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* All prices subject to change.
Agriculture

Agricultural Issues and Policies
Lindsey K. Watson
In series: Agricultural Issues and Policies
Case: 978-1-61761-972-4. $125.00.
This book is one of the defining elements of a nation. This series consists of analyses on a variety of agricultural issues including (but not limited to) developments, policies, programs, trade, trends and economics. Topics will be seen from a U.S. perspective, but not to the exclusion of other countries particularly when the discussion has an international scope.

Agricultural Issues and Policies. Volume 2
Lindsey K. Watson
In series: Agricultural Issues and Policies
Case: 978-1-62257-472-8. $135.00.
This book is one of the defining elements of a nation. This series consists of analyses on a variety of agricultural issues including (but not limited to) developments, policies, programs, trade, trends and economics of agriculture. Topics will be seen from a U.S. perspective, but not to the exclusion of other countries particularly when the discussion has an international scope.

Agricultural Research Updates. Volume 2
Barbara P. Hendriks (Editor)
In series: Agricultural Research Updates
2012. 228 pp.
Case: 978-1-62100-338-0. $140.00.
This compilation examines agricultural research from across the globe and covers a broad spectrum of related topics. In this book, the authors discuss research including cotton growth, seed yield, seed viability, and seedling vigor as affected by plant nutrition and plant growth retardants; salmonella sp. in the pork production chain; health effects of kiwi fruit; developing biomarkers to improve, detect and monitor high pork quality; methods to study the seed production of semi-natural grasslands; and the use of live food for larval peneids.
This book presents current research in the cultivation, varieties and uses of cotton. Topical research in this compilation include cotton pests and strategies for management control; cotton biotechnology and application in breeding; phosphorous acquisition characteristics of cotton plants; chemically modified cotton fibers for biomedical applications; China and Australia's global cotton production; and climatic conditions affecting Egyptian cotton.

**Agriculture and Food Science Research Summaries**

**Héctor J. Escobedo and Sergio M. Madrigal**

In series: *Agriculture Issues and Policies*

2013.

Case: 978-1-62257-717-0. $150.00.

This book is a continuation of the book Agriculture and Food Science Researcher Biographical Sketches and Research Summaries which compiles biographical sketches of top professionals in the field of agriculture and food science research, as well as research summaries from a number of different focuses in this important field.

**Alfalfa and Clovers: Properties, Medicinal Uses and Health Benefits**

**Jakub Fišál and David Pospíšil**

In series: *Botanical Research and Practices*

2012. 192 pp.

Case: 978-1-62100-062-4. $150.00.

In this book, the authors present topical research in the study of the properties, medicinal uses and health benefits of alfalfa and clover. Topics discussed in this compilation include the position of alfalfa oxidoreductases in soil enzymology and biotechnology; alfalfa properties and livestock nutrition and phytoestrogen use in menopausal patients.

**Cooperatives: A Feasibility Study Guide and Education Efforts of Farmers**

**Jacob Rogers and Vincent K. Grant**

In series: *Agriculture Issues and Policies*

In series: *Business Issues, Competition and Entrepreneurship*

2012. 95 pp.

Soft: 978-1-62081-251-8. $52.00.
e-book: 978-1-62081-273-0. $52.00.

This book provides a national perspective of cooperative education initiatives by farmer cooperatives. The analysis examines whom cooperatives educate, what resources they use, what topics they focus on, where they source their programs and materials, whether they feel there are enough resources available for education, and what educational topics they feel directors most need to fulfill their duties. A cooperative feasibility study guide is also outlined with a focus on the cooperative business development process.

**Feed the Future: The U.S. Global Food Security and Sustainable Agriculture Initiative**

**Chas Slater and Ezekiel L. Castaneda**

In series: *Agriculture Issues and Policies*

In series: *Government Procedures and Operations*


Case: 978-1-61942-672-6. $95.00.
e-book: 978-1-61122-708-6. $95.00.

At the G8 Summit in L’Aquila, Italy in 2009, global leaders committed to “act with the scale and urgency needed to achieve sustainable global food security.” They recognized that the combined effect of longstanding underinvestment in agriculture and food security, historically high and volatile food prices, and the economic and financial crisis was increasing dramatically the number of poor and hungry and jeopardizing global progress toward meeting the Millennium Development Goals. By robbing people of a healthy and productive life and stunting the development of the next generation, hunger leads to devastating consequences for individuals, families, communities, and nations. This book examines the state of food insecurity in the world and provides an overview of the Obama Administration's global hunger and food security initiative, called “Feed the Future.”

**Dairy Cooperatives: Profiles and Research**

**Andrew West and Skye I. Kelly**

In series: *Agriculture Issues and Policies*


Soft: 978-1-62081-247-1. $52.00.
e-book: 978-1-62081-257-0. $52.00.

Dairy cooperatives as a group are the most prominent among farmer cooperatives in terms of sales revenue and the important roles they play in the dairy industry, a major sector in agriculture. Their mission, functions, organization, governance, operations, market performance, financing, etc., are in full agreement with the economic theory of what cooperatives are and what cooperatives do. This book addresses some of the challenges faced by cooperatives and the issues raised by the alternative financing methods used. Classic literature on the economic theory of what cooperatives are and what they do in the market economy is discussed with a focus on measuring performance and marketing operations.

**Cotton: Cultivation, Varieties and Uses**

**Benedetto Giuliano and Emilia J. Vinci**

In series: *Agriculture Issues and Policies*


Case: 978-1-61942-746-4. $140.00.

This book presents current research in the study of the cultivation, varieties and uses of cotton. Topics included in this compilation include cotton pests and strategies for management control; cotton biotechnology and application in breeding; phosphorous acquisition characteristics of cotton plants; chemically modified cotton fibers for biomedical applications; China and Australia's global cotton production; and climatic conditions affecting Egyptian cotton.

**Federal Crop Insurance: Elements and Proposals**

**Marc C. Brown and Noah E. Clark**

In series: *Agriculture Issues and Policies*


Case: 978-1-62257-009-6. $110.00.

For many farmers, crop insurance is the most important component of the farm safety net, given the breadth of commodity coverage and capability to reimburse producers for crop losses. The federal crop insurance program began in 1938 when Congress authorized the Federal Crop Insurance Corporation. The current program provides producers with risk management tools to address crop yield and/or revenue losses on their farms. In purchasing a policy, a producer growing an insurable crop selects a level of coverage and pays a portion of the premium, or none of it in the case of catastrophic coverage, which increases as the level of coverage rises. The federal government pays the rest of the premium. Insurance policies are sold and completely serviced through 15 approved private insurance companies. This book provides an overview of the federal crop insurance program and discusses related issues.
The United States is richly endowed with forests, and their care and conservation have been a national concern for more than half a century. This book provides data and analysis aimed at addressing this concern by enhancing dialogue and decisions in pursuit of the goal of forest sustainability. On the whole, no evidence suggests that we are "using up" our forests. In fact, the total area of forests has been stable, and the volume of wood found on them increasing. But a number of issues cause significant concern which range from regional forest fragmentation and loss to widespread increases in forest insect infestation and other disturbances. Potential changes in climate compound the risks and uncertainties associated with these issues.

**Global Agricultural Industries: Research Spending Trends and Changing Market Structures**

*Shirley O. Kelley and Mike F. Grant*

In series: *Global Agriculture Developments*

In series: *Agriculture Issues and Policies*


Growth in the productivity of the global food and agricultural system will be largely determined by today's investments in research and development (R&D). In recent decades, the private sector has become a major player in developing innovations for food and agriculture. Factors spurring private companies to invest in food and agricultural research include the emergence of biotechnology and other new scientific developments, the strengthening of intellectual property rights (IPR) over agricultural innovations, new regulatory requirements, the expansion of markets for improved agricultural inputs and food products, and rising consumer demand for more diverse foods. This book evaluates investment trends by-for-profit companies in food manufacturing, biofuel, and agricultural input R&D and explores how these trends are affected by changes in market demand and industry structure.

**Global Agriculture: Developments, Issues, and Research, Volume 1**

*Marvin R. Robertson and Jeffery I. Schmidt*

In series: *Global Agriculture: Developments, Issues, and Research*


This book explores the developments, issues and research outlook of global agriculture. Topics discussed include the trade and food security implications from the Indonesian agricultural experience; the remarkable growth in China's apple juice concentrate exports since the 1990s; the U.S. and Mexican dry bean sectors; and Peru as an emerging exporter of fruits and vegetables.

**Grazing Ecology: Vegetation and Soil Impact**

*José Ramón Arévalo (University of La Laguna, Spain)*

In series: *Agriculture Issues and Policies*

Case: 978-1-62100-436-3. $95.00.
e-book: 978-1-62100-468-4. $95.00.

Grazing management is one of the most important management activities worldwide, and it has been a traditional sustainable land use in many areas of the planet. This book demonstrates the poor extrapolation capacity that grazing studies have due to site-dependent effects and sensitivity to changes in weather conditions and soil characteristics. Therefore, researchers should be cautious when suggesting management recommendations, such as removing all grazing animals or reducing grazing activities. A highly variable ecological force such as grazing, with important environmental and social implications, should be analyzed deeply before extrapolated results or suggesting management practices.

**Horizons in Crop Production: Precision Agriculture and No-Till Farming**

*Aiden Banks and Scott F. Melves*

In series: *Agriculture Issues and Policies*

2012. 78 pp.
Case: 978-1-61942-109-7. $47.00.

This book explores the technologies of precision agriculture and no-till farming, with a focus on yield monitors, variable crop-rate application, guidance systems and GPS maps.

**Inspecting Grain in the United States: Procedures and Diseases**

*Wayne B. Fisher and Sandra M. Gray*

In series: *Agriculture Issues and Policies*

Case: 978-1-62257-252-6. $110.00.

Across America, U.S. grain flows from farm to elevator to destinations around the world. The Grain Inspection, Packers and Stockyards Administration (GIPSA), Federal Grain Inspection Services (FGIS), an agency of the United States Department of Agriculture (USDA), helps move that grain into the marketplace by providing farmers, grain handlers, processors, exporters, and international buyers with information that accurately and consistently describes the quality and quantity of grain being bought and sold. This book examines the nationally accepted grain standards and inspection procedures that provide producers, elevator operators, and others who trade grain with common terms for describing grain; a means for determining storability and end-product yield; and a framework for improving grain quality.

**International Food Security: Assessments and Projections**

*Hoyt A. Rutledge and Darren R. Hays*

In series: *Agriculture Issues and Policies*

2012. 103 pp.
Case: 978-1-61942-673-3. $47.00.
e-book: 978-1-6122-691-1. $47.00.

This book examines projections of two key determinants of food security: food production and import capacity of the countries. Domestic food production performance plays the most critical role in food security, particularly for regions like Asia and sub-Saharan Africa that depend on grain supplies. Conversely, imports play a significant role for regions like Latin America and North Africa that depend on positive trade terms. To understand how food production and import capacity impact food security, researchers estimated and projected three measures of food security regionally including: the number of food-insecure people in each country, the nutrition gap, and the distribution gap.

**Maize: Cultivation, Uses and Health Benefits**

*Jose C. Jiménez-López (High Council for Scientific Research (CSIC), Department of Biochemistry, Cell and Molecular Biology of Plants, Granada, Spain)*

In series: *Agriculture Issues and Policies*

Maize (Zea mays L.) commonly called corn, field corn, or Indian corn belongs to the Poaceae (Gramineae) family. It grows almost anywhere, although approximately 50% of the world's maize is produced in the USA. It is one of the 3 major grain crops worldwide and extremely important for human and animal consumption (15 to 56% of total daily dietary caloric intake), food processing and other commercial activities in many developed and developing countries. This book aims to provide an up-to-date knowledge of recent developments in maize cultivation; the improvement of maize nutritional values to be used in food preparation and human consumption; and maize health benefits provided by the use of alternative maize varieties. The authors expect this book will provide a compendium of valuable knowledge for anyone interested in agricultural, environmental and food sciences.

Organic Fertilizers: Types, Production and Environmental Impact
Rajeev Pratap Singh (Division School of Industrial Technology, Universiti Sains Malaysia, Malaysia)
In series: Agriculture Issues and Policies

Organic fertilizer refers to materials used as fertilizer that occur naturally. Organic fertilizers such as manure have been used in agriculture for thousands of years; ancient farmers did not understand the chemistry involved, but they did recognize the benefit of providing their crops with organic material. Interest in organic farming is growing worldwide as sustainable agricultural practice nowadays. Organic fertilizers are sustained sources of nutrients due to slow release during decomposition. By increasing soil organic matter, organic farming can reinstate the natural fertility of the damaged soil, which will improve the crop productivity to feed the growing population. Organic fertilizers enhance the natural soil processes, which have long-term effects on soil fertility. The book is a very valuable compilation in this direction.

Rice: Production, Consumption and Health Benefits
Yoshihiro Liu and Liliana Froyen
In series: Agriculture Issues and Policies

Rice is one of the most important food crops around the world and feeds over half of the global population. Hence, the study of rice productivity is vital to assuring an adequate food supply for all. In this book, the authors present topical research in the study of the
production, consumption and health benefits of rice. Topics discussed in this compilation include the pharmacology and toxicology of rice bran and its potential efficacy in reducing cardiovascular disease; arsenic in rice and its health emergency in South and South-East Asia; the quality of rice as affected by paddy drying and kernel storage; plant architecture in rice and grasses and its relevance to crop improvement; rice allelopathy as an environmentally friendly weed control strategy; rice bran as a byproduct for the production of bioactive compounds and nutraceuticals and rice flour as a prospective gluten-free cereal-based food product.

**Role of Wheat in Afghanistan’s Food Security, The**  
*Merrill E. Patterson and Charley D. Hughes*  
In series: *Agriculture Issues and Policies*  
2012. 74 pp.  
Soft: 978-1-61942-946-8, $47.00.  
e-book: 978-1-61942-954-3, $47.00.

Wheat is a key staple food in Afghanistan, accounting for over half of the caloric intake of the population. It is also Afghanistan’s major crop, accounting for roughly 70 percent of the cultivated land area. However, the country’s domestic production of wheat is inadequate for meeting demand and, moreover, is subject to sizable weather induced fluctuations. Imports from surrounding countries have been required in order for Afghanistan to meet its need for wheat. This book discusses the role of wheat in Afghanistan’s food security.

**Safety of U.S. Meat and Poultry Products: Development and Oversight**  
*Joseph J. Lewis and Mary A. Hernandez*  
In series: *Agriculture Issues and Policies*  
Case: 978-1-62257-008-9, $110.00.  
e-book: 978-1-62257-054-6, $110.00.

The U.S. beef industry has recalled over 23 million pounds of beef owing to contamination from pathogenic strains of Shiga toxin-producing *Escherichia coli* (STEC) bacteria since 2006. These strains do not harm cattle but may contaminate meat during slaughter. If humans eat contaminated meat without properly cooking it, STEC can cause illnesses, including bloody diarrhea and Hemolytic Uremic Syndrome, which is characterized by kidney failure and can be fatal. The Departments of Health and Human Services (HHS) and of Agriculture (USDA) play a role in reducing STEC. The USDA has stated that interventions to reduce STEC before slaughter offer a significant opportunity to improve food safety. This book examines current developments to provide safety in the U.S. meat and poultry products industry. Prolonged slaughter interventions that could reduce *E. coli* in cattle are discussed, as is the “pink slime” controversy, meat and poultry inspection, and the USDA’s authority to recall meat and poultry products.

**SNAP’s (Supplemental Nutrition Assistance Program) Role in Poverty Reduction and Increased Food Security**  
*Brian E. Hall and Richard F. Green*  
In series: *Nutrition and Diet Research Progress*  
2012.  
Case: 978-1-62257-122-2, $110.00.  

The Supplemental Nutrition Assistance Program (SNAP, formerly called the Food Stamp Program) plays a vital role in the social safety net in the United States, providing almost $72 billion in benefits in 2011. An important measure of SNAP’s effectiveness is the extent to which the program reduces poverty. Evaluations of antipoverty effect of safety net programs often focus on the rate of poverty. However, the poverty rate reflects only one aspect of the antipoverty effect of a safety net program, whether or not adding program benefits to a family’s resources lifts them above the poverty threshold. This book examines SNAP’s role in poverty reduction with a focus on increased food security.

**Strategy and Science at the FDA: Plans, Goals and Challenges for the Future**  
*Daniel N. Reed and Gloria S. Griffin*  
In series: *Public Health in the 21st Century*  
In series: *Food Science and Technology*  
Case: 978-1-62100-856-9, $95.00.  

FDA’s primary responsibility is to protect the American people from unsafe or unlabeled food, drugs, and other medical products and to make sure consumers have access to accurate, science-based information about the products they need and rely on every day. The agency also guides and oversees the development and availability of effective new medical products and new food products that harness the latest advances in science and technology to improve the health and well-being of American consumers. This book explores the FDA’s strategic priorities and vision for the future which includes a transformed and integrated global food system, focused on prevention and improved nutrition, as well as an investment in medical science and technology, to ultimately better promote and protect the health of the American people.

**Sugarcane: Production, Cultivation and Uses**  
*João F. Gonçalves and Kauê D. Correia*  
In series: *Agriculture Issues and Policies*  
Case: 978-1-61942-213-1, $185.00.  

This book presents topical research in the study of the production, cultivation and uses of sugarcane. Topics discussed in this compilation include the ecology and tactics of control for three sugarcane stalk-boring species in West Africa; sugarcane diversification, productivity and competitiveness by geostatistical techniques and precision agriculture; sugarcane as feedstock for biomaterials and polymer production; sugarcane tillering and ratooning; products from the delignification of sugarcane bagasse; and the adaptability and stability of sugarcane genotypes.

**The Farm Safety Net: Programs, Proposals, Overlap**  
*Daniel E. Miller and Emma J. Harris*  
In series: *Agriculture Issues and Policies*  
2012. 133 pp.  
Soft: 978-1-62257-028-7, $52.00.  

The U.S. Department of Agriculture and the broader farming community often refer to the price and income support programs of the farm bill's Title I and the crop insurance and disaster assistance programs of Title XII as encompassing the farm safety net. Many policymakers and farmers consider federal support of farm businesses necessary for their financial survival, given the unpredictable nature of agricultural production and markets. In contrast, many environmental groups and budget hawks argue that farm subsidies encourage overproduction on environmentally fragile land and are a market-distorting use of tax dollars. This book provides an overview of the current farm safety net programs, proposals and overlap in producer support. Also discussed is the congressional debate that is expected to precede the next round of omnibus farm legislation in 2012 and the budget and policy issues and implications for U.S. farm policy in the context of the World Trade Organization (WTO).
The importance of grasslands lies not only in the areas they cover, but also in the diversity of environmental benefits they produce. The lands provide forage for livestock, water for urban and rural uses, flood protection, wildlife habitat, purification of air, and carbon sequestration. The lands also provide aesthetic values and open space. This book discusses the Grasslands Reserve Program (GRP), which provides assistance to landowners and operators to protect grazing uses and related conservation values on eligible private range and pasture lands. The program emphasizes support of grazing operations, maintaining and improving plant and animal biodiversity, and protecting grasslands and shrublands under threat of conversion to cropping, urban development, and other non-grazing uses.

Animal Science

Animal Science Research Biographical Sketches and Research Summaries
Pascual F. Matolla and Sandy S. Miers
In series: Animal Science, Issues and Professions
2012.
Case: 978-1-62100-873-6, $150.00.
This new book compiles biographical sketches of top professionals in the field of animal science research, as well as research summaries from a number of different focuses in this important field.

Bees: Biology, Threats and Colonies
Richard M. Florio (Editor)
In series: Animal Science, Issues and Professions
In series: insects and Other Terrestrial Arthropods:
Biology, Chemistry and Behavior
Case: 978-1-61324-825-6, $140.00.
For students of animal behavior, honey bees are an intriguing organism, interacting in a complex eusocial colony setting as well as with the environment as they forage over wide areas. Much of that behavior is moderated by odors, which honey bees can detect at extremely low concentrations. This book presents current research from across the globe in the study of bees, including the importance of odor in learning and behavior of the honeybee; the role of honeybees in pollination ecology; threats to the stingless bee in the Brazilian Amazon; honeybee viruses and age-related associative and non-associative learning performance in honeybees.

Drosophila Melanogaster: Life Cycle, Genetics and Development
M. Spindler-Barth (Universitat Ulm, Germany)
In series: Insects and Other Terrestrial Arthropods:
Biology, Chemistry and Behavior
Case: 978-1-61470-279-5, $95.00.
Drosophila melanogaster is a species of Diptera, or the order of flies, in the family Drosophilidae. This species is one of the most commonly used model organisms in biology, including studies in genetics, physiology, microbial pathogenesis and life history evolution because they are easy to take care of, breed quickly and lay many eggs. In this book, the authors present current research in the study of drosophila melanogaster including: the gametogenesis, embryonic and post-embryonic development of drosophila melanogaster; the significance of stellate genes in drosophila melanogaster; the evolution of drosophila melanogaster retroviruses and the morphogenesis of drosophila melanogaster macrochaetes.
Impossible Escape, The: Studies on the Tonic Immobility in Animals from a Comparative Psychology Perspective

Carlo Alfredo Clerici and Laura Veneroni
(University of Milan, Italy)

Soft: 978-1-62100-183-6. $47.00.
e-book: 978-1-62100-221-5. $47.00.

Since ancient times, a curious phenomenon has been described in many animal species: people have been able to induce state of prolonged immobility in the animal by using various methods. Over time, the phenomenon has gone by several names, from the most evocative animal hypnosis to the more scientific tonic immobility. For some years now, investigations have been examining analogies between this phenomenon and conditions occurring in humans, such as the immobility that accompanies severe trauma and sexual violence, wartime situations, catalepsy, cataplexy, catatonia and the immobility experienced in panic attacks. This book reviews the literature on these tonic immobility (TI) phenomena in animals and the comparative psychological research that has investigated how this model can contribute to our understanding of aspects of human behavior.

Native Species: Identification, Conservation and Restoration

Lluvia Marín and Dimos Kovac

Case: 978-1-61470-613-7. $95.00.
e-book: 978-1-61470-676-2. $95.00.

This book presents current research from across the globe in the study of the identification, conservation, and restoration of native species. Topics discussed include soil microbiology influencing biodiversity conservation of natural ecosystems; the native breed of domestic cattle in Southwest England; native plants of northeastern Mexico and their potential in the restoration of damaged ecosystems; Berberis buxifolia, a native fruit species of Patagonia; the contribution of the native earthworm species of Assam state in northeast India and a review of the native species of salt steps in Algeria.

Nematodes: Morphology, Functions and Management Strategies

Fausto Boeri and Jordan A. Chung

Case: 978-1-61470-784-4. $185.00.

Nematodes are the most numerous multicellular animals in the biosphere encountered in terrestrial or aquatic ecosystems among multispecies communities and are integrated in the food chain at five trophic levels according to their feeding habits. In this book, the authors present topical research in the study of nematodes, including the biological control of animal-parasitic nematodes and plant-parasitic nematodes; resistance and virulence in plant-nematode interactions; free-living nematodes in the marine ecosystem; management and control of the Pine Wood Nematode and slug pest management through nematodes in agricultural and horticultural crops.

Rodents: Habitat, Pathology and Environmental Impact

Alfio Triunveri and Desi Scalise

Case: 978-1-61470-833-9. $140.00.

This book gathers topical research from across the globe in the study of the habitat, pathology and environmental impact of the rodent population. Topics discussed include rodents in urban ecosystems of Russia and the USA; the European water vole of Western Siberia; a study of rodents in field investigations; the potential use of Proechimys (spiny rat) in the field of neuroscience; niche overlap and resource partitioning among three urban rodent species; helminth parasites of hydromyine rodents from the island of New Guinea and rodent management in animal farms by anticoagulant rodenticides.

BIOCHEMISTRY

Biochemistry and Biotechnology: Research and Development

Sergey D. Varfolomeev, G.E. Zaikov, Larisa P. Krylova (Russian Academy of Sciences, Moscow, Russia)

Case: 978-1-62100-452-3. $150.00.

This book presents current research in the fields of biochemistry and biotechnology. Topics discussed include information about the production of thermostable DNA polymerase suitable for whole-blood polymerase chain reaction; isolation, purification and some properties of L-Lysine a-Oxidase from Trichoderma sp. 6; production of nitric oxide by endothelial cells infected with herpes simplex virus type 1; optimization of the process of cultivation of recombinant Escherichia coli TBI protein producing strain; development of HRP-functionalized carbon-coated iron nanoparticles using arenediazonium tosylates; experimental approach to the induction of nonculturable state of Lactococcus lactis and callus culture technology of spring soft wheat stress tolerant varieties.

Fatty Acids: Types, Roles and Health Effects

Grace Chen (Crop Improvement and Utilization, Albany, California)

Case: 978-1-61324-704-4. $140.00.
e-book: 978-1-61324-820-1. $140.00.

In this book, the authors present topical research from across the globe in the study of the types, roles and health effects of fatty acids. Topics discussed include the chemical structure and classification of fatty acids; n-3 polyunsaturated fatty acids in brain resistance to aging; the role of dietary fatty acids for developmental and disease states in domestic animals; the effects of fatty acid synthase on fatty acids biogenesis in metabolic syndrome and lipotoxicity on human pancreatic beta-cells.

Isotopes for the Nation’s Future: Research Opportunities and Plans

Ezio Benfante

Case: 978-1-61470-818-6. $185.00.
This book explores isotopes which are vital to the science and technology base of the U.S. economy. Isotopes, both stable and radioactive, are essential tools in the growing science, technology, engineering and health enterprises of the 21st century. The scientific discoveries and associated advances made as a result of the availability of isotopes today span widely from medicine and biology, physics, chemistry and a broad range of applications in environmental and material sciences. Isotope issues have become crucial aspects of homeland security. Isotopes are utilized in new resource development, in energy from bio-fuels, petrochemical and nuclear fuels, in drug discovery, health care therapies and diagnostics, in nutrition, in agriculture and in many other areas.

Keratin: Structure, Properties and Applications
Renke Dullaart and João Mousquê
In series: Protein Biochemistry, Synthesis, Structure and Cellular Functions
Case: 978-1-62100-336-6. $95.00.
Keratins represent a group of fibrous proteins produced in some epithelial cells of vertebrates such as reptiles, birds and mammals. These proteins are abundantly present in nature and they constitute the major part of hair, wool, horns, nails, feathers and stratum corneum of the skin. In this book, the authors present current research in the study of the structure, properties and applications of keratin. Topics discussed include simple epithelial keratins K8 and K18; extraction, processing and applications of wool keratin; water sorption of human keratinized fibers and keratin expression in the human pituitary gland and its application to neoplastic pituitary cells.

Molecular and Supramolecular Bioinorganic Chemistry: Applications in Medical and Environmental Sciences. Volume 3
Ana Lucia Ramalho Mercê, Judith Felcman and Maria Angeles Lobo Recio (Universidade Federal do Parana, Pontificia Universidade Catolica do Rio de Janeiro, Universidade Federal de Santa Catarina, Brazil)
In series: Biochemistry Research Trends
2012. 244 pp.
Case: 978-1-62100-624-4. $140.00.
This book focuses on the newest information on metal ion contaminations and the influence of some of them in neurological diseases, a subject still not completely understood in the scientific literature so far. The book presents an extensive review on the aluminium forms of intoxication in humans and the role of this metal ion in human pathobiology by presenting live cases experienced in hospitals and discussing similar data; a review on the recent findings of the role of aluminium, zinc and copper in neurological disorders based on the chemical and bioinorganic aspects of these metal ions; a review on the genotoxic effects of the metal ions aluminium, iron and manganese either in vivo and in vitro results; information concerning arsenic and its structural effects on the human erythrocyte and some complementary model studies, and provides a study on coffee cultures in contaminated soils and its influence on human health.

Organic Chemistry, Biochemistry, Biotechnology and Renewable Resources. Research and Development. Volume 2- Tomorrow and Perspectives
G.E. Zaikov, Oleg V. Stoyanov, Elena L. Pekhtasheva (Institute of Biochemical Physics, Russian Academy of Sciences, Moscow, Russia)
In series: Biochemistry Research Trends
In series: Biotechnology in Agriculture, Industry and Medicine
2012.
Case: 978-1-62081-159-7. $150.00.
This book includes the latest information in the field of organic chemistry, biochemistry, biotechnology, material science (synthesis, properties, applications) and renewable resources. This book discusses the modification of chitosan films as a way of regulating their transport properties, ozone and its reactions with diene rubbers, antiradical activity of different antioxidants depending on pH and polarity of model system detected by a photochemical scintence method, the interlayer spacing and elasticity modulus interconnection for nanocomposites polymer/organoclay.

Recollections of 45 Years in Research: From Chemistry to Polymetric Drugs to the EPR Effect in Cancer Therapy
Hiroshi Maeda (Sojo University, Kumamoto, Japan)
In series: Protein Biochemistry, Synthesis, Structure and Cellular Functions
2012. 86 pp.
Soft: 978-1-61761-101-8. $47.00.
e-book: 978-1-62100-309-0. $47.00.
This book describes the lifelong research experience of a scientist, from the beginning studies of protein chemistry to the development of a protein drug. Also discussed herein include the invention of the first polymer conjugate drug—poly(styrene-co-maleic acid (SMA) conjugated to NCS,-called SMANCS. The author, having acquired knowledge of proteases and inhibitors, pioneered investigations of microbial proteases in the pathogenesis of bacterial infection. The author’s group, using a polymer-conjugated enzyme, discovered an enormous burst in the generation of superoxide anion radical during influenza virus infection by the generation of xanthine oxidase, which was found to be the major cause of the pathogenesis of this viral infection, which progressed even after the virus was eradicated.

Zinc: Characteristics, Uses and Benefits
Masayoshi Yamaguchi (Division of Endocrinology and Metabolism and Lipids Department of Medicine Emory University School of Medicine, Atlanta, GA, USA)
In series: Biochemistry Research Trends
In series: Earths Chemistry in the 21st Century
2012. 201 pp.
Case: 978-1-61942-523-1. $95.00.
Zinc is one of the most abundant transition metals in the human body, and it has various benefits as an essential trace element in the regulation of the living body. Nutritional deficiency of zinc is known to induce many chronic diseases such as immune system disorders, rheumatoid arthritis, diabetes, obesity, atherosclerosis, cancers, bone growth retardation, osteoporosis and others. This book introduces the recent topics concerning the characteristics, uses and benefits of zinc. This book will be helpful in research development and also in the...
understanding of the various physiological-pathophysiological roles of zinc.

**BIOLOGY**

Antagonistic Activity and Interaction of Probiotic Bacteria with Intestinal Microbiota

Sameer M. Dixit (Centre for Molecular Dynamics, Nepal, Kathmandu, Nepal), Kasipathy Kailasapathy (University of Western Sydney, Australia)

In series: Microbiology Research Advances

In series: Bacteriology Research Developments


Case: 978-1-62081-755-1. $150.00.


In this age, societies take great pains to protect their populations against exposure to undesirable microbes. Pasteurization, sterilization, sanitation and HACCP procedures have been instrumental in this effort, particularly for gastro-intestinal diseases. We are therefore much less exposed to microbes, good or bad, than in ancient times. An important feature of this book is the exploration of Escherichia coli as a probiotic culture. This is very much forward thinking, and challenges the current paradigm. Indeed, probiotics have mainly been selected from lactic cultures, and exploring the use of coliforms has novelty.

Another important feature of this book is the development of an automated assay for the evaluation of interactions between probiotics and pathogens. The agarose-supernatant strategy is a novel development of the microplate systems which has great potential for rapid screening of effective cultures.

Beta-Lactamases

Jean-Marie Frère (Universite de Liege, Institute of Chemistry, Belgium)

In series: Molecular Anatomy and Physiology of Proteins

Edited by: Vladimir N. Uversky (University of South Florida, USA)


The activity of a bacterial enzyme “able to degrade penicillin” had first been described in 1940, even before the exact structure of penicillin was elucidated and, by 1970, several enzymes had been purified to homogeneity, the amino acid sequence of a staphylococcal penicillinase was also known and that of its Bacillus licheniformis counterpart was well under way. By contrast, their catalytic mechanism remained quite mysterious. A Zn++ metallo-beta-lactamase (B-lactamase II, Bcl or Bll) had also been described as soon as 1967 and later purified. It was thus surprising that the first mechanistic information demonstrating the presence of a penicillin-binding serine residue was obtained with a penicillin-sensitive DDP-peptidase rather than a b-lactamase. This seemed to open the floodgates and several class A b-lactamases were then rapidly shown to be active-site serine enzymes. This book presents current research in the study of beta-lactamases.

Biomacromolecular Mass Spectrometry Yearbook. Volume 2

Simone Koenig (Univ. Muenster, Germany)

In series: Biomacromolecular Mass Spectrometry Yearbook


Case: 978-1-61470-739-4. $140.00.


This yearbook covers research in the fields of biomacromolecules such as proteins, DNA, and other biopolymers studied with mass spectrometry and peripheral techniques. Cleavage and breakdown of the large molecules is often necessary for their investigation and therefore such studies on the products are also of importance. Topics discussed include protein modifications and their analysis using mass spectrometry; chemical profiles of the insect cuticle; polycyclisiloxane background in field-based ion generation at atmospheric pressure; screening methodology for substrates of protein histidine and compilation of fragmentation data of single amino acids prepared by electrospray.

Calcium Binding Lysozymes

Eugene A. Permyakov (Institute for Biological Instrumentation of the Russian Academy of Sciences, Pushchino, Moscow region, Russia), Ludmilla A. Morozova-Roche (Umea University, Umea, Sweden) and Lawrence J. Berliner (Denver University, Denver, Colorado)

In series: Molecular Anatomy and Physiology of Proteins

Edited by: Vladimir N. Uversky (University of South Florida, USA)


Case: 978-1-62081-755-1. $150.00.


In this book, the authors describe an important class of calcium binding lysozymes that are evolutionarily related to the lysozyme superfamily and the lactalbumins. The authors take the reader through a journey from the evolution, then the structure and properties of the calcium binding lysozymes. They discuss new unique protein folding pathways with local cooperative, close related folding modes that exhibit multiple folding pathways which are not properties of the lactalbumins or non calcium binding lysozymes. They comprise one of the most diverse group of examples in protein folding. In addition this protein class, especially equine lysozyme, shows peculiar amyloid assembly properties that are not common with other fibril forming proteins. It is one of the first shown to form ring shaped amyloids and other complexes in vitro. Lastly equine lysozyme forms complex with oleic acid, a unique form ELOA, which contributes to the family of the human and bovine lactalbumin analogs HAMLET and BAMLET.

Ecosystem Assessment for Marine Resource Management

Maria P. Toscano (Editor)

In series: Oceanography and Ocean Engineering


Soft: 978-1-61470-805-6. $47.00.

e-book: 978-1-61470-852-0. $47.00.

This book explores the various nationwide commissions which have reviewed and highlighted the importance of incorporating ecosystem principles in ocean and coastal resource management. An ecosystem approach to management (EAM) is one that provides a comprehensive framework for marine, coastal and Great Lakes resource decision making. Integrated ecosystem assessments (IEAs) are a critical science-support element enabling an EAM strategy. An IEA is a formal synthesis and quantitative analysis of information on relevant natural and socioeconomic factors in relation to specified ecosystem management goals. It involves and informs citizens, industry representatives, scientists, resource managers and policy makers through formal processes to contribute to attaining the goals of EAM.
Textbook of Fish Endocrinology
Sofronios E. Papoutsoglou (Agricultural University of Athens, Greece)
In series: Marine Biology
Case: 978-1-62100-270-3. $165.00.
The discovery and study of the biological action of substances possessing hormonal properties comprise a considerable step towards a more comprehensive illustration of fish physiology. Fish in their vast majority do not constitute merely the most populous and phylogenetically oldest vertebrate group of organisms, but also a constant source of information regarding the mode of action of physiological and endocrinological processes of the phylogenetically evolved vertebrates, including mammals and humans. Although cells with neurohormonal properties have been identified in fish during the first decades of the 20th century, it is only over the past thirty years that these cells have been the object of intensive research efforts which, at an ever accelerating pace, are attaining a number of significant goals. This book presents current research in the study of fish endocrinology.

BIOTECHNOLOGY

Bioremediation: Biotechnology, Engineering and Environmental Management
Alexander C. Mason (Editor)
In series: Biotechnology in Agriculture, Industry and Medicine
In series: Environmental Science, Engineering and Technology
Case: 978-1-61122-730-7. $165.00.
Bioremediation can be defined as any process that uses microorganisms, fungi, green plants or their enzymes to return the natural environment altered by contaminants to its original condition. This book presents topical research data in the study of bioremediation from across the globe. Topics discussed herein include the bioremediation of nitro-toluences and their derivatives; advances in the bioremediation of perchlorate; the interaction of copper and chromium with yeasts for potential application on polluted environmental clean ups; biosurfactants in the bioremediation of metals; the use of saccharomyces cerevisiae cells in bioremediation; nitrogen sequestration by salt marshes; bioremediation of chromium contaminated soils by actinomycetes; and bioremediation with marine algae.

Biotechnology of Microbial Enzymes
Vijal Kumar Gupta and Manimaran Ayyachamy
(National University of Ireland, Galway, Ireland)
In series: Biotechnology in Agriculture, Industry and Medicine
Case: 978-1-62100-131-7. $165.00.
Enzyme technology is a comprehensive and definitive source of information for all those fascinated in this area. It provides a complete survey of microbial enzymes currently available in the market, as well as their potential applications in several industrial processes. This book includes chapters detailing ACC Deaminase, Amylase, Chitinase, Hyaluronidase, Laccases, Proteases, Pectinases and other important enzymes utilized at commercial scale in various industrial sectors. The authors have prepared up-to-date and easy-to-read book chapters which will accomplish the mandate for a comprehensive survey of enzymes to audiences across disciplines. It is particularly very handy to undergraduates and diplomas pursuing degrees in microbiology, biotechnology, microbial technology or biochemistry.

Biotechnology: Health, Food, Energy and Environment Applications
Luis G. Torres Bustillos (Unidad Profesional Interdisciplinaria de Biotecnologia-Instituto Politecnico Nacional, Col. Barrio la Laguna Ticoman, Mexico)
In series: Biotechnology in Agriculture, Industry and Medicine
2012.
Case: 978-1-62081-071-2. $165.00.
e-book: 978-1-62081-105-4. $165.00.
In a world of declining fossil energy, biotechnology explores multiple products and processes hidden in the rich genome of microbes, plants and animals. One of the reasons for the renewed spirit of biotechnology is supported by its capacity to swiftly incorporate the multidisciplinary advances in basic and applied sciences. This book presents a wide range of biotechnology research by the UPIBI community, teachers and students in the past 24 years. Novel methodologies, basic results and new processes are reported in several of the most dynamic fields in biotechnology such as health, energy, food and environment. This effort will certainly be an inspiration for students wishing to join research teams, for academic colleagues in search of new knowledge and for professionals exploring novel ideas or innovative solutions.

Biotechnology: New Ideas, New Developments
Atul Bhargava and Shilpi Srivastava (Amity University Uttar Pradesh, Lucknow, India)
In series: Biotechnology in Agriculture, Industry and Medicine
Case: 978-1-62100-539-1. $165.00.
Biotechnology is one of the fastest emerging fields of biological sciences. The 21st century is witnessing the dawn of biotechnology, which is expected to surpass information technology as the new engine of the global economy. This exciting discipline has drawn the interests of traditional biologists, biochemists, microbiologists, medical and agricultural scientists into applying mathematical and engineering models to understanding biology. Biotechnology is experiencing a revolution and is affecting every facet of our lives, from crop improvement to commerce, and drugs to sustainable development. This book reflects the view that biotechnology is the integrated use of many biological technologies which are essential for the effective translation of novel research into application.

Emulating Human Speech Recognition: A Scene Analysis Approach to Improving Robustness in Automatic Speech Recognition
Andre Coy (University of West Indies, Mona, Jamaica)
In series: Computer Science, Technology and Applications
Case: 978-1-61209-228-7. $195.00.
Soft: 978-1-61942-914-7. $69.00.
This new book presents a systematic approach to the automatic recognition of simultaneous speech signals using computational auditory scene analysis. Inspired by human auditory perception, this book investigates a range of algorithms and techniques for decomposing multiple speech signals by integrating a spectro-temporal fragment decoder within a statistical search process. The outcome is a comprehensive insight into the mechanisms required if automatic speech recognition is to approach human levels of performance.

**Geometric Methods in Modern Biomechanics**

**Tijana T. Ivancevic (Tesla Science Evolution Institute, South Australia), Vladimir G. Ivancevic (Defense Science & Technology Organization, Australia), Bojan Jovanovic (Sports Academy, Serbia)**

In series: Biomechanics - Theory and Applications
In series: Mathematics Research Developments

This book gives a comprehensive introduction into geometrical methods of modern biomechanics. This book is designed for a rigorous, one-semester course at the graduate level. The intended audience includes mechanical, control and biomedical engineers (with stronger mathematical background), mathematicians, physicists, computer scientists and mathematical biologists, as well as all researchers and technical professionals interested in modelling and control of biomechanical systems and humanoid robots.

**Milk Production**

**Boulbaba Rekik (Ecole Superieure d'Agriculture de Mateur, Mateur, Tunisia)**

In series: Food Science and Technology
Case: 978-1-62100-061-7. $165.00.

Milk is unarguably the most nutritious bio-fluid in all of nature. Milk sufficiency for neonatal brain, nervous and immune systems, and bone development and supportive tissue growth for even up to two years without a major need for alternative foods is an evolutionary proof for its irreplaceable role in human nutrition. Milk production in ruminants is a bio-complex process that necessitates conversion of least available plant materials into the most enriched available nutrients. This book presents current research in the study of milk production, with a particular focus on the biological components and nutritional quality of milk.

**Organic Chemistry, Biochemistry, Biotechnology and Renewable Resources. Research and Development. Volume 1- Today and Tomorrow**

**Gennady E. Zaikov (N.M. Emanuel Institute of Biochemical Physics, Russian Academy of Sciences, Moscow, Russia) Frank Pudel (Pilot Pflanzenotechnologie, Magdeburg, Germany) Grzegorz Spychalski (Institute of Material Fibres and Material Plants, Poland)**

In series: Biotechnology Research Trends
In series: Biotechnology in Agriculture, Industry and Medicine
2012.

This book includes the latest information in the field of organic chemistry, biochemistry, biotechnology, material science (synthesis, properties, applications) and renewable resources. This book emphasizes the problems of classification of bio-damages, evaluation and protection methods, bio-damages and protection of artificial and synthetic leather, bio-degradation and biodeterioration of some natural polymers, bio-damages and protection of cosmetics, microbiological corrosion and protection of optical glasses, microbiological corrosion of metals and protection against it, bio-damaging and protection of paint materials.

**BOTANY**

**Herbs: Cultivation, Medicinal Uses and Environmental Concerns**

**Shen Ten Ma and Zhi Yu Su**

In series: Botanical Research and Practices
In series: Food and Beverage Consumption and Health
2012. 133 pp.
Soft: 978-1-61942-983-3. $47.00.
e-book: 978-1-61942-984-0. $47.00.

Herbs are any plants with leaves, seeds, or flowers used for flavoring, food, medicine, or perfume or parts of such a plant as used in cooking. Herbs have a variety of uses including culinary, medicinal, and in some cases spiritual usage. In this book, the authors present research on the cultivation, medicinal uses and environmental concerns of herbs. Topics discussed include resources, cultivation, chemistry and biological activities of salvia miltiorrhiza; cultivation of aromatic plants under irrigation with secondary-treat effluents; immunomodulatory effects of ayurvedic herbs; and development and application of a certified reference material on cadmium and lead in Chinese medicinal herb.

**The Flora of Nara Desert, Pakistan**

**Rahmatullah Qureshi (Department of Botany, Pir Mehr Ali Shah Arid Agriculture University, Rawalpindi, Pakistan)**

In series: Botanical Research and Practices
Case: 978-1-62081-638-7. $175.00.

This book covers a topic of current interest in flora and it can be considered as a specialized work that will not go out of date for a long time. This book provides new insights into the area of plant taxonomy with respect to xeric conditions. This area, being a hostile and harsh climate, has been neglected for the comprehensive and scientific study point of view. This book is thus a contribution of more than 10 years exploration and collection of plant specimens from the whole study area.

**CELL BIOLOGY**

**Cellulose Biosynthesis Inhibitors as Tools for Research of Cell Wall Structural Plasticity**

**José Luis Acebes (Universidad de León, Spain)**

In series: Cell Biology Research Progress
Soft: 978-1-61470-946-6. $49.00.
e-book: 978-1-61470-993-0. $47.00.
This monograph deals with a heterogeneous group of structurally unrelated compounds, called cellulose biosynthesis inhibitors (CBIs). This group includes dichlobenil, isoxaben, thaxtomin A, flupoxam, triazoflam, compound 1, CGA 325 615 and AE F150944. Other putative CBIs that inhibit cellulose biosynthesis in a secondary effect, such as quinclorac, ancymidol, coumarin and derivatives, triaziflam, indaziflam, oxaziclomefone and cobtorin are also considered. With the exception of thaxtomin A, the only naturally occurring CBI, the rest of CBIs are synthetic compounds. The mode of action of CBIs is mostly unknown. However, some of them (dichlobenil, isoxaben flupoxam, triaziflam and indaziflam) are used as herbicides, and are included into group L in the Herbicide Resistance Action Committee classification of herbicides (inhibition of cellulose synthesis).

**Mesenchymal Stem Cells**

**Yin Xiao (Queensland University of Technology, Brisbane, Australia)**

In series: *Cell Biology Research Progress*


This book presents a comprehensive insight into the biology of adult stem cells and their utility in current regeneration therapies. The adult stem cell populations reviewed in this book include bone marrow derived MSCs, adipose derived stem cells (ASCs), umbilical cord blood stem cells, and placental stem cells. MSC circulation and trafficking, neuroprotective properties, and the nurturing roles and differentiation potential of multiple lineages have been discussed in details. In terms of therapeutic applications, the strengths of MSCs have been presented and their roles in disease treatments such as osteoarthritis, Huntington’s disease, periodontal regeneration, and pancreatic islet transplantation have been discussed.

**Chemical Engineering**

**Acetonitrile: Properties, Applications and Health Effects**

**Iyereemy Demeter and Emanuil Itsov**

In series: *Chemical Engineering Methods and Technology*

In series: *Materials Science and Technologies*


Acetonitrile is a colorless volatile liquid with a sweet burnt taste and an odor similar to ether. This substance has widely been used as an organic solvent in extractive processes, and it is commonly applied to the development and manufacturing of cosmetics, pharmaceutical and agricultural products. Topics discussed in this book include the sorption of cellulose from aqueous acetonitrile solutions; the reactivity of acetonitrile towards palladium carboxylates; and photochemical experiments in acetonitrile.

**Advances in Chemistry Research. Volume 17**

**James C. Taylor**

In series: *Advances in Chemistry Research*

2012.

Case: 978-1-62257-450-6. $120.00.

e-book: 978-1-62257-452-0. $120.00.

This book presents original research results on the leading edge of chemistry research. Each article has been carefully selected in an attempt to present substantial research results across a broad spectrum. Topics discussed include the physicochemical properties and applications of dichloromethane; innovative strategies in endotoxin free plasmid DNA production; the electrolytic dissociation of thio derivatives of dicarboxylic acids; tetravalent ion conducting solid electrolytes; and biomolecule and layered double hydroxide assemblies.

**Alginates: Production, Types and Applications**

**Manuel E. Molina and Andres J. Quiroga**

In series: *Microbiology Research Advances*

In series: *Biochemistry Research Trends*


Case: 978-1-61942-546-0. $140.00.


Alginate is extracted from brown algae and some bacteria. It is an abundant natural polysaccharide and usually exists as sodium salt. In this book, the authors present topical research in the study of the production, types and applications of alginate. Topics discussed include the application of alginites in cell and enzyme immobilization; alginate based materials in environmental applications; cross-linked alginates for modified drug delivery applications; bacterial alginate production by fermentation and the preparation and functionalization of alginate-based hydrogels.

**Calcite: Formation, Properties and Applications**

**Joana Dobrev and Petra Markovic (Editor)**

In series: *Chemical Engineering Methods and Technology*

In series: *Earth Sciences in the 21st Century*


Case: 978-1-61470-782-0. $140.00.


As one of the most abundant minerals, calcium carbonate (CaCO3) has great significance in both geological and biological systems. Of the six calcium carbonate polymorphs, calcite is the most stable one thermodynamically, which has attracted much attention due to its considerable industrial importance and abundant diversity as a biomineral. This book presents topical research in the study of the formation, properties and applications of calcite, including CaCO3 crystallization in the presence of biomacromolecules; the archaeological significance of calcite; surface properties of calcite in aqueous suspensions; calcite growth in a simulated cooling water environment and calcite in the skeletons of annelids.

**Chemical Regulation in the EU: Introduction and Comparisons**

**Shannon M. McDonnery and Cindy L. Elroy**

In series: *Chemical Engineering Methods and Technology*

In series: *Environmental Health - Physical, Chemical and Biological Factors*

2012. 71 pp.

Soft: 978-1-62100-786-9. $47.00.


Chemicals play an important role in everyday life. However, some chemicals are highly toxic and need to be regulated. In 1976, Congress passed the Toxic Substances Control Act (TSCA) to authorize the Environmental Protection Agency (EPA) to control chemicals that pose an unreasonable risk to human health or the environment, but some have questioned whether TSCA provides EPA with enough tools to protect against chemical risks. Like the United States, the European Union (EU) has laws governing the production and use of chemicals. The EU has recently revised its chemical control policy through legislation known as Registration, Evaluation and Authorization of Chemicals (REACH) in order to better identify and mitigate risks from chemicals.
Chemical Vapor Synthesis of Inorganic Nanopowders
H. Y. Sohn (University of Utah Salt Lake City, Utah, USA)
In series: Chemistry Research and Applications
In series: Nanotechnology Science and Technology
2012. 221 pp.
Case: 978-1-62100-002-0. $110.00.
Materials in the form of ultrafine or nanosized powders display many useful physical, mechanical and chemical properties. The properties of nano-sized materials are significantly different from atoms and bulk materials arise mainly from large fraction of surface atoms, high surface energy and reduced imperfections. The effects of grain size on mechanical properties have been recognized and generated much interest. It would therefore be advantageous if compounds can be produced in fine powder form from inexpensive raw materials using less energy. Their small sizes also improve hardness, fracture toughness and low-temperature ductility as well as catalytic and interfacial processes. Nanomaterials also enable lower processing temperatures compared with bulk materials and faster reaction time due to their higher surface reactivity. Thus, the production of nanosized powder is an important industrial process and is explored in this technical and informative book.

Coordination Polymers and Metal Organic Frameworks: Properties, Types and Applications
Oscar L. Ortiz and Luis D. Ramírez (Editor)
In series: Chemical Engineering Methods and Technology
In series: Materials Science and Technologies
Case: 978-1-61470-899-5. $140.00.
In this book, the authors present topical research in the study of coordination polymers and metal organic frameworks. Topics discussed include hybrid vanadates and metal organic frameworks; structure and magnetic properties of mono- and polynuclear complexes containing Re(VI); metal organic framework applications in the fields of hydrogen storage and catalysis; MOF-Based mixed-matrix membranes for industrial applications; coordination polymers in heterogeneous catalysis; high pressure gas storage on porous solids; metal organic frameworks for CO2 capture and halogen bonding in the assembly of high-dimensional supramolecular coordination polymers.

Denitrification: Processes, Regulation and Ecological Significance
Nicolò Savaglio and Raul Puopolo (Editor)
In series: Chemical Engineering Methods and Technology
In series: Environmental Science, Engineering and Technology
Case: 978-1-61470-879-7. $185.00.
Denitrification is a process occurring in natural environments, such as soil, marine and fresh waters, where the role of the nitrogen cycle is relevant. Denitrification is defined as an anoxic biological process, which involves the reduction of nitrate or nitrite to molecular nitrogen. In this book, the authors present topical research in the study of the processes, regulation and ecological significance of denitrification. Topics discussed include the biological removal of nitrogen compounds from wastewaters; biofilm reactors in denitrification processes; design ecological treatment systems for nitrogen removal through nitritation and anammox; microbial water denitrification stimulated by electric fields and denitrification in plant-beneficial bacteria.

Flow Through Optosensors
Antonio Ruiz (Department of Physical and Analytical Chemistry, University of Jaén Campus las Lagunillas, Jaén, Spain)
In series: Chemistry Research and Applications
Soft: 978-1-61942-467-8. $47.00.
e-book: 978-1-61942-479-1. $47.00.
This book focuses on the main characteristics of direct solid-phase measurements in flow systems. The fundamentals and the technical status of flow-through optosensing together with the main detection techniques are described, including the discussion of advantages and limitations and practical guidelines to the successful implementation of this approach. In order to give readers insight into the features and the potential of flow through optosensors, relevant examples of strategies and types of configuration are studied.

Formaldehyde: Chemistry, Applications and Role in Polymerization
Chan Bao Cheng and Feng Hu Lu
In series: Pollution Science, Technology and Abatement
In series: Chemistry Research and Applications
Case: 978-1-62257-214-4. $150.00.
e-book: 978-1-62257-228-1. $150.00.
Formaldehyde is a building block in the synthesis of many other compounds of specialized and industrial significance. It exhibits most of the chemical properties of other aldehydes but is more reactive. In this book, the authors discuss the chemistry, applications and role in polymerization of formaldehyde. Topics discussed include the properties of urea-formaldehyde resins for wood-based composites; electronic spectra of formaldehyde in aqueous solution; decontamination of indoor air pollutants of formaldehyde through catalytic oxidation over oxide supported noble metal nanocatalysts; indoor air monitoring using newly developed formaldehyde sensor elements and portable monitoring devices; unusual behavior during the electrochemical oxidation of formaldehyde; and an algebraic approach to estimate the PES of formaldehyde through the study of vibrational excitations.

Germanium: Properties, Production and Applications
Regina V. Germanno
In series: Chemical Engineering Methods and Technology
Case: 978-1-61209-205-8. $165.00.
Germanium is an important semiconductor material used in transistors and various other electronic devices. Its major end uses are fiber-optic systems and infrared optics, but it is also used for polymerization catalysts, as well as in electronics and solar cell applications. This book presents current research in the study of germanium, including properties and generation by irradiation of germanium point defects in Ge-doped silica; Germanium encaged fullerene-synthesis; research of silicon and germanium structures with films of oxides and fluoride rare earth elements and new generation germanium detectors for double beta decay searches.
Glycerol: Production, Structure and Applications
*Miguel De Santos Silva and Paulo Costa Ferreira*
In series: *Chemical Engineering Methods and Technology*
In series: *Biochemistry Research Trends*
Case: 978-1-62081-120-7. $140.00.
In this book, the authors present topical research in the study of the production, structure and applications of glycerol. Topics discussed include the use of glycerol from biodiesel to production of environmental technologies; thermochemical conversion of glycerol to hydrogen; the application of glycerol in pharmaceutical formulation; valorization of glycerol in propanediols production by catalytic processes; hydrogen production from glycerol via membrane reactor technology; ruthenium-catalyzed nitrile hydration reactions using glycerol as solvent; and natural activation of commercial glycerol.

Hydroquinone: Production, Uses and Health Effects
*Fritz Gokden and André Lazzarotto*
In series: *Chemical Engineering Methods and Technology*
Case: 978-1-62100-258-1. $95.00.
e-book: 978-1-62100-297-0. $95.00.
Hydroquinone has a variety of uses principally associated with its action as a reducing agent which is soluble in water. It is a major component in most photographic developers for film and paper, and is used as a topical application in skin whitening to reduce the color of skin. In this book, the authors present current research in the production, uses and health effects of hydroquinone. Topics discussed include the cellular effects of hydroquinone; the involvement of cigarette smoke-related hydroquinone in the pathogenesis of age-related macular degeneration; hydroquinone solubility and separation processes; the transport and transfer processes of poly(o-aminophenol)film electrodes in the presence of the hydroquinone/p-benzoquinone redox couple and the detection of thiols using hydroquinone on gold surfaces.

Indium: Properties, Technological Applications and Health Issues
*Hsiao G. Woo and Huang Tsai Choi*
In series: *Chemical Engineering Methods and Technology*
In series: *Materials Science and Technologies*
2013.
Case: 978-1-62257-696-8. $150.00.
In this book, the authors gather and present current research from across the globe in the study of the properties, technological applications and health issues relating to indium. Topics discussed include the properties of indium, gallium and Ga-In alloys in confined geometry; indium as a co-catalyst in Novel Cu or Ni catalysts for reduction of biomass derived fatty acids to alcohols; reliability of indium tin oxide thin films; indium reagents for chemical transformations; indium atoms using electron and optical spectroscopy; indium sulfide-manganese ore; rare earth ions doping on the photoluminescent properties of indium hydroxide; and hydrothermal synthesis of indium tin oxide nanoparticles without chlorine contamination.

Iron Oxides: Structure, Properties and Applications
*Arituro J. Martinez (Center for Research and Advanced Studies, National Polytechnic Institute at Saltillo, Mexico)*
In series: *Chemistry Research and Applications*
2012.
Case: 978-1-62257-407-0. $150.00.
This book presents the most recent findings in science and technology of iron oxides based materials. It contains eight chapters written by research experts from different countries. The book covers recent results on superparamagnetic iron oxide nanoparticles used as contrast agents for molecular imaging and cell tracking; the synthesis and characterization of nanostructured iron oxides embedded in porous matrixes; the use of superparamagnetic nanoparticles in characterizing cardiac injury; application of iron oxide thin films in solar water splitting; the relation of photoresponse with different impurities in the iron oxide matrix; the use of coated iron oxide nanoparticles in cell and tissue engineering for designing strategies for cardiovascular medicine; and research on natural and man-made iron oxides nanoparticles focused on the natural iron oxides nanoparticles developed in plants.
and the impact of man-made iron oxide nanoparticles on the growth of plants. Additionally, the use of superparamagnetic iron oxide nanoparticles in magnetic resonant imaging, applied drug delivery, and photodynamic therapy are discussed. Finally, the application of both natural and synthetic iron oxides based adsorbents in arsenic removal is reviewed. For these characteristics, this book is useful for specialists working in multidisciplinary projects where iron oxides are involved, as well as to graduate students, and upper-level undergraduates undertaking research in this field.

Napthalene: Structure, Properties and Applications

Gleb I. Antsyforov and Alyona F. Ivanski
In series: Chemical Engineering Methods and Technology
Case: 978-1-61942-550-7. $150.00.
In this book, the authors gather and present topical research in the study of the structure, properties and applications of napthalene. Topics include several self-assembling technologies to napthalene-based organic nanostructures; transition metals complexes of napthalene; luminescence of napthalene in self-assembled inclusion complexes with cyclodextrins and napthalene-based fluorophore applications.

Non-Phosgene Polycarbonate from CO2-Industrialization of Green Chemical Process
Shinsuke Fukuoka (Asahi Kasei Chemicals Corporation)
In series: Environmental Research Advances
In series: Environmental Remediation Technologies, Regulations and Safety
Case: 978-1-61470-877-3. $165.00.
All polycarbonate (PC) in the world have been produced using CO as a starting material until the process was industrialized in 2002; among them, more than about 90% of polycarbonate (PC) have been produced by the so-called phosgene process. The phosgene process must use not only highly toxic and corrosive phosgene (COCl2) made from CO and Cl2, but also large quantities of solvents, water and methylene chloride which is suspected to be a carcinogen. Furthermore, the phosgene process must execute the disposal treatment of large quantities of wastewater to remove the contaminated organic materials before discharge from the factory. The Asahi Kasei Non-Phosgene Polycarbonate Process enables high-yield production of the two products, high-quality polycarbonate (PC) having excellent properties and high-purity monoethylene glycol (MEG), starting from ethylene oxide (EO), CO2 and bisphenol-A, without waste and wastewater.

Pesticides: Characteristics, Uses and Health Implications
Aarón J. Abrego Gomez and Eduardo M. Lugo de Ortega
In series: Agriculture Issues and Policies
In series: Chemical Engineering Methods and Technology
2012. 177 pp.
Case: 978-1-62081-577-9. $120.00.
e-book: 978-1-62081-630-1. $120.00.
In this book, the authors present current research in the study of the characteristics, uses and health implications of pesticides. Topics discussed include the evaluation of pesticide-induced DNA damage and oxidative stress on human and wildlife populations in Argentina; analytical methods of various families of pesticides in biological matrices; implications of pesticide use in the olive sector; pesticides and endangered sea turtles; monitoring emissions and atmospheric degradations of pesticides in the atmosphere; and adverse effects of pesticides in human health.

Phosphorus: Properties, Health Effects and the Environment
Ming Yue Chen and Da-Xia Yang
In series: Chemical Engineering Methods and Technology
In series: Biochemistry Research Trends
Case: 978-1-62081-399-7. $150.00.
In this book, the authors present topical research in the study of the properties, health effects and environmental issues relating to phosphorus. Topics discussed in this compilation include aminophosphonate synthesis and applications; the effect of phosphorus doping on the electrical properties of diamond and carbon nanotubes; limiting nutrient and eutrophication in aquatic systems and the nitrogen/phosphorus dilemma; the environmental response of sedimentary phosphorus of shallow lakes and the anthropogenic impact; and the phosphorus complex of porphyrin.

Phthalates: Chemical Properties, Impacts on Health and the Environment
Gerardo L. Moretti and Drago Romano
In series: Chemical Engineering Methods and Technology
In series: Environmental Health - Physical, Chemical and Biological Factors
Case: 978-1-62081-994-4. $150.00.
Phthalates are esters of phthalic acid and are a group of chemicals of high environmental relevance due to their production rates and ecotoxicological potential. Phthalates are mainly used as plasticizers in PVC plastics, wherein many consumer products contain specific members of this family of chemicals. In this book, the authors present current research on the chemical properties and impacts on health and the environment of phthalates. Topics include phthalate contamination in two estuaries from the Basque Coast; bioaccumulation and intracellular signal modifications of in vivo and in vitro models of phthalate esters; DEHP behavior in contact with liquid food simulants, blood, saliva and soil; removal of phthalates from the environment; gas phase fragmentation reactions of phthalate ions; the effects of DEHP exposure on brain development; and phthalate toxicogenomics and health effects.

Polymer Chains: Structure, Physical Properties and Industrial Uses
Régine Penzkofer and Yasue Wu
In series: Chemical Engineering Methods and Technology
In series: Polymer Science and Technology
Case: 978-1-62100-422-6. $140.00.
The physical properties of a polymer are strongly dependent on the size or length of the polymer chain. As chain length is increased, melting and boiling temperatures increase quickly. Impact resistance also tends to increase with chain length, as does the viscosity, or
resistance to flow, of the polymer in its melted state. In this book, the authors present topical research in the study of the structure, physical properties and industrial uses of polymer chains. Topics discussed include the flexibility of polyheteroarylenes and the effect on several physical properties of these polymers; aliphatic polyester-based nanocomposites; bioplastic-based blends; interactions in small permeants in polymeric matrices; the role of polymer chain ends in plasma surface modification and preceramic polymer chains.

**Pressure Driven Membrane Processes: Modeling and Analysis**

*Sergey P. Agashichev*

In series: *Chemical Engineering Methods and Technology*


Case: 978-1-61942-411-1. $150.00.

Membrane technology being low-energy consuming and environmentally friendly is considered to be a new generation of the sustainable processes. Diversification of the spectrum of their applications in particular for processing aggressive fluids at elevated temperature; for separation of liquids with shear-dependent behaviour etc. require further development of the pressure driven membrane processes such as reverse osmosis, nanofiltration, ultrafiltration and microfiltration. Implementation of these processes are often hampered by existing techniques of process calculation and design, therefore this book focuses on modeling, development of the process-type calculations and analysis of the pressure driven membrane operations.

**Silane: Chemistry, Applications and Performance**

*Katsuo Moriguchi and Susumu Utagawa*

In series: *Gases - Characteristics, Types and Properties*


Case: 978-1-62257-432-2. $150.00.


Silanes are synthetic compounds containing one or more Si-C bonds. They have wide application in industry, dentistry and medicine. They are used mainly as surface coating agents for surface modification and as coupling agents for adhesion promotion between two dissimilar materials. In this book, the authors present current research in the chemistry, applications and performance of silanes. Topics include the role silanes play in the processing of electronic chips and their thermochemical data; silane application in dental materials; thermal cationic polymerization of E-caprolactone using silanes; nanosilica surface modification by low-volatility silane coupling agents; and synthesis of a mesoporous silica hollow microsphere using methyltrimethoxy silane.

**Silicon Nitride: Synthesis, Properties and Applications**

*Emiliano Jose Hierra and Jesus Anjel Salazar*

In series: *Chemical Engineering Methods and Technology*


Case: 978-1-61942-865-2. $150.00.


Silicon nitride (Si3N4) ceramic is used in numerous applications because of its superior properties, such as high-temperature strength, good oxidation resistance and low thermal expansion coefficient. In this book, the authors present current research in the study of the synthesis, properties and applications of silicon nitride. Topics include the optical and vibration properties of silicon rich nitride; high temperature oxidation of silicon nitride based ceramics; low temperature preparation of phosphate bonded silicon nitride ceramics with high mechanical strength; the SPS-sintering process and use of ceramics for high-temperature engineering applications; synthesis and properties of silicon nitride coatings; and the use of silicon nitride as biomaterial.

**Strontium: Chemical Properties, Applications and Health Effects**

*Miaohua Wai and Xu Guan Gong*

In series: *Chemical Engineering Methods and Technology*


Case: 978-1-62257-631-9. $120.00.

e-book: 978-1-62257-632-6. $120.00.

Strontium (Sr) is one of the most extensively investigated alkaline earth metals and has received much attention for biomedical applications since strontium ranelate was marked as a new orally administered agent for the treatment of women with postmenopausal osteoporosis that reduces the risk of vertebral and nonvertebral fractures. In this book, the chemical properties, applications and health effects of strontium are discussed. Topics include the use of strontium in assessing the age of geological materials; the physical, chemical and biological roles of strontium in bone regeneration materials; mammalian oocyte activation with strontium chloride for parthenogenensis, somatic cell nuclear transfer and intracytoplasmic sperm injection; concentration distribution of emerging pollutant strontium in food and environmental samples; and lanthanum strontium manganites for application as cathodes in solid oxide fuel cells.

**The Role of Ionic Liquids in the Chemical Industry**

*José Santiago Torrecilla (Departamento de Ingeniería Química, Facultad de Ciencias Químicas, Universidad Complutense de Madrid, Spain)*

In series: *Chemistry Research and Applications*


Case: 978-1-62081-086-6. $75.00.


This book has been written by nearly twenty relevant authors in the field of ionic liquids. This book is a summary which will appeal not only to students and professionals, but also to non-qualified people interested in chemistry in general. Certainly, the readers of this book can take a pleasant stroll through the marvelous world of ionic liquids and some of their most important and novel applications. Their characteristics and applications are presented from the most general to the most specific points of view. In addition, these points are presented with more than sufficient scientific and technical references which can easily be found in the literature.

**Triazines: Synthesis, Applications and Toxicity**

*Ramesh Bhai Patel and Amit Malhotra*

In series: *Chemical Engineering Methods and Technology*


Case: 978-1-61942-299-5. $150.00.


1,3,5-Triazine derivatives find wide applications as bioactive compounds and drugs, components of polymer compositions, reactive dyes, energetic materials, reagents for organic synthesis, combinatorial and analytical chemistry. In this book, the authors present topical research in the study of the synthesis, applications and toxicity of triazines. Topics discussed include polynitromethyl 1–1,3,5 triazines; application of triazine based dendrimers as drug delivery agents;
Among hexagonal ferrites also endows it a low sintering temperature. On the other hand, the relative simple crystal structure frequency up to GHz and excellent soft magnetic character in hyper frequency and attracts much attention these years. On one hand, the ceramics (LTCC) technology creates a great demand for novel chip inductive materials for rechargeable lithium ion batteries. Y- type hexagonal ferrite for hyper-frequency, The Yang Bai (Advanced Material and Technology Institute, University of Science and Technology Beijing, P.R. China) 

Vanadium: Characteristics, Uses and Environmental Effects
Veniamin N. Baranova and Arkady V. Fortunatov
In series: Chemical Engineering Methods and Technology
In series: Biochemistry Research Trends
2012. 190 pp.
Case: 978-1-62081-600-4. $150.00.
In this book, the authors present topical research from across the globe in the study of the chemical properties, uses and environmental effects of vanadium. Topics discussed include vanadium in biology and its contributions on the environmental cycles of chemical elements; ferritic stainless steel protected vanadium alloy as cladding material for fast reactors; vanadium oxides for solar control applications; global scientific production of vanadium research; and soft solution processing of nanoscaled lithium vanadium oxides as cathode materials for rechargeable lithium ion batteries.

Zirconium: Characteristics, Technology and Performance
Lucy M. King and Kathy E. Allen
In series: Chemical Engineering Methods and Technology
In series: Materials Science and Technologies
2012. 150 pp.
Soft: 978-1-62081-497-0. $69.00.
In this book, the authors present current research in the study of the characteristics, technology and performance applications of zirconium. Topics discussed include the preparation of zirconium oxide thin film by plasma coating method and its hydrophobic nature; cellulose fibers coated zirconium oxide; zirconium and potassium cobalt molybdenum carbide as an active water-gas shift catalyst; the electrochemical characterization of two different zirconium-based perselective systems; zirconia and allumina bioceramic biocompatibility; and the preparation and properties of zirconia nanocrystalline ceramics.

Advances in Chemical Modeling. Volume 3
Mihai V. Putz (West University of Timisoara, Timisoara, Romania)
In series: Chemistry Research and Applications
2012.
This book presents and discusses current research in the study of chemical modeling. Topics discussed include the periodic law and the Scerri’s periodic table; the family resemblance view of quantum mechanics; the relationship between electronic sharing in bonding and electronegativity equalization of atoms in molecules; Gordy’s atomic electronegativity ansatz; amphoteric, amphihydric and ambisaline; from cyclic silylenes to allenic strutures; and modeling and simulation of isothermal fixed-bed adsorption column.

Advances in Chemistry Research. Volume 11
James C. Taylor (Editor)
In series: Advances in Chemistry Research
Case: 978-1-61324-676-4. $185.00.
This book presents original research results on the leading edge of chemistry research. Each article has been carefully selected in an attempt to present substantial research results across a broad spectrum. Topics discussed include the potential binding potency of biological molecules; nitrogen dioxide for wasteless sustainable syntheses; the molecular structure of five new 2-methylbenzimidazole derivatives; electrochemical reduction of phthalimide in isoindoline; nitrous oxide clathrate hydrates and the molecular mechanis of urea denaturation.

Advances in Chemistry Research. Volume 13
James C. Taylor
In series: Advances in Chemistry Research
Case: 978-1-62100-519-3. $140.00.
This book presents original research results on the leading edge of chemistry research. Each article has been carefully selected in an attempt to present substantial research results across a broad spectrum. Topics discussed include semiconductor photocatalysis and metal biodegradation of s-triazine herbicides in soil/surface water environments and synthesis and properties of heat-resistant polymers containing triaryl-s-triazine moiety.

Uranium: Characteristics, Occurrence and Human Exposure
Alik Ya. Vasiliev and Mikhail Sidorov
In series: Chemistry Research and Applications
In series: Nuclear Materials and Disaster Research
Case: 978-1-62081-230-3. $150.00.
Uranium has both radioactive and chemical hazards and risk assessments must address both types. Its environmental distribution depends on natural occurrence and has been influenced by human activities such as energy production, coal, and phosphate fertilizer exploration, which may impact freshwater ecosystems. In this book, the authors present current research in the study of the characteristics, occurrence and human exposure to uranium. Topics include the anthropogenic sources of uranium in Serbia; uranium mining in Portugal; laser-induced nuclear decays in uranium isotopes; uranium hydrothermal deposits; and geophysical studies to evaluate geological and hydro-geological features in old uranium mines.
Advances in Chemistry Research. Volume 14
James C. Taylor
In series: Advances in Chemistry Research
Case: 978-1-61942-327-5. $140.00.
This book presents original research results on the leading edge of chemistry research. Each article has been carefully selected in an attempt to present substantial research results across a broad spectrum. Topics discussed include the oxidative decomposition of oxalic acid in aqueous media; the physico-chemical properties of acrylamide; catalysis and the phenomenon of electrochemical promotion; oxalate metabolism in wood-rotting basidomycetes; novel self-oscillating polymer chains; lysophosphatidic acid and heavy metal toxicity.

Advances in Chemistry Research. Volume 15
James C. Taylor
In series: Advances in Chemistry Research
2012. 190 pp.
Case: 978-1-61942-528-6. $150.00.
This book presents original research results on the leading edge of chemistry research. Each article has been carefully selected in an attempt to present substantial research results across a broad spectrum. Topics discussed include the critical aspects in microfluidic systems design; the study of furan synthesis, function and control and interactions between furans and drug metabolic enzymes; acid tolerance and propionic acid production by genome-shuffling and asphalten precipitation in gas condensate systems.

Advances in Chemistry Research. Volume 16
James C. Taylor
In series: Advances in Chemistry Research
Case: 978-1-62081-362-1. $150.00.
This book presents original research results on the leading edge of chemistry research. Each article has been carefully selected in an attempt to present substantial research results across a broad spectrum. Topics discussed include quantum chemical research of the electronic structure and reactivity of nitric acid; furan chemistry and structure application; polyethylene glycol in metal-mediated catalysis; water chemistry research; membrane and membrane reactor technologies for COx purification of gaseous streams; docking of anticlastosomal natural products with relevant protein targets; biosynthesis of propionic acid by anaerobic processes; and the analysis of bamboo-carbonized liquid.

Chemical Information and Computational Challenges in the 21st Century
Mihai V. Putz (West University of Timisoara, Romania)
In series: Chemistry Research and Applications
In series: Chemical Engineering Methods and Technology
2012. 373 pp.
Case: 978-1-61209-712-1. $145.00.
While many fields of our current life and technology make use of the involvement of chemistry, even in a subtle way as quantum-, mathematical-, physical-, nano-, bio-, or eco-, and chemical disciplines, the chemistry itself drives almost all nature cycles through the atomic and molecular structure and reactivity universal principles. This new book presents an interdisciplinary-internationally picture of chemical information embedded in various micro- and macro- systems in order to show how fertile the field of research and knowledge is thanks to chemistry.

Chemistry Research Biographical Sketches and Research Summaries
Elnur S. Hüseynov and Vusal Babayev
In series: Chemistry Research and Applications
Case: 978-1-62257-633-3. $150.00.
This book compiles biographical sketches of top professionals in the field of chemistry research, as well as research summaries from a number of different focuses in this important field.

Chemistry Research Summaries. Volume 1
Elnur S. Hüseynov and Vusal Babayev
In series: Chemistry Research and Applications
Case: 978-1-62257-634-0. $150.00.
This book is a continuation of the book Chemistry Researcher Biographical Sketches and Research Summaries which compiles biographical sketches of top professionals in the field of chemistry research, as well as research summaries from a number of different focuses in this important field.

Chemistry Research Summaries. Volume 2
Elnur S. Hüseynov and Vusal Babayev
In series: Chemistry Research and Applications
Case: 978-1-62257-635-7. $150.00.
e-book: 978-1-62257-663-0. $150.00.
This book is a continuation of the book Chemistry Researcher Biographical Sketches and Research Summaries which compiles biographical sketches of top professionals in the field of chemistry research, as well as research summaries from a number of different focuses in this important field.

Chemistry Research Summaries. Volume 3
Elnur S. Hüseynov and Vusal Babayev
In series: Chemistry Research and Applications
Case: 978-1-62257-636-4. $150.00.
This book is a continuation of the book Chemistry Researcher Biographical Sketches and Research Summaries which compiles biographical sketches of top professionals in the field of chemistry research, as well as research summaries from a number of different focuses in this important field.

Colloids: Classification, Properties and Applications
Paresh C. Ray (Department of Chemistry, Jackson State University, Jackson, MS)
In series: Chemistry Research and Applications
In series: Condensed Matter Research and Technology
Case: 978-1-62081-128-3. $140.00.
Colloidal science and technology is one of the fastest growing research and technology areas. This book explores the cutting edge research in
colloidal science and technology that will be useful in almost every aspect of modern society. This book has a depth of information related to historical prospective, synthesis, characterization, theoretical modeling and application of unique class of colloidal materials starting from colloidal gold to coated silica colloids and platinum, titania colloids. This book is unique in its design, content, providing depth of science about different colloidal materials and their applications in chemistry, physics, biological, medical sciences and environment. Graduate students, academic and industrial researchers and medical professionals will discover recently developed colloidal materials and their applications in many areas of human endeavors through this book.

Encyclopedia of Chemistry Research (2 Volume Set)
Gerald R. Newmann and Andrew P. Albertis (Editor)
In series: Chemical Engineering Methods and Technology
2012. 925 pp. 61324
Case: 978-1-66470-104-0. $325.00.
This book presents current research in the field of chemistry. Topics discussed include crystal chemistry of an atropisomer; construction and structure of metal-organic frameworks with specific ion-exchange property; chemical sensors and biosensors; non-specific chemical gas sensor arrays for environmental monitoring of odour emissions; green analytical chemistry; microwave assisted separations; metal-catalyzed electrochemical processes in ionic liquids; development of green chemistry processes for metallocomplex catalysis and the environmental impact of a lignite-fired power plant operation.

Fabrication and Characterization of Dilute Nitride Indium Antimonide for Long Wavelength Infrared Applications
Pham Huyah Tram, Yoon Soon Fatt and Lim Kim Peng (Nanyang Technological University, Singapore)
In series: Chemistry Research and Applications
2012. 148 pp. 62081
Soft: 978-1-62100-940-5. $47.00.
e-book: 978-1-62100-972-6. $47.00.
Recently, there has been increased interest in long wavelength infrared (LWIR) materials because of their applications in civilian and military imaging. Among many on-going research materials, dilute nitride indium antimonide (InSnN) has attracted great attention because of the unique characteristics of dilute nitride III-V compounds, which could complement the ubiquitous mercury cadmium telluride (HgCdTe) material in terms of performance and manufacturing. This book presents the molecular beam epitaxy (MBE) growth and characterization of InSn and InSnN materials, based on the research work under the Compound Semiconductor and Quantum Information group, Nanyang Technological University, Singapore.

Green Chemistry
Rafael Luque (Universidad de Cordoba, Spain)
In series: Chemistry Research and Applications
2012. 304 pp. 62100
Case: 978-1-6324-877-5. $140.00.
e-book: 978-1-6324-885-0. $140.00.
Nanotechnology, energy and the environment are three key hot topics included in green technologies present in all international challenges for the future. The urgency to identify and develop sustainable and timely solutions for our future society is demonstrated due to the alarming trends in global energy demand, the finite nature of fossil fuel reserves, the need to dramatically curb emissions of greenhouse gases (GHO) to mitigate the devastating consequences of climate change, the damaging volatility of oil prices and the geopolitical instability in supplier regions. This book examines several of these topics related to green chemistry in a multidisciplinary and unique book which covers the essence of green chemical technologies. The book also features top contributions from well-established and respected authors in world-wide research programs.
carbon; delamination of layered double hydroxides; anionic depollution by layered hydroxides; and ceramic pigments from mixed hydroxides with hydrotalcite-like structures.

**Manganese: Chemical Properties, Medicinal Uses and Environmental Effects**

*Shu Tian Gan and Hui Rong Kong*

In series: *Chemical Engineering Methods and Technology*

In series: *Materials Science and Technologies*


Case: 978-1-61942-931-4. $150.00.

In this book, the authors present current research in the study of the chemical properties, medicinal uses and environmental effects of manganese. Topics discussed include manganese in natural and artificial photosynthesis; manganese inhalation induces alterations comparable to Parkinson's symptoms; manganese complexes in lignin oxidation catalysis; the use of neuroimaging to explore cognitive function in welders exposed to manganese; sinter-alloying and properties of manganese steels; and excessive manganese exposure.

**Mercury: Sources, Applications and Health Impacts**

*Ki-Hyun Kim (Sejong University, Goon Ja Dong, Seoul, South Korea) and Richard J. C. Brown (Principle Research Scientist and Head of Trace Chemical Analysis, Analytical Science Division, National Physical Laboratory, Teddington, Middlesex, UK)*

In series: *Chemistry Research and Applications*


The chemical element mercury is the only metal that is a liquid at standard temperature and pressure. It is an extremely rare element in the Earth's crust with an average abundance of only 80 parts per billion. However, where mercury ores do occur they can be very concentrated – containing up to 2.5% mercury by mass. The use of these ores, and of mercury itself, by humans has a long history – mercury was found in Egyptian tombs dating from 1500 BC. This book attempts to cover recent developments and the current state-of-the-art relating to many aspects of mercury science. The contributions made by the authors encompass diverse fields of mercury science such as the monitoring of mercury in various environmental media and the management of mercury in the earth’s ecological system. Efforts have also been made to provide detailed insights into developments in novel chemistry involving mercury and its compounds. This book's coverage is expanded further to cover the effect of mercury on animals and plants.

**Molybdenum: Characteristics, Production and Applications**

*Mattias Ortiz and Thiago Herrera*

In series: *Chemistry Research and Applications*


Case: 978-1-61470-504-8. $140.00.

In this book, the authors present current research in the study of the characteristics, production and application of molybdenum. Topics discussed include the electrocatalysis of molybdenum containing substrates for fuel cell applications; morphology-controllable solvothermal synthesis of nano- and microcrystals of molybdenum trioxide; molybdenum compounds as efficient additives to lubricants; molybdenum as a catalyst promoter in the growth of carbon nanotubes and the physico-chemical and catalytic properties of V2O5-MoO3.

**Quantum-Chemical Calculations of Molecular System as the Basis of Nanotechnologies in Applied Quantum Chemistry, Volume 1**

*G.E. Zaikov and V.A. Babkin (Russian Academy of Sciences, Moscow, Russia)*

In series: *Chemistry Research and Applications*

2012. 244 pp.

Case: 978-1-61324-244-5. $110.00.

This book presents current research in the study of quantum-chemical calculations of various molecular systems. The research results presented suggest that the development of nanotechnologies will offer new and more effect advancements for the improvement of penicillins, vitamins and catalysts. The results of quantum-chemical calculations of various molecular systems presented here are the first step toward the development of new nanotechnologies.

**Quantum-Chemical Calculations of Molecular System as the Basis of Nanotechnologies in Applied Quantum Chemistry, Volume 2**

*V.A. Babkin and G.E. Zaikov (Russian Academy of Sciences, Moscow, Russia)*

In series: *Chemistry Research and Applications*


Case: 978-1-61324-284-1. $175.00.

This book presents current research in the study of quantum-chemical calculations of various molecular systems. The research results presented suggest that the development of nanotechnologies will offer new and more effect advancements for the improvement of penicillins, vitamins and catalysts. The results of quantum-chemical calculations of various molecular systems presented here are the first step toward the development of new nanotechnologies.

**Quantum-Chemical Calculations of Molecular System as the Basis of Nanotechnologies in Applied Quantum Chemistry, Volume 3**

*G.E. Zaikov and V.A. Babkin (Russian Academy of Sciences, Moscow, Russia)*

In series: *Chemistry Research and Applications*

2012. 244 pp.

Case: 978-1-61324-283-4. $110.00.

This book presents current research in the study of quantum-chemical calculations of various molecular systems. The research results presented suggest that the development of nanotechnologies will offer new and more effect advancements for the improvement of penicillins, vitamins and catalysts. The results of quantum-chemical calculations of various molecular systems presented here are the first step toward the development of new nanotechnologies.

**Quantum-Chemical Calculations of Molecular System as the Basis of Nanotechnologies in Applied Quantum Chemistry, Volume 4**

*G.E. Zaikov and V.A. Babkin (Russian Academy of Sciences, Moscow, Russia)*

In series: *Chemistry Research and Applications*


Case: 978-1-61324-281-8. $175.00.

This book presents current research in the study of quantum-chemical calculations of various molecular systems. The research results presented suggest that the development of nanotechnologies will offer new and more effect advancements for the improvement of penicillins, vitamins and catalysts. The results of quantum-chemical calculations of various molecular systems presented here are the first step toward the development of new nanotechnologies.
In series: Nanotechnology Science and Technology
Case: 978-1-61324-281-0. $110.00.
This book presents current research in the study of quantum-chemical calculations of various molecular systems. The research results presented suggest that the development of nanotechnologies will offer new and more effect advancements for the improvement of penicillins, vitamins and catalysts. The results of quantum-chemical calculations of various molecular systems presented here are the first step toward the development of new nanotechnologies.

Radical Polymerization: New Developments
Irena O. Paulauskas and Lukas A. Urbonas
In series: Polymer Science and Technology
Case: 978-1-62100-406-6. $95.00.
e-book: 978-1-62100-475-2. $95.00.
Design and synthesis of structurally well-defined polymers is one of the areas of current technology interest for niche product applications. Major research efforts are focused on moving from coordination-addition to advanced radical polymerization methodology to produce new polymeric structures using polar and/or non-polar monomer for different end use applications. In this book, the authors present topical research on new developments in radical polymerization. Topics discussed include interface radical reactions of functional polyperoxides for fabrication of three-dimensional polymeric structures; biomacromolecules in radical processes; nitroxide-mediated photo controlled/living radical polymerization; alkaline anion-exchange membranes prepared by plasma polymerization; advancements in controlled radical polymerization for functional polymers and thermal redox and photoinduced ring opening polymerization reactions.

Trace Elements: Environmental Sources, Geochemistry and Human Health
Diego Alejandro De Leon and Paloma Raquel Aragon
In series: Chemical Engineering Methods and Technology
Case: 978-1-62081-376-8. $150.00.
This book examines the environmental sources, geochemistry and human effects of trace elements. Topics discussed include an assessment of cancer and non-cancer health risk caused by trace element content in Belgrade; flow opto-sensing applied to the analysis of trace elements; trace metals in fruits and vegetables and their effect on human health; excessive livestock mineral supplementation on environmental pollution; assessing the geochemistry of trace elements in canal sediments; and trace element deficiencies in crops.

Yuri N. Bubnov, Valeri A. Vasnev, Andrei A. Askaskii and Gennady E. Zaikov (Russian Academy of Sciences, Moscow)
In series: Polymer Science and Technology
In series: Materials Science and Technologies
Case: 978-1-61470-520-8. $95.00.
e-book: 978-1-61470-646-5. $95.00.
This is the second volume in this series which is devoted to the memory of World Renowned Scientist professor Rusanov Alexander L’vovich. The authors have highlighted in this volume the information about synthesis and properties of some heterochain polymers; polymer chain containing alternating phthalide groups and hydrocarbon structures without heteroatoms; proton-conducting membranes on the basis of sulfonated polyphenylenquinazolines; anionic ring-opening polymerization of e-caprolactam in the presence of an ionic liquid; synthesis of polythiophenenes and the modification of materials surfaces by functional oligoorganosiloxanes.

Zeolites: Synthesis, Chemistry and Applications
Moisey K. Andreyev and Olya L. Zubkov
In series: Materials and Manufacturing Technology
Edited by: Professor J. Paulo Davim (University of Aveiro, Portugal)
In series: Chemical Engineering Methods and Technology
Case: 978-1-61942-861-4. $140.00.
Zeolites, mainly consisting of silicon, aluminum, and oxygen atoms that connect in three-dimensional frameworks, are three-dimensional microporous or mesoporous materials. They are widely used in many applications, such as catalysts, catalyst supports, membranes, etc. In this book, the authors present current research in the study of the synthesis, chemistry and applications of zeolites. Topics include the conversion of ethanol to hydrocarbons over zeolite catalysts; air pollution catalytic control by metal promoted zeolites; zeolite from fly ash iron oxide magnetic nanocomposites; application of zeolite containing rocks in berry crop growing; and dealuminated zeolites in biological systems.

CHINESE STUDIES

Energy Consumption in China: Outlook and Demand Scenarios
Brian A. Childers and Margret C. Downing
In series: China in the 21st Century
In series: Energy Policies, Politics and Prices
Case: 978-1-61942-558-3. $95.00.
Urbanization has re-shaped China’s economy, society, and energy system. Between 1990 and 2007 China added 290 million new urban residents, bringing the total urbanization rate to 45%. This population adjustment spurred energy demand for construction of new buildings and infrastructure, as well as additional residential use as rural biomass was replaced with urban commercial energy services. This book studies energy consumption in China with a focus on urbanization, industrialization, and energy demand scenarios.

COMMUNICATIONS

Advances in Communications and Media Research, Vol. 6
Anthony V. Stavros (Editor)
In series: Advances in Communications and Media Research
Case: 978-1-60876-576-8, $129.00.
In a society predicated on information, the media has a pervasive presence. From government policy to leisure television, the information age touches us all. The papers collected in this book constitute some of today's leading analyses of the information industry. Together, these essays represent a needed foundation for understanding the present state and future development of the mass media. Current trends in communications as well as media impact on public opinion are studied and reported on.

Communication Despite Postmodernism
Joseph J. Pilotta (The Ohio State University, School of Communication, Ohio) Algis Mickunas (Department of Philosophy, Ohio University, Ohio)
In series: Contemporary Cultural Studies
Edited by: Joseph J. Pilotta (The Ohio State University), John Murphy (University of Miami, Florida), Algis Mickunas (Ohio University)
Case: 978-1-62081-161-0, $195.00.
e-book: 978-1-62081-200-6, $195.00.
The malaise of today’s “Cultural Studies” is perhaps best summarized by Picasso (paraphrased) “success can lead to copying from oneself, and copying from oneself, and that is worse than copying from others.”
This book is both a response and an independent configuration of the dominant, current trend: that is “cultural studies” known as the Birmingham/U.S. School (B/US). Contemporary Cultural Studies leapfrogs the Birmingham/U.S. School of “future self-clarification.”
The fundamental conceptual, mythological and philosophical problematic has been worked over the last 40-plus years in the United States in advance of the current self-clarification exercises. Surprisingly, the genesis of U.S. Contemporary Cultural Studies is in Continental philosophy, not unlike the genesis of the Birmingham/U.S. School. This book discusses some procedural questions and practical features relevant to theory and research practice in social science and humanities from the standpoint of phenomenology.

Cryptography: Protocols, Design and Applications
Kamol Lek and Naruemol Rajapakse
In series: Cryptography, Steganography and Data Security
In series: Privacy and Identity Protection
Case: 978-1-62100-779-1, $140.00.
e-book: 978-1-62100-831-6, $140.00.
Cryptography is the practice and study of hiding information. Modern cryptography intersects the disciplines of mathematics, computer science, and electrical engineering. Applications of cryptography include ATM cards, computer passwords, and electrical commerce. In this book, the authors present current research in the study of the protocols, design and application of cryptography. Topics discussed include quantum cryptography protocols and quantum security; visual cryptography for halftone images; mathematical cryptography of the RSA cryptosystem; multi-layer QKD protocol using correlated photon of dark soliton array in a wavelength router and low-cost mutual authentication protocols.

Emergency Communications: Policy, Technology and Funding Considerations
Daniel H. Martinez and Allen E. Young
In series: Media and Communications - Technologies, Policies and Challenges
In series: Safety and Risk in Society
2012. 147 pp.
Case: 978-1-62081-140-5, $110.00.
The United States has yet to find a solution that assures seamless communications among first responders and emergency personnel at the scene of a major disaster. Since September 11, 2001, when communications failures contributed to the tragedies of the day, Congress has passed several laws intended to create a nationwide emergency communications capability. The 111th Congress considered pivotal issues, such as radio frequency spectrum license allocation and funding programs for a Public Safety Broadband Network (PSBN), without finding a solution that satisfied the expectations of both public safety and commercial network operators. This book explores the areas where changes in existing policies and practices may facilitate achievement of the important goals for emergency communications that Congress and others have identified. Why these goals have become important, and recent planning efforts to achieve these goals is discussed.

Measuring Broadband Performance in America
Dale Johnson and Margaret B. Wood
In series: Internet Theory, Technology and Applications
In series: Media and Communications - Technologies, Policies and Challenges
2012. 93 pp.
Soft: 978-1-61942-737-2, $47.00.
e-book: 978-1-61942-742-6, $47.00.
To make informed choices about purchasing and using broadband, consumers need to have access to basic information about broadband performance. Will a particular offering allow me to browse the web quickly and easily? Will it enable me to use new applications that help me maintain my health, search for a job, or take courses online? What should I look for in a provider if I want to watch high definition online video or play online video games? Does a given speed tier have sufficient upload capacity to enable video conferencing? Will a higher speed, higher priced service improve my Internet experience? To help answer these questions, this book presents the results of the first rigorous, nationwide study of actual home broadband performance in the United States.

Wireless Communications and Spectrum Management by the FCC and NTIA
Adan F. Barlow and Daniel I. Boyle
In series: Media and Communications - Technologies, Policies and Challenges
2012. 149 pp.
Case: 978-1-61942-997-0, $125.00.
The radio-frequency spectrum is a natural resource used to provide an array of wireless communications services that are critical to the U.S. economy and national security, such as mobile voice and data services, radio and television broadcasting, radar, and satellite-based services. Demand for radio-frequency spectrum has exploded over the past several decades as new technologies and services have been and continue to be brought to the market in the private sector and new mission needs unfold among government users of spectrum, including wireless communications critical for public safety officials responding to natural and man-made disasters. This book examines the plans and actions to meet future needs of commercial spectrum management.
Computers

Advances on Processing for Multiple Carrier Schemes OFDM & OFDMA
Faouzi Bader (Centre Technologique de Telecomunicaciones de Catalunya-CTTC, Barcelona, Spain), Nizar Zorba (University of Jordan, Amman, Jordan)
In series: Computer Science, Technology and Applications
Case: 978-1-61470-634-2. $375.00.
Orthogonal frequency-division multiplexing (OFDM) has existed for many years, but it has recently acquired a huge momentum as an emerging technology for high data rates. This technology has quickly moved from books and lectures to be a key technique within almost all wireless commercial broadband technologies. OFDM stands as a low complexity and high efficiency way to deal with the channel frequency selectivity by dividing the channel into a large set of subchannels, each one of them showing flat fading characteristics. Therefore, OFDM is a multi-carrier transmission technique that makes the communication to be robust against large delay spreads by keeping the orthogonality in the frequency domain. This book presents current research on the advantages and disadvantages of OFDM.

Computational Intelligence
Alexandru Floares (Artificial Intelligence Department, Cancer Institute Cluj-Napoca, Cluj-Napoca, Romania)
In series: Computer Science, Technology and Applications
Case: 978-1-62081-901-2. $150.00.
Computational intelligence aims to emulate aspects of biological systems for developing software and/or hardware that learns and adapts. Such systems primarily include neural networks, fuzzy logic systems and evolutionary computation each of them including multiple active and fast growing research directions. This book presents new and ground-breaking research from world-renowned experts focusing on various topics related to computational intelligence. What makes this book particularly interesting is the variety of subjects attained, which offer a global perspective on this central research field in the Knowledge Age.

Computer Aided Design: Technology, Types and Practical Applications
Song Jia and Cheng Yu
In series: Computer Science, Technology and Applications
Case: 978-1-62257-346-2. $150.00.
Computer aided design (CAD) applies computer-assisted methodologies to model 3-D products, perform geometrical shape design, generate industrial or graphic drawings, and make engineering documentation. In this book, the authors present current research in CAD technology, types and general applications. Topics discussed in this compilation include computer aided thermal module design; virtual manufacturing technology; application of feature recognition in uniform and adaptive slicing for rapid prototyping and tooling processes; and computer-aided design based on the function-behavior-structure (FBS) ontology.

Computer Physics
Brian S. Doherty and Amy N. Molloy (Editor)
In series: Physics Research and Technology
In series: Computer Science, Technology and Applications
Case: 978-1-61324-790-7. $140.00.
e-book: 978-1-61324-905-5. $140.00.
In this book, the authors present topical research from across the globe in the study of computer physics, including multidimensional experimental data processing in nuclear physics; solving the vibrational Schrödinger equation using a combined neural network collocation approach; the numerical solution of nonlinear partial differential equations using symplectic geometric integrators and grid computing multiple shooting algorithms for extended phase space sampling and long time propagation in molecular dynamics.

Cybersecurity for the Electric Smart Grid: Elements
Preston Barker and Rudy F. Price
In series: Energy Science, Engineering and Technology
In series: Energy Policies, Politics and Prices
Case: 978-1-61942-353-4. $95.00.
e-book: 978-1-61942-357-2. $95.00.
The "Smart Grid" is the name given to the evolving electric power network as new information technology systems and capabilities are incorporated. While these new components may add to the ability to control power flows and enhance the efficiency of grid operations, they also potentially increase the susceptibility of the grid to cyber attack since they are built around microprocessor devices whose basic functions are controlled by software programming. This book examines the "Smart Grid" where the potential for a major disruption or widespread damage to the nation's power system from a large scale cyberattack has increased focus on cybersecurity.
part in addressing these inefficiencies and improving government service delivery. The cloud computing model can significantly help agencies grappling with the need to provide highly reliable, innovative services quickly despite resource constraints.

Federal Geospatial Information: Management and Coordination
Andrew Halpern and Mark Troupp
In series: Earth Sciences in the 21st Century
Case: 978-1-62257-572-5. $110.00.
Geospatial information is data referenced to a place—a set of geographic coordinates—which can often be gathered, manipulated, and displayed in real time. A Geographic Information System (GIS) is a computer data system capable of capturing, storing, analyzing, and displaying geographically referenced information. The federal government and policy makers increasingly use geospatial information and tools like GIS for producing floodplain maps, conducting the census, mapping foreclosures, congressional redistricting, and responding to natural hazards such as wildfires, earthquakes, and tsunamis. For policy makers, this type of analysis can greatly assist in clarifying complex problems that may involve local, state, and federal government, and affect businesses, residential areas, and federal installations. This book provides a primer on geospatial data and GIS and explores the complexity of managing, sharing, and using geospatial data from a variety of sources and across the breadth of the federal government.

Handbook of Genetic Algorithms: New Research
Adalberto Ramírez Muñoz and Ignacio Garza Rodríguez
In series: Mathematics Research Developments
Case: 978-1-62081-158-0. $150.00.
Genetic algorithms (GA) have become popular tools for search, optimization, machine learning, and solving design problems. These algorithms use simulated evolution to search for solutions to complex problems. A GA is a population-based computational method in which the population, using randomized processes of selection, crossover, and mutation, evolves towards better solutions. In this book, the authors present current research including the application of genetic algorithm optimization techniques in beam steering of circular array antenna; hybrid genetic algorithms; changing range genetic algorithms; study of the influence of forest canopies on the accuracy of GPS measurements using genetic algorithms; roundness evaluation by genetic algorithm; and optimal sizing of analog integrated circuits by applying genetic algorithms.

Horizons in Computer Science Research. Volume 3
Thomas S. Clary
In series: Horizons in Computer Science
Case: 978-1-61122-807-6. $89.00.
e-book: 978-1-61324-398-5. $89.00.
This book presents original research results on the leading edge of computer science research. Each article has been carefully selected in an attempt to present substantial research results across a broad spectrum.
Horizons in Computer Science Research. Volume 4
Thomas S. Clary
In series: Horizons in Computer Science
Case: 978-1-61324-262-9. $140.00.
This book presents original results on the leading edge of computer science research. Each article has been carefully selected in an attempt to present substantial research results across a broad spectrum. Topics discussed in this compilation include multi-path routing protocols for ad hoc networks; development of software to characterize particulate matter in air pollution; web-based software infrastructure for service-oriented science; clinical applications of wearable monitoring systems; distributed computing; encryption software and computer science firewalls.

Horizons in Computer Science Research. Volume 5
Thomas S. Clary
In series: Horizons in Computer Science
Case: 978-1-61324-789-1. $140.00.
This book presents original results on the leading edge of computer science research. Each article has been carefully selected in an attempt to present substantial research results across a broad spectrum. Topics discussed in this compilation include contemporary DRAM memories using predictors; database management in risk analysis for nuclear reactors; simulating load balancing in a distributed service architecture; ViER and VaSER analyses of logic circuits in advanced CMOS processes; VLSI circuit design for fuzzy C-means algorithm in reconfigurable hardware; scheduling in WiMAX mesh networks and performance evaluation of configurable multiprocessors.

Horizons in Computer Science Research. Volume 6
Thomas S. Clary
In series: Horizons in Computer Science
Case: 978-1-61470-455-3. $150.00.
This book presents original results on the leading edge of computer science research. Each article has been carefully selected in an attempt to present substantial research results across a broad spectrum. Topics discussed include online impairment aware routing and wavelength assignment in WDM optical networks; data fusion in ad-hoc networks; NCTUns distributed network emulator; wireless mesh sensor networks and fully adaptive wormhole router design for network-on-chips.

Image Processing: Methods, Applications and Challenges
Vítor Hugo Carvalho (Algoritmi Research Centre, University of Minho (UM), Guimarães, Portugal)
In series: Computer Science, Technology and Applications
2012. 262 pp.
Case: 978-1-62081-844-2. $150.00.
The use of image processing is presenting nowadays an exponential increase in the development of new solutions to deal with challenges in the industry and in the day-to-day life of Society. The improvements of technology enable the recurrent use of image processing based applications with a market which has reached mobile supporting devices such as smart phones and tablets. With the objective of discussing the main issues, challenges, opportunities and trends related to image processing, the result is a compilation of studies available to the readers allowing them to achieve new technological developments, present practical solutions and state-of-the-art technologies, provide guidance for future research and to create a connection between research and applications.

Devoted to the 80th Anniversary of I.V. Prangishvili
Ivane Gorgidze (Georgian Technical University, Tbilisi, Georgia)
In series: Computer Science, Technology and Applications
Case: 978-1-61324-870-6. $225.00.
e-book: 978-1-61470-050-0. $225.00.
This book consists of several chapters, each of which focuses upon the different aspects of innovative usage of modern Informational Technology and IT-related fundamental sciences in solution of different theoretical and practical problems.

Introduction to Networking (CCNA, part 1)
S.P. Maj (Edith Cowan University, Perth, Western Australia)
In series: Computer Science, Technology and Applications
In series: Computer Science, Technology and Applications
2012.
Case: 978-1-61324-536-1. $75.00.
In the 1990s, Cisco, the world’s largest supplier of network equipment developed the Cisco Network Academy Program (CNAP). CNAP defines the global standard in network technology. However, this material does not provide a useful conceptual model of how network devices work. Furthermore, an extensive range of network management tools were evaluated with the same results – it was difficult to manage runtime data from multiple devices and protocols. This demand driven problem was the basis of our applied research program that led to the development of State Model Diagrams (SMDs). SMDs are a diagrammatic modeling method that control complexity by means of abstraction. This book uses the universally applicable SMD principles to provide new insights to the wide range of different network devices and protocols.
Multi-Discipline Virtual Prototype Modeling and Simulation Theory and Application
Xudong Chai, Baocun Hou and Bo Hu Li (Beijing Simulation Center, Beijing, PR, China) Xuefeng Yan (College of Information Science and Technology, Nanjing University of Aeronautics and Astronautics, PR China)
In series: Distributed, Cluster and Grid Computing
Edited by: Yi Pan (Georgia State University)
Case: 978-1-62100-273-4. $140.00.
The research of modeling and simulation has made great progress during the past few decades. A number of institutions and scholars from various domains have proposed different modeling theories and simulation technologies. Great variety and diversity tools and commercial software, which are mainly oriented to specific single-discipline, are rushing out and being applied in their own fields successfully. Multi-discipline virtual prototype has been applied in a wide range of engineering applications, especially the design, testing and evaluation of complex product. The growing complexity of the product and simulation system, as well as the user requirement, bring many challenges to modeling and simulation. This book examines the major theories and methods involved in modeling, simulation, optimization, evaluation and application of multi-discipline virtual prototype, based on concept oriented thinking.

Network Protocols
Geng Liang (North China Electric Power University, Beijing, China)
In series: Computer Networks
Case: 978-1-61470-821-6. $75.00.
This book intends to focus on network protocol and communication in the area of information and industrial control. Various research on sub-layer protocols including Data Link Layer (DLL), Application Layer (AL) and User Layer (UL) in instrumentation network and TCP/IP, Web based protocol for industrial and informatic network and control problems involving network communication, along with the design of corresponding system are presented explicitly. The main objective of this book is to provide information on some latest research on some mainstream network protocols used in industry, including fundamental concepts and principles, latest technological developments, and as the main part, theoretical and practical research results ever accomplished.

Network Quality of Service
Collin Vaughan
In series: Computer Science, Technology and Applications
Case: 978-1-61470-202-3. $95.00.
e-book: 978-1-61470-301-3. $95.00.
In the field of computer networking and other packet-switched telecommunication networks, the traffic engineering term quality of service (QoS) refers to resource reservation control mechanisms rather than the achieved service quality. Quality of service is the ability to provide different priority to different applications, users or data flows, or to guarantee a certain level of performance to a data flow. This book presents current research from across the globe in the study of network quality of service, including resource allocation in next generation networks; QoS management by active grid information servers in grid computing; radio resource management architecture for wireless networks; IP-Based QoS architecture for cloud services; analysis of WiMax and WiFi integration and quality of service in wireless local area networks.

Neurocomputing: Learning, Architectures and Modeling
Elizabeth T. Mueller
In series: Computer Science, Technology and Applications
Case: 978-1-61324-699-3. $95.00.
In this book, the authors present topical research in the study of the architectures and modeling in neurocomputing. Topics discussed include a brain-computer interface for analyzing investment behavior and market stability; neural-based image segmentation architecture with execution on a GPU; EEG montages for the diagnosis of Alzheimer's disease; design and training of neural architectures using extreme learning machines and the systematic comparison of single and multiple hidden-layer neural networks.

New Developments in Computer Research
Nikos E. Mastorakis (Technical University of Sofia, Bulgaria)
In series: Computer Science, Technology and Applications
Case: 978-1-61470-321-1. $140.00.
e-book: 978-1-61470-414-0. $140.00.
This book presents current research in the field of computer science. Topics discussed include reactive diagnosis of active systems; managing IT resources; parallel iterative solvers using programmable devices; current legislation, executive branch initiatives and options for Congress regarding cybersecurity; high-performance reversible and quantum systolic parallel processing; software development for approximate bayesian computation; broadband infrastructure programs in the American Recovery and Reinvestment Act and spectrum policy in the age of broadband.

Pervasive Computing
Mary L. Howard
In series: Computer Science, Technology and Applications
Case: 978-1-61122-057-5. $150.00.
Pervasive or Ubiquitous computing is a post-desktop model of human-computer interaction in which information processing has been thoroughly integrated into everyday objects and activities. In the course of ordinary activities, someone "using" pervasive computing engages many computational devices and systems simultaneously, and may not necessarily even be aware that they are doing so. This model is usually considered an advancement from the desktop paradigm. This book presents topical research data in the study of pervasive computing, including bio-inspired principles used on a simple computational model for distributed interacting systems; automating the development of pervasive systems using a Model-Driven Development (MDD) guideline; wireless sensor networks and pervasive computing; and using pervasive computing in biomedical applications.
Public Cloud Computing: Security and Privacy Guidelines
Aiden E. Williams and Alexander L. Robinson
In series: Computer Science, Technology and Applications
In series: Internet Privacy and Issues
2012.
Soft: 978-1-62081-982-1. $52.00.
e-book: 978-1-62257-046-1. $52.00.
Cloud computing can and does mean different things to different people. The common characteristics most interpretations share are on-demand scalability of highly available and reliable pooled computing resources, secure access to metered services from nearly anywhere, and displacement of data and services from inside to outside the organization. While aspects of these characteristics have been realized to a certain extent, cloud computing remains a work in progress. This book provides an overview of the security and privacy challenges pertinent to public cloud computing and points out considerations organizations should take when outsourcing data, applications, and infrastructure to a public cloud environment.

Reconfigurable Multipipeline Computing Structures
Igor A. Kalyaev, Ilya J. Levin, Evgeny A. Semernikov, Vladimir I. Shmoilov (The Russian Academy of Sciences, Southern Federal University, Taganrog, Russia)
In series: Computer Science, Technology and Applications
Case: 978-1-61942-854-6. $150.00.
This book covers theoretical aspects of design of reconfigurable multipipeline computing structures of various types and of their practical implementation, based on large-scale integration FPGAs. This book consists of the introduction and six chapters. Topics discussed include general design principles of reconfigurable multipipeline computing structure organization; organization principles of multimicropipeline computing structures within homogeneous environments; structural-procedural methods of organization of computations in multimicropipeline computing structures; and problems of practical implementation of reconfigurable multipipeline computing structures, based on large-scale integration FPGAs.

Scheduling Problems and Solutions
Hussein M. Khodr (Polytechnic Institute of Engineering, Oporto, Portugal)
In series: Computer Science, Technology and Applications
Case: 978-1-61470-689-2. $140.00.
e-book: 978-1-61470-769-1. $140.00.
In recent years more attention has been devoted to the computer aided scheduling problems in industries process. Computer programs are now available in order for production engineers to develop an understanding for how a decision can be taken while making the scheduling process easier to determine when, where and how to produce a set of products. Due to the discrete decisions involved, these scheduling problems have a combinatorial nature and are therefore challenging from a computational complexity standpoint. With the tools, scheduling studies can be run to simulate present industry conditions and to help with the long-range planning of new facilities for a given production plan. The tools also provide an opportunity for the production engineers to do such things as optimize the production process and apply diverse mathematical optimization techniques.

Software Security Engineering: Design and Applications
Muthu Ramachandran (Leeds Metropolitan University, Leeds UK)
In series: Computer Science, Technology and Applications
Case: 978-1-61470-128-6. $75.00.
e-book: 978-1-61470-280-1. $75.00.
Software engineering has established techniques, methods and technology over two decades. However, due to the lack of understanding of software security vulnerabilities, we have been not successful in applying software engineering principles when developing secured software systems. Therefore software security can not be added after a system has been built as seen on today’s software applications. This book provides concise and good practice design guidelines on software security which will benefit practitioners, researchers, learners, and educators. Topics discussed include systematic approaches to engineering; building and assuring software security throughout software lifecycle; software security based requirements engineering; design for software security; software security implementation; best practice guideline on developing software security; test for software security and quality validation for software security.

Virtual Reality
Nada Bates-Brkljac (University of the West of England, Bristol, United Kingdom)
In series: Computer Science, Technology and Applications
Case: 978-1-61470-246-7. $140.00.
Virtual Reality (VR) was created to fulfill human curiosity about exploring beyond the reality. Humans establish the experiences of a real world based on the feedbacks from sense organs, such as eyes, ears, nose and hands. By replacing real images, sound and tactility with computer-generated illusions, a virtual world can be built for the human user to navigate in and interact with. In this book, the authors gather current research from across the globe in the study of virtual reality including education processes implemented in the simulated environment of the laboratory; an intuitive 3D interface infrastructure for virtual reality applications; virtual environments for the visualization of cultural and archaeological heritage; virtual reality in psychotherapy and autism and virtual reality as a tool for machining-processes simulation and in the textile field.

CONSTRUCTION

Brick and Mortar Research
Santiago Manuel Rivera and Antonio L. Pena Diaz
In series: Materials Science and Technologies
In series: Engineering Tools, Techniques and Tables
Case: 978-1-61942-927-7. $140.00.
This book is a study of brick and mortar research technologies. Topics include the corrosion and environmental aspects of cements and reinforced concrete; in-plane behavior of CFRP retrofitted masonry; high temperature effects on masonry materials; raman spectroscopic characterization of brick and mortars; preparation of colored facing brick from low melting clay under a water vapor atmosphere; negative effects of the use of white portland cement as an additive to aerial lime.
Construction Project Management Research Compendium, Volume 1

Faisal M. Arain (School of Construction, Southern Alberta Institute of Technology (SAIT), Canada)
In series: Construction Materials and Engineering
Case: 978-1-62081-925-8. $150.00.
E-book: 978-1-62081-926-5. $150.00.
The book presents various facets of construction project management. The diverse facets discussed in this book include an evaluation of a project management measurement framework that was used to cluster construction project management critical success factors. Consultants’ perspective on the main factors affecting the performance of construction projects, and the nature and impact of variation orders on the overall project performance are discussed as important aspects of effective construction project management.

Guidelines For Improved Duct Design and HVAC Systems In The Home

Lane M. Collins and Danielle E. Martinez
In series: Energy Science, Engineering and Technology
Case: 978-1-62081-443-7. $110.00.
 Heating and cooling losses from forced-air ducts can result in high energy costs, lead to thermal comfort problems, and—in some extreme situations—result in serious health and safety concerns. Reducing air leakage and conductive losses from ducts can be a straightforward way to reduce energy use and improve comfort in homes. This book discusses the basics of air distribution and duct design; strategies to seal and insulate ducts in existing homes; accurate heating and cooling load calculations and HVAC equipment sizing.

DEFENSE AND SECURITY

Biometrics Use in the Department of Defense
Steven C. Edwards and Elizabeth R. Adams
In series: Defense, Security and Strategies
In series: Computer Science, Technology and Applications
Soft: 978-1-62257-124-6. $52.00.
E-book: 978-1-62257-150-5. $52.00.
The long-term strategic success in counterinsurgency operations, such as Operation Enduring Freedom in Afghanistan, involves separating enemy combatants from innocent civilians in the general population. U.S. military forces in Afghanistan are using biometrics to identify enemy combatants and link individuals to events such as improvised explosive device detonations. Biometrics and related biometrics-enabled intelligence are decisive, nonlethal battlefield capabilities that deny enemy combatants the necessary anonymity to hide and strike at will. Biometrics is the measurement and analysis of a person’s unique physical or behavioral characteristics, such as fingerprints, iris scans, facial photographs, or written signature recognition, which can be used to verify personal identity. This book examines biometrics use in the Department of Defense with a focus on additional training for leaders, timely transmission of data, and better standards to share information within federal agencies.

Defense Manufacturing: Technology Strategy and Risk Management

Preston I. Brown and Travis E. Robinson
In series: Defense, Security and Strategies
In series: Manufacturing Technology Research
Case: 978-1-62081-672-1. $110.00.
For over fifty years, the DoD Manufacturing Technology (ManTech) Program has been the Department’s Investment mechanism for staying at the forefront of defense-essential manufacturing capability. In the 20th century, when the threat was highly predictable and the U.S. defense industrial base was largely self-contained, ManTech helped keep the nation positioned to produce the best military systems in the world. In the 21st century, DoD faces new threats, the industrial base is globally networked, and the definition of “best” must increasingly consider affordability. These are the new demands placed on defense manufacturing, and they are shaping the future role of ManTech. This book examines the ManTech strategy for keeping DoD positioned to enhance and use 21st century manufacturing capabilities to address the growing challenges of weapon system affordability and timely delivery to the warfighter, and for enhancing U.S. global manufacturing competitiveness.

Dirty Bombs: Elements, Prevention and Response

Benjamin P. Kohler
In series: Defense, Security and Strategies
Case: 978-1-62100-234-5. $125.00.
Congress has long sought through legislation and oversight to protect the United States against terrorist threats, especially from chemical, biological, radiological and nuclear (CBRN) weapons. Radiological dispersal devices (RDDs) are one type of CBRN weapon. Explosive-driven “dirty bombs” are an often-discussed type of RDD, though radioactive material can also be dispersed in other ways. Radioactive material is the necessary ingredient for an RDD. This material is composed of atoms that decay, emitting radiation. Some types and amounts of radiation are harmful to human health. This book provides background for understanding the RDD threat and responses, and presents issues for Congress.

F-35 Joint Strike Fighter Aircraft Program, The

Clayton D. Simmons and Vernon F. Morgan
In series: Military and Veteran Issues
The largest procurement program in the Department of Defense (DOD), the F-35 Joint Strike Fighter (JSF), also called the Lightning II, is a new aircraft being procured in different versions for the United States Air Force, Marine Corps, and Navy. This book discusses the F-35 Joint Strike Fighter program and the F-35 Alternate Engine Program.

Federal Cybersecurity Planning: Human Capital and Research and Development

Kurk C. Moore and Marion D. Taylor
In series: Safety and Risk in Society
In series: Defense, Security and Strategies
Soft: 978-1-61942-769-3. $47.00.
E-book: 978-1-61942-817-1. $47.00.
Threats to federal information technology (IT) infrastructure and systems continue to grow in number and sophistication. The ability to
make federal IT infrastructure and systems secure depends on the knowledge, skills, and abilities of the federal and contractor workforce that implements and maintains these systems. In light of the importance of recruiting and retaining cybersecurity personnel, this book examines the extent to which federal agencies have implemented and established workforce planning practices for cybersecurity personnel and explores the status of and plans for governmentwide cybersecurity workforce initiatives.

Military Operations, Health and Technology

Alexander L. Cobb
In series: Defense, Security and Strategies
Case: 978-1-62100-328-1. $95.00.
This book presents current research in the study of military operations, health issues, and technology. Topics discussed in this compilation include population transfers and the mediation of insurgent conflicts; the emotional and mental coping skills of a submarine crew in extreme environments; telehealth technologies for the provision of long-distance clinical health care, patient and professional education and health administration; military unit pathfinding problems applying MOACO algorithms and the strategic and military operation issues for conducting the war in Afghanistan.

U.S. Navy Shipbuilding Plans: Goals and Considerations

Brandon Carmichael and Jason Lornel
In series: Defense, Security and Strategies
Soft: 978-1-62100-694-7. $47.00.
This book provides background information and presents potential issues for Congress concerning the Navy's ship force-structure goals and shipbuilding plans. The planned size of the Navy, the rate of Navy ship procurement, and the prospective affordability of the Navy's shipbuilding plans have been matters of concern for the congressional defense committees for the past several years. Decisions that Congress makes on Navy shipbuilding programs can substantially affect Navy capabilities and funding requirements, and the U.S. shipbuilding industrial base.

U.S. Nuclear Security of Operations and Radiation Sources

Jonathan P. Ransen
In series: Nuclear Materials and Disaster Research
In series: Defense, Security and Strategies
Case: 978-1-62100-494-3. $95.00.
For over 30 years, the U.S. Nuclear Regulatory Commission (NRC) has maintained effective nuclear security, emergency preparedness and incident response programs. The NRC requires safe and secure operations at nuclear facilities wherein safety refers to operating the facility in a manner that protects the public and the environment. Security refers to protecting the facility from adversaries who wish to harm people and the environment. Safety and security are accomplished by using people, equipment and physical protection. This book explores the safety and security threats to our nations nuclear facilities and the measures and techniques in place to thwart any such emergency.

DENTAL

Atomic and Nuclear Surface Analysis Methods: A Novel Perspective for the Characterization of Dental Composites

Eugen A. Preoteasa (Horia Hulubei National Institute for Physics and Nuclear Engineering, Bucharest-Măgurele, Romania), Elena Preoteasa (Helident Ltd. Dental Surgery, Bucharest, Romania), Ioana Suciu (Carol Davila Medical University, Bucharest, Romania)
In series: Dental Science, Materials and Technology
Soft: 978-1-61470-208-5. $47.00.
At first sight, dental composites and atomic/nuclear surface analysis methods seem to belong to remote, hardly overlapping fields. However, at a closer look certain similar patterns may be evidenced in their evolution. They both were born about half a century ago, but nonetheless they both are driven by unexhausted innovation and continue to develop at high rates. It is therefore not surprising that the applications of these physical analysis techniques in the field of dental composite research during the last decade yielded valuable results. However, the behaviour of dental composites in the oral environment is not fully understood. This book approaches this subject and discusses in great length the future of dental composites.

Oral Health Care for Socially Disadvantaged Communities

Febronia Kokulengya Kahabuka (School of Dentistry, Tanzania)
In series: Dental Science, Materials and Technology
In series: Health Care Issues, Costs and Access
Case: 978-1-61470-896-4. $165.00.
This book gathers the current information on management of common oral conditions and proposes an appropriate package for underdeveloped communities. Practical solutions for managing oral conditions in the existing social, political and economic context of the developing countries is provided. This book is a good reference material for undergraduate and postgraduate students, academicians, as well as practicing dentists. In this book, the Basic Package of Oral Care (BPOC) forms a pillar of the presentation. Atraumatic Restorative Treatment, affordable fluoride tooth paste and relieve of oral pain are presented as an essential minimum package of oral care for any community. This book advocates home care and outreach programmes to reach the elderly. The already existing oral health care delivery system is challenged. This book provides evidence based appropriate oral care.

EARTH SCIENCES

Cyclones: Formation, Triggers and Control

Kazuyoshi Oouchi and Hironori Fudeyasu (Yokohama National University, Japan)
In series: Environmental Science, Engineering and Technology
In series: *Natural Disaster Research, Prediction and Mitigation*
Case: 978-1-61942-976-5. $140.00.
This book is edited for the young researchers and students who are interested in overviewing and knowing the specific progress of tropical cyclone research. This book is devoted to either an up-to-date review or report of new research on the tropical cyclone, encompassing the problems of the genesis, development, climate control of tropical cyclone in terms of wide-ranging scales based on every type of method -- theoretical, modeling, and observational analysis. Not only comprehensive climate model but stand-alone theoretical and conceptual modeling researches will continue to play important role in illustrating the essential physics of tropical cyclone, and observational studies will support their specific features.

Eddies and Hurricanes: Formation, Triggers and Impact
*Agnes Tarasov and Maksim Demidov*
In series: *Oceanography and Ocean Engineering*
In series: *Natural Disaster Research, Prediction and Mitigation*
2012.
Case: 978-1-61942-235-3. $95.00.
e-book: 978-1-61942-239-1. $95.00.
This book presents current research in the study of the causes, formation and impacts of eddies and hurricanes. Topics discussed include the exploration of experiences after Hurricane Katrina; the theory of streamlets; the methodology of satellite observations of eddies in the sea; hurricanes under climate change and the effect of eddy diffusion on the near surface profiles of atmospheric electrical parameters.

Encyclopedia of Earth Science Research (3 Volume Set)
*Funio Sato and Shigeo Nakamura (Editor)*
In series: *Earth Sciences in the 21st Century*
Case: 978-1-61470-247-4. $345.00.
This book presents current research in the study of earth science. Topics discussed include the formation of the lithosphere; the fate of subducted oceanic crust and the origin of intraplate volcanism; deformable lithospheric plates; cosgenic nuclides and geomorphology; geomorphic adjustment, geographic context and disturbances; erosion and sediment yield; paleomagnetic evidence for Siberian plate tectonics; dune ecosystems; the geology of sand dunes and improving water regimes of loamy sand for wheat cultivation by adding silt loam.

Holistic Ice-Sheet Modeling: A First-Order Approach
*Terence J. Hughes (University of Maine, USA)*
In series: *Earth Sciences in the 21st Century*
In series: *Physics Research and Technology*
2012. 269 pp.
Case: 978-1-62100-729-6. $75.00.
e-book: 978-1-62100-822-4. $75.00.
This book presents the basic physics needed to model the past, present and future of large continental ice sheets. Minimal mathematical ability is needed. Simple triangles and rectangles allow a visual treatment of the force balance for stresses driving and opposing glacier flow. The holistic aspect of the book recognizes that ice flow in ice sheets begins as slow sheet flow from high convex ice domes near the center of an ice sheet, with most sheet flow converging on fast concave currents of ice called ice streams near the ice-sheet margin, and ends as relatively thin and flat shelves of ice floating in water or lobes of ice grounded on land.

Holocene: Perspectives, Environmental Dynamics and Impact Events
*Bahadur Singh Kotlia (Department of Geology, Kumaun University, Nainital, India)*
In series: *Dialogues among Civilizations and Cultures*
In series: *Earth Sciences in the 21st Century*
2013.
Case: 978-1-62257-722-4. $150.00.
The Holocene (11.5 ka BP onwards), directly linked to the evolution of modern society, encompasses the increase and impacts of the human species world-wide, including by and large striking changeover towards living in the present. The Holocene climate is also responsible for expansion/migration/decline of the human cultures. Because of this, a period termed as Anthropocene (age of man) is also proposed as the latest part of this epoch since the recent human impacts have been found on the Earth and such impacts are unquestionably of global implication for our future. This book contains seventeen invaluable manuscripts submitted by the authors from diverse countries. While most of them are related to the climatic events and environmental dynamics during the Holocene, two chapters focus on the palaeoseismology and human migration/anatomy.

Horizons in Earth Science Research. Volume 5
*Benjamin Veress and Jozsi Szigethy*
In series: *Horizons in Earth Science Research*
Case: 978-1-61209-923-1. $195.00.
This book presents and discusses research in the field of earth science, with a focus on the dynamics of continental deformation with regard to rifting and plate tectonics; archaeological charcoal signals from Upper Paleolithic sites; olivine and its role in chemical evolution and in the origin of life; Great Lakes ecology, conservation and management; volcanic ash soils in Taiwan; finite half-space models of the oceanic lithosphere and manifestations of upwelling mantle flow on the Earth's surface.

Horizons in Earth Science Research. Volume 6
*Benjamin Veress and Jozsi Szigethy*
In series: *Horizons in Earth Science Research*
Case: 978-1-61470-462-1. $140.00.
This book presents and discusses research in the field of earth science, with a focus on the iron bioavailability in the Southern Oceans; the electrical properties of sedimentary rocks; the evolution of movement of asteroids; climatological features of cyclonic development over the Southwestern South Atlantic Ocean; coastal impacts related to wind/wave changes in the South American Continental Shelf; hydraulic conductivity assessment in fractured rock masses and the geology of hematite on the Earth's surface.

Horizons in Earth Science Research. Volume 7
*Benjamin Veress and Jozsi Szigethy*
In series: *Horizons in Earth Science Research*
2012. 347 pp.
Case: 978-1-62100-622-0. $185.00.
This book presents and discusses research in the field of earth science, with a focus on glacial erosion and Karst Evolution; the Lake Urmia Dike and its hydrodynamic and geological impact; geometry of coronal rays; Estonian dolomite; the last continental glaciation of Western Siberia; fracture network properties in limestone and dolostone; and solar EUV coronas.

**Horizons in Earth Science Research. Volume 8**

*Benjamin Veress and Jozsi Szigethy*  
In series: *Horizons in Earth Science Research*  
Case: 978-1-61942-933-8. $150.00.  
This book presents and discusses research in the field of earth science, with a focus on the utility of schist in rock art studies; fossil records of angiosperm origin; crater detection algorithms; crater distributions in volcanoes controlled by magmatic and tectonic conditions; and the mineralogical compositions of gneisses and schists.

**Ice Sheets: Dynamics, Formation and Environmental Concerns**  
*Jonas Müller and Luka Koch*  
In series: *Earth Sciences in the 21st Century*  
Case: 978-1-61942-367-1. $150.00.  
Ice sheets as vast accumulations of frozen water on land are a direct expression of energy distribution on our planet. They form from the interplay of intensive accumulation of frozen water and insufficient melt during the summer. They define global sea-level and affect the geochemical composition of the ocean. This book presents current research in the study of the dynamics, formation and environmental concerns relating to ice sheets.

**Low Temperature Processes**  
*Mouhamadou Bassir (Earth Science Institute, University Cheikh Anta Diop De Dakar, Senegal)*  
In series: *Energy Science, Engineering and Technology*  
2012. 185 pp.  
Case: 978-1-62100-038-9. $75.00.  
e-book: 978-1-62100-105-8. $75.00.  
The manufacturing of bricks is an energy-intensive industry that contributes significantly to carbon dioxide emissions, with more than fifty chemical pollutants being generated by the process. In 2002, over eight billion bricks were sold in the United States alone. Considering the fact that the manufacturing of one brick consumes about 2 Mega Joules/kg brick, the total energy used in USA can be estimated at sixteen billion Mega Joules/kg brick. The heating process changes the molecular structure of the clay, such that it is vitrified. This book presents new approaches in the creation of cement which reduces energy by working at low temperature and eliminates pollutions.

**Rainfall: Behavior, Forecasting and Distribution**  
*Olga E. Martin and Tricia M. Roberts*  
In series: *Environmental Science, Engineering and Technology*  
2012. 204 pp.  
Case: 978-1-62081-551-9. $150.00.  
In this book, the authors present topical research in the study of the behavior, forecasting and distribution of rainfall variability. Topics discussed in this compilation include coping strategies in relation to local rainfall variability in Tanzania; rainfall variability and changes in Bangladesh; non-parametric methods for forecasting time series from cumulative monthly rainfall; long term and interannual rainfall variability in the Argentinean Chaco plain region; study of wet scavenging of atmospheric aerosols using decay products in rainwater; spatial variability of rain and its erosivity in a tropical semi-arid area in Kenya; potential of the piezoelectric transducer for direct rainfall kinetic energy measurement and erosion evaluation; climatology and rainfall in northeast Brazil; and the Kalman Filtering approach in the calibration of radar rainfall data.

**Rutile: Properties, Synthesis and Applications**  
*Jim Low (Department of Applied Physics, Curtin University, Australia)*  
In series: *Earth Sciences in the 21st Century*  
e-book: 978-1-61942-236-0. $140.00.  
This book deals with the synthesis, properties and applications of titanium dioxide (TiO2) which is a naturally occurring oxide of the element titanium. In nature these oxides are found in well-known minerals such as Rutile, Anatase and Brookite. However, it is most commonly extracted from titanium tetrachloride by carbon reduction and re-oxidization. Alternatively, it may be processed from another oxide called ilmenite, which is subjected to reduction with sulphuric acid to achieve pure titanium dioxide.

**Spatial Planning: Strategies, Developments and Management**  
*Elia Cicuttelli and Benigno Caló*  
In series: *Urban Development and Infrastructure*  
Case: 978-1-61470-894-0. $95.00.  
e-book: 978-1-61470-911-4. $95.00.  
Spatial planning refers to the methods used by the public sector to influence the distribution of people and activities in spaces of various scales. In this book, the authors present topical research in the study of the strategies, developments and management of spatial planning. Topics discussed include planning the coastal zone; land management and its implication for spatial development; resource management on near shore ecosystems in Southwest Puerto Rico; coastal zone management in the Brazilian Amazon and marine spatial planning.

**Vulnerable U.S. Shorelines and Coasts: Select Assessment**  
*Adam T. Procházka*  
In series: *Earth Sciences in the 21st Century*  
Soft: 978-1-62100-236-9. $47.00.  
e-book: 978-1-62100-293-2. $47.00.  
Beach erosion is a chronic problem along many open-ocean shores of the United States. As coastal populations continue to grow and community infrastructures are threatened by erosion, there is increased demand for accurate information regarding past and present trends and rates of shoreline movement. There is also a need for a comprehensive analysis of shoreline movement that is consistent from one coastal region to another. To meet this national need, the U.S. Geological Survey (USGS) has conducted an analysis of historical shoreline changes along open-ocean sandy shores of the conterminous United States and parts of Hawaii, Alaska and the Great Lakes. This book explores the development of a standard and repeatable method for mapping and analyzing shoreline movement so that periodic, systematic, internally consistent updates regarding coastal erosion and land loss can be made nationally.
Great Outdoors (AGO) initiative. This initiative highlights the Administration’s efforts to connect people to the outdoors through jobs, education, recreation, and service. This will protect America’s natural and cultural resources and connect people to the outdoors through jobs, education, recreation, and service. Conservation of our natural, cultural, and historic resources is an American tradition, shaping who we are as a nation. This book highlights this Administration’s work to date under the America’s Great Outdoors (AGO) initiative.

**ECOLOGY**

**Zircon and Olivine: Characteristics, Types and Uses**
*Gilles Van Dijk and Valentijn Van den Berg*

This book presents topical research in the study of the mineralogy of zircon and olivine and their properties, production and applications. Topics discussed include the application of U-Pb dating and chemistry of zircon in the continental crust of Calabria; the internal morphology and crystal growth of accessory zircon from igneous rocks; the reduction, softening and melting behavior of olivine pellets in an experimental blast furnace; characterizing the radiation damage in zircon and the weathering reactions of olivine as an effective way to sustainably capture CO2.

**Biodiversity Conservation: New Research**
*Richard L. Nelson and John F. Carter*

Biodiversity encompasses genes, species, ecosystems and their relative abundance. International awareness of the need to conserve biodiversity has been growing steadily since the first "Earth Summit" in 1992. The development of ecological networks can connect the fragmented habitats of wild animals, stem biodiversity loss, and promote dispersal and genetic exchanges of wild species. In this book, the authors present current research in the study of biodiversity conservation including the theory and practice of ecological networks to conserve biodiversity; sustainable utilization and conservation of indigenous Western Cape medicinal plants; biodiversity change and sustainable development; biodiversity management in the Brazilian Atlantic Forest; and agricultural water management inside the North African oasis.

**Advanced Modeling and Computer Technologies for Fluvial Water Quality Research and Control**
*Karlos J. Kachiashvili and D.Y. Melikdzhanian (Tbilisi, GA)*

The results discussed in this book are interesting and useful for a wide range of specialists and scientists working in the field of applied mathematics, and in the modeling and monitoring of pollution of natural waters, ecology, hydrology, power engineering and building of different structures of water objects. Their importance and practical value are submitted in the friendly form for comprehension and are ready for direct application for the solution of practical tasks. Advantages of the elaborated methods and algorithms are shown not only through theoretical judgments and calculations, but also through the demonstration of results of particular calculus and modeling.

**Coral Reef Protection and the Clean Water Act**
*Isaac H. Frampton and Nina D. Romano*

Coral reef communities are a national treasure. The Clean Water Act (CWA) can be a powerful legal instrument for protecting water resources, including the biological inhabitants of coral reefs. The objective of the CWA is to restore and maintain the chemical, physical and biological integrity of water resources. Biological integrity is a long-term objective of the CWA and, like its physical and chemical counterparts, biological standards and criteria can be defined to protect valued aquatic resources. This book presents a summary of the Clean Water Act with a focus on coral reef protection.
Forest Management: Technology, Practices and Impact
Armando C. Bonilla Cruz and Ramona E. Guzman Correa
In series: Environmental Science, Engineering and Technology
In series: Environmental Remediation Technologies, Regulations and Safety
2012. 204 pp. Case: 978-1-62081-359-1. $120.00. e-book: 978-1-62081-396-6. $120.00.
In this book, the authors gather and present current research in the study of the technologies, practices and impacts of forest management. Topics discussed in this compilation include forest fire management; forest management systems and conservation in Madagascar; the effects of land use history and forest management practices in Southern Chile; forest conservation and land use planning in Kilosa District, Tanzania; biological wildlife corridors as a tool for conservation management; Spanish Black Pine sustainability for forest management; and the development of carbon sequestration models for the management of coniferous forests.

Forests of Volga River Basin under Global Warming (Landscape-ecological analysis and prognosis)
Erland G. Kolomyts, Gennadiy S. Rozenberg, Sergey V. Saksonov, Larisa S. Sharaya (Institute of Ecology of Volga Basin of Russian Academy of Sciences, Pushchino, Moscow Region, Russia)
In series: Climate Change and its Causes, Effects and Prediction
In series: Environmental Science, Engineering and Technology
The coming global climate changes associated with the increase of atmospheric greenhouse effect, may disturb the natural carbon cycle in the biosphere and may lead to large-scale ecological consequences. The cognition of the mechanisms of environmental sustainability in changing climate is connected with studying the biotic regulation of the carbon cycle. Boreal forests play an important role in the global carbon cycle. This book expounds the regional-local prognostic conception as a scientific basis of monitoring forest ecosystems under global climatic changes. Predictive landscape-ecological scenarios of the nearest future of temperate forests and their paleogeographical analogs as a single system of global changes have been considered for the first time by the example of a large region – the Volga River basin.

Freshwater Fish and Mussel Bioindicators of North America
Jackson L. White and Clayton J. Johnson
In series: Marine Biology
In series: Environmental Science, Engineering and Technology
The freshwaters of North America are populated by a rich tapestry of native fishes, some of which possess enough charisma and color to rival their marine and tropical counterparts. While names such as trout and bass are well-embedded into the American vernacular, the less familiar monikers of darter, madtom, and dace remain relatively unknown. However, it is more often these lesser known groups function as valuable bioindicators of biological integrity, thereby providing important information to scientists regarding the health of our nation’s waterways. This book provides reference for environmental and fisheries professionals, naturalists, and educators on the use of fishes and mussels as biological indicators.

Invasive Species: Threats, Ecological Impact and Control Methods
Joaquin J. Blanco and Adrian T. Fernandes
In series: Environmental Science, Engineering and Technology
In series: Wildlife Protection, Destruction and Extinction
Many species of plants, microbes, and animals have been introduced around the world. Species are considered “invasive” or “alien” when they are not native to an area, but become established and cause, or are likely to cause, economic or environmental harm or harm to human health. In this book, the authors present current research in the study of the threats, ecological impacts and control methods relating to invasive species. Topics include thermochemical processing of wood from invasive arborescent species for sustainable bioenergy generation; invasive rodents in the U.S.; invasive Buprestis beetle species monitoring; the invasive beaver castor canadensis of the Tierra del Fuego Archipelago; leaf-cutting ants; invasive species and accurate ecological assessment in freshwater pollution; and the aquarium trade as a pathway for the introduction of invasive species in Mexico.

Long Term Changes in Africa’s Rift Valley: Impacts on Biodiversity and Ecosystems
Andrew J. Plumptre (Wildlife Conservation Society, Kampala, Uganda)
In series: Environmental Science, Engineering and Technology
Despite Africa’s rich biodiversity and the importance of its ecosystem services, it has relatively few collaborative, network-based studies that examine the ecological impacts of climate change. This book marks the beginning of such a collaboration. It covers ecological information that spans across five countries in the Albertine Rift region, reflects over 50 years of research, and includes contributions from 65 researchers who represent 44 organizations at work in 11 sites. It provides invaluable information about past and current trends in the status of species, ecosystems and associated threats, as well as recommendations for interventions.

Marshes: Ecology, Management and Conservation
Demarco C. Abreu and Savannah L. de Borbón
In series: Environmental Science, Engineering and Technology
Marshes, both tidal and non-tidal, are productive and complex ecosystems. The water in these systems ranges from fresh, to brackish, to saline as one moves from inland to coastal areas. Marshes are an interface between upland and aquatic habitats. In this book, the authors present current research in the study of the ecology, management and conservation of marshes including the climatic roles of marshes; the mesocosm marsh ecology of two southwestern Spanish estuaries;
factors conditioning the vegetation in the salt marshes of the Atlantic Coast of the Iberian Peninsula; and nutrient cycling in salt marshes.

**Multiple-Use Management of Protected Natural Areas: Integrating Conservation, Restoration and Recreation in the Spanish Basque Country**
Ashley DuVal, Mark S. Ashton, Tamara Muruetagoiena (Yale School of Forestry and Environmental Studies, New York, NY)
In series: Environmental Remediation Technologies, Regulations and Safety
In series: Environmental Research Advances
Case: 978-1-61942-328-2. $75.00.  
This book takes a multidisciplinary approach to integrative protected area management, drawing from perspectives in policy science, environmental science, political ecology and silviculture to address the historical, socio-political, economic and biophysical origins of contemporary conflicts in resource use and management. While this case study reflects the sets of conditions specific to Aiako Harria, it nonetheless provides broadly applicable lessons and methodological approaches in sustainable multiple-use protected area management, particularly in Europe.

**Mycorrhizal Symbiosis in Mediterranean Environment, The: Importance in Ecosystem Stability and in Soil Rehabilitation Strategies**
Mohamed Hafidi (University Cadi Ayyad, Marrakech, Morocco) and Robin Dupponnois (Institut de Recherche pour le Développement, Montpellier, France)
In series: Environmental Science, Engineering and Technology
Case: 978-1-62081-278-5. $150.00.  
The role of mycorrhizal symbiosis has been usually related to its impact on the plant mineral nutrition and consequently on the development of the plant species. However, it has been demonstrated that this symbiotic process has a key role in ecosystem stability. Numerous recent studies have outlined the major role of mycorrhizal symbioses in ecosystem functioning and the necessity to manage this soil microbial component in order ensure the productivity of plant ecosystems and to maintain plant diversity. The main objectives of this book are to present recent results showing the expected benefits in managing the mycorrhizal symbiosis in order to ensure the conservation of endemic plant diversity and to rehabilitate degraded soils in Mediterranean areas.

**Non-Conventional Textile Waste Water Treatment**
Ahmed El Nemr (National Institute of Oceanography and Fisheries, Alexandria, Egypt)
In series: Pollution Science, Technology and Abatement
Case: 978-1-62100-079-2. $165.00.  
Environmental pollution is known as any deterioration in the physical, chemical and biological quality of the environment. The pollutants fall under the broad category of xenobiotic compounds and are released into the environment by the actions of human and occur at concentrations higher than “natural levels”. Environmental pollution can be implied by any alternation in the surroundings. All types of environmental pollution may affect directly or indirectly the living organisms and particularly human health. The textile industry is amongst the major contributors to environmental pollution but it is very important for the nation's economy. This book provides the latest research on a non-conventional method effective in treatment of textile wastewater.

**Pharmaceuticals in the U.S. Water Supply**
Ed T. Blevins and Sherman E. Rush
In series: Environmental Remediation Technologies, Regulations and Safety
In series: Water Resource Planning, Development and Management
Case: 978-1-61942-408-1. $95.00.  
e-book: 978-1-61942-413-5. $95.00.  
In response to increasing information arising from the scientific community, the news media reported that pharmaceuticals have been detected in the drinking water of 24 major metropolitan areas across the United States. These reports raised concerns about the potential impact of these pharmaceuticals on human health and the environment. Pharmaceuticals are a particular concern because they are designed to interact with human or animal physiology. Much is known about the therapeutic uses of pharmaceuticals, but little is known about their potential risk to human health from long-term exposure through drinking water. This book examines the research reported in the detection of pharmaceuticals in the U.S. water supply.

**Water Utility Approaches and Responses to Climate Change Vulnerability**
James A. Williams and Caroline E. Jones
In series: Climate Change and its Causes, Effects and Prediction
In series: Water Resource Planning, Development and Management
Case: 978-1-61942-784-6. $95.00.  
e-book: 978-1-61942-814-0. $95.00.  
Climate change poses a variety of challenges for water management, and there is a need to develop methods for understanding and managing risk. While much has been written about the projected impacts of climate change at the continental or regional scale, scientists are quick to caution decision makers about using projections based on global circulation models (GCMs) for local decision making. This uncertainty about specific impacts on local systems has raised concern about the ability of water resource managers to plan for climate and hydrological changes at the local scale, and has spurred recent activity to develop methods for understanding vulnerabilities, including how to downscale climate models. This book examines and documents the steps taken by some of the leading utilities in an attempt to identify the emergent characteristics of water utility climate change vulnerability assessments.

**ECONOMICS**

**Manufacturing Trends in the United States**
Lucas G. Morán
In series: Economic Issues, Problems and Perspectives
In series: Manufacturing Technology Research
Case: 978-1-62100-583-4. $95.00.  
e-book: 978-1-62100-663-3. $95.00.
The health of the U.S. manufacturing sector has been a long-standing concern of Congress. Although Congress has established a wide variety of tax preferences, direct subsidies, import restraints and other federal programs with the goal of retaining or recapturing manufacturing jobs, only a small proportion of U.S. workers are now employed in factories. Meanwhile, U.S. factories have stepped up production of goods that require high technological sophistication but relatively little direct labor. Labor productivity in manufacturing, as measured by government data, has grown rapidly, suggesting that the manufacturing sector as a whole remains healthy. This book explores manufacturing trends in the United States with a focus on job creation in the manufacturing revival; the manufacturing extension partnership program; globalized supply chains and offshore outsourcing.

**EDUCATION**

**Computers in Education, Volume 1**
*Sergei Abramovich (School of Education and Professional Studies, SUNY University, Potsdam, NY)*
In series: *Computer Science, Technology and Applications*
Case: 978-1-62100-621-3. $140.00.
This two-volume collection of diverse international experiences and perspectives on the current use of computers in education is a joint effort of fifty-seven authors from sixteen countries. Most of the chapters describe current work of the authors on the use of computers in their respective areas of education. The first volume includes chapters describing history and future trends of educational computing, technological infrastructure of Brazilian public education, the use of e-textbooks by college students in the United States, online learning at the middle school level in Australia, theoretical aspects of knowledge sharing in technology-supported environments, the interplay between learning theories and technology, the integration of Web 2.0 tools in education, knowledge authoring in e-learning environments, application of technology to special education, and the use of computers in the teaching of physical education.

**Computers in Education, Volume 2**
*Sergei Abramovich (School of Education and Professional Studies, SUNY University, Potsdam, NY)*
In series: *Computer Science, Technology and Applications*
Case: 978-1-62100-623-7. $140.00.
e-book: 978-1-62100-635-0. $140.00.
This two-volume collection of diverse international experiences and perspectives on the current use of Horizons in Earth education is a joint effort of fifty-seven authors from sixteen countries. Most of the chapters describe current work of the authors on the use of computers in their respective areas of education. The material of this volume should be of interest to teacher educators in the areas of science, technology, engineering and mathematics (STEM) education involved in the use of computers as teaching tools; tertiary education faculty in STEM areas; curriculum developers; policy makers at different levels; and college students in STEM-related programs.

**Education Researcher Biographical Sketches and Research Summaries**
*Troy B. Stephens and Jon E. Duncan*
In series: *Education in a Competitive and Globalizing World*
2012.
Case: 978-1-62257-564-0. $150.00.
This new book compiles biographical sketches of top professionals in the field of education research, as well as research summaries from a number of different focuses in this important field.

**Educational Achievement: Teaching Strategies, Psychological Factors and Economic Impact**
*Manju Gowda and Anamika Khanderia*
In series: *Education in a Competitive and Globalizing World*
2013.
Case: 978-1-62257-779-8. $150.00.
In this book, the authors present current research in the study of the teaching strategies, psychological factors and economic impacts of educational achievement. Topics discussed in this compilation include the achievement gap between Hispanic and White students in Middle School; the academic achievement of immigrant adolescents; multicultural education and student attitudes; international comparisons of student achievement; childhood short stature and educational achievement; accountability ratings and beginning elementary school teachers; advanced placement courses and Asian student performance; and parental education and school enrollment in rural India.

**Elementary School Children's Spelling-Specific Self-Beliefs: Longitudinal Analyses of their Relations to Academic Achievement, School Attitudes, and Self-Esteem**
*Günter Faber (University of Hannover, Department of Educational Psychology, Hannover)*
In series: *Education in a Competitive and Globalizing World*
2012.
Case: 978-1-62257-006-5. $110.00.
e-book: 978-1-62257-069-0. $110.00.
This book presents a study that concerns itself with selected findings on the measurement of the spelling-specific self-concept, on the causal ordering between the spelling-specific self-concept and spelling achievement, on the relationships between the spelling-specific self-concept and causal attributions of dictation outcomes as well as on the relationships between the spelling-specific self-concept, spelling-specific test anxiety, and global self-esteem variables and on the relationships between the spelling self-concept and test anxiety, global self-esteem, and school attitude variables. Moreover, an empirical approach to further differentiate the spelling-specific self-concept and thus to analyze a more task-specific facet is documented. Altogether, these findings can provide strong evidence for a basic model of academic self-beliefs in the spelling domain.

**Empowering Scientific Literacy through Digital Literacy and Multiliteracies**
*Wan Ng (University of New South Wales, Sydney, Australia)*
In series: *Education in a Competitive and Globalizing World*
Case: 978-1-62100-768-5. $75.00.
We live in a society largely driven by science and technology. As more scientific and technological issues dominate public debates at national and international levels, it is important to ensure that our students
become global citizens who are scientifically literate. However, many students have poor attitudes and low engagement levels toward the learning of science. This book puts forward an argument that we should capitalise on the affordances that digital technologies offer in enabling better science learning, the general technological interest and knowledge of young people and the motivating influence of technology for learning, to foster the development of scientific literacy in students.

Environmental Education in a High School Biology Class: Knowing and Appreciating Nature
Dalva Maria Bianchini Bonotto (Instituto de Biociências, Universidade Estadual Paulista, UNESP Brazil)
In series: Education in a Competitive and Globalizing World
In series: Environmental Science, Engineering and Technology
2013.
Soft: 978-1-62257-738-5. $52.00.
e-book: 978-1-62257-746-0. $52.00.
The call for changes in the situation of environmental degradation that characterizes the contemporary world has come from diverse sectors of society, and education has an important role to play. To achieve this goal, educational efforts must contemplate the natural, as well as the cultural aspects of the environment. The theme can be addressed at the different levels of formal teaching, by adopting an interdisciplinary approach that addresses the aesthetic dimension of natural and man-made environments. The purpose of this book is to present the analysis of an intervention, developed in biology classes related to the environmental thematic focusing on ecological knowledge and aesthetic dimension of natural and man-made environments. The author analyzes the engagement and participation of high school students and some possibilities and limits for the development of such activities.

Evaluation in e-Learning
Y. Psaromiligkos, A. Spyridakos (Technological Educational Institute of Piraeus, Athens, Greece), S. Retalis (University of Piraeus, Athens, Greece)
In series: Advances in Operations Research
Edited by: Prof. Constantin Zopounidis (Technical University of Crete)
Case: 978-1-61942-942-0. $150.00.
One approach which is becoming very popular nowadays is to measure the effectiveness of e-Learning solutions via analysis of data gathered from authentic educational environments. This constitutes the ultimate goal of the underlying book. More specifically, this book discusses and presents several evaluation approaches as they have been applied in real practice. Criticism, best practices, and lessons learned from the application of these approaches are discussed. The book includes innovative contributions and real world evaluation studies in authentic learning environments by experienced researchers in e-Learning.

From PCK to TPACK: Research and Development
Jang Syh-Jong (Graduate School of Education, Chung-Yuan Christian University, Chung-Li, Taiwan)
In series: Education in a Competitive and Globalizing World
Radical experiment in dialogic pedagogy in higher education and its Centauric failure: Chronotopic analysis

Eugene Matusov (School of Education, University of Delaware, Newark, DE, USA)

In series: Education in a Competitive and Globalizing World

2012.
Case: 978-1-62257-362-2. $150.00.

This book analyzes a unique pedagogical experiment in Higher Education to explore innovative ways to teach a graduate seminar guided by Dialogic Pedagogy. There have been many books describing successful pedagogical innovations in higher education and beyond. In contrast, this book describes a certain type of pedagogical failure of the innovation that is arguably common in practice but rarely reported. This pedagogical failure is called a “Centauric Failure”. Like the Centaur, who embodied two contrasting natures of half-human and half-beast, this pedagogical experiment was guided by humanistic and dialogic values, but also it caused pains to the participants. The in-depth analysis of events has pushed the boundaries of Dialogic Pedagogy based on the framework developed by Russian philosopher Mikhail Bakhtin toward the notion of agency in education.

Special Education Practices: Personal Narratives of African American Scholars, Educators, and Related Professionals

Festus E. Obiakor, Ramel Smith (University of Wisconsin-Milwaukee, WI)

In series: Education in a Competitive and Globalizing World

Case: 978-1-62081-204-4. $150.00.

Special education is a vibrant, complex, and controversial field that continues to garner widespread attention from policy makers, researchers, practitioners, and educators. It is a field whose primary goal is to provide an appropriate education for students with special needs, a disproportionate number of whom are from culturally and linguistically diverse (CLD) backgrounds. In this book the authors bring together critical perspectives and historical viewpoints on special education by a group of distinguished and well-recognized African American scholars, educators, and related professionals. These authors raise important questions, challenge assumptions about traditions and conventions in special education, and provide insights into how to reach and teach underserved African American children and youth in special education.

Strategies for Effective Science, Technology, Engineering and Math (STEM) Education

Valerian I. Bell and Shioban E. Gonzalez

In series: Education in a Competitive and Globalizing World

Case: 978-1-62081-523-6. $135.00.
e-book: 978-1-62081-525-0. $135.00.

Economic projections point to a need for approximately 1 million more STEM professionals than the U.S. will produce at the current rate over the next decade if the country is to retain its historical preeminence in science and technology. To meet this goal, the United States will need to increase the number of students who receive undergraduate STEM degrees by about 34% annually over current rates. This book provides an overview for strategies to improve STEM education during the first two years of college, thereby being responsive to both the challenges and the opportunities that this crucial stage in the STEM education pathway presents.

Successful Science Education Practices: Exploring What, Why and How They Worked

Christine Redman (Science and technology Education Teaching and research Melbourne Graduate School of Education, University of Melbourne, 3010 Victoria, Australia)

In series: Education in a Competitive and Globalizing World

2012.
Case: 978-1-62257-387-5. $175.00.

This book has been designed to provide a conduit for the pre-service and beginning teacher of science to access contemporary educational research. The chapters offer researched forms of classroom practices that are also easy to transfer into classrooms. The teaching of chemistry, biology, astronomy and physics, and Primary Science teaching, are discussed with a focus on new technology tools, as well as important topics for the new teacher of science. This includes providing different types of feedback; the value of developing a supportive network of colleagues; planning for science teaching effectively; the types and contribution of models in science teaching and how they contribute to thinking, great ways to utilize demonstrations; and challenging the learners’ alternative conceptions. New technologies are pervasive in many chapters, and are used to enrich and deepen the learning experiences possible for learners.

University Teaching and Faculty Development Research Compendium

Luis M. Villar-Angulo, Olga M. Alegre-de la Rosa (University of Sevilla, Spain)

In series: Professions - Training, Education and Demographics

2012.
Case: 978-1-62257-516-9. $150.00.

This book is concerned with teaching for students at a university level and faculty development. This book will look at how teaching and research can be brought into a closer relationship. This book welcomes research-based articles on the practice of higher education, specifically those manuscripts that span a wide range of teaching and faculty development issues and trends occurring internationally.

What You Need to Know: An Insider’s Look at Graduate Studies

Jennifer Bonds-Raacke and John D. Raacke

In series: Education in a Competitive and Globalizing World

Soft: 978-1-61324-451-7. $47.00.

This book is designed for graduate students and provides helpful insights on what they can expect in the upcoming years and gives suggestions for how to handle various situations. This book is not designed to provide the reader with study skills or content knowledge in their area, however, the goal is to share information with the reader about graduate studies that few people know.
ENERGY

Advances in Energy Research: Distributed Generations Systems Integrating Renewable Energy Resources

Nicu Bizon (University of Pitesti, Romania)
In series: Energy Science, Engineering and Technology
Case: 978-1-61200-991-0. $195.00.
In this new book, systems and technologies of distributed generation (DG) for electricity generation or Combined Heat and Power (CHP) are discussed. DG generally refers to micro and small-scale (typically 1 kW – 50 MW) electric power generators that produce electricity at a site close to customers or that are tied to an electric distribution system. Distributed generators include, but are not limited to synchronous generators, induction generators, reciprocating engines, micro turbines, combustion gas turbines, fuel cells, solar photovoltaic panels and wind turbines.

Advances in Energy Research: Energy and Power Engineering

Nicu Bizon (University of Pitesti, Arges, Romania) and Naser Mahdavi Tabatabaei (Seraj Higher Education Institute, Tabriz, Iran)
In series: Energy Science, Engineering and Technology
Electric power engineering occupies the most dominant role in provision of the population with energy. The advantages of electric power and energy systems are universal and easily being converted into various other types of energy, easiness and cheapness of its transportation, accessibility for massive amounts of end users and practically capable to actuate directly all existing technical means. The book chapters and materials are very efficient in theoretical and application issues and are highly recommended for studying and considering in educational and research fields.

Advances in Energy Research. Volume 10
Morena J. Acosta
In series: Advances in Energy Research
Case: 978-1-62100-838-5. $150.00.
e-book: 978-1-62100-888-0. $150.00.
This book presents a comprehensive review of energy research studies from authors across the globe, including recent research in solar ground radiation in greenhouses; the energy outlook in Malaysia; biodiesel production using heterogeneous catalysts; digital control system stimulation for nuclear reactor neutronic parameters; strategies to increase the viability of power generation using renewable energy sources; the current state of CPV in Spain as an alternative for producing solar electricity and evaluation of a new combined power generation system under CO2 emission constraints.

Advances in Energy Research. Volume 11
Morena J. Acosta
In series: Advances in Energy Research
Case: 978-1-61942-825-6. $150.00.
This book presents a comprehensive review of energy research studies from authors across the globe, including recent research in renewable energy, emerging energy technologies and sustainable development; the production of biofuels in the Italian energy system; hydrogen production in the dark fermentation process; price effects of biofuel tax credits and blending mandates; wind power as an economically viable and environmentally sustainable source of renewable energy; and using aquatic plants as biofuel sources.

Advances in Energy Research. Volume 12
Morena J. Acosta
In series: Advances in Energy Research
Case: 978-1-62257-621-0. $150.00.
This book presents a comprehensive review of energy research studies from authors across the globe, including recent research in direct expansion ground source heat pumps for better heating and cooling in new buildings; potential renewable energy technologies, efficient energy systems, and energy savings techniques to reduce climate changes; sustainable energy development and the environment; nonlinear finite element analysis of tubular expansion in oil wells; and super long conductive channels for energy delivery.

Advances in Energy Research. Volume 9
Morena J. Acosta (Editor)
In series: Advances in Energy Research
Case: 978-1-61470-485-0. $140.00.
This book presents a comprehensive review of energy research studies from authors across the globe, including recent research in the development of green energy saving mechanisms; seasonal thermal energy storage of underground heat; free carbon technologies in developing nations; energy efficiency in buildings; standby losses in power demand in electricity distribution systems with high penetration of small electronic devices; solar water heating; energy consumption and economic growth in Pakistan and biodiesel production from Langmuir-Blodgett lipase engineering.

Alternative Fuels and Advanced Technology Vehicles: Incentives and Considerations
Thomas Huber and Jack Spera
In series: Energy Science, Engineering and Technology
In series: Energy Policies, Politics and Prices
2012.
Case: 978-1-62257-556-5. $110.00.
A wide array of federal incentives support the development and deployment of alternatives to conventional fuels and engines in transportation. These incentives include tax deductions and credits for vehicle purchases and the installation of refueling systems, federal grants for conversion of older vehicles to new technologies, mandates for the use of biofuels, and incentives for manufacturers to produce alternative vehicles. Many of the policy choices presented for alternative fuel and advanced vehicle technologies originated as a response to the nation's interest in reducing petroleum imports. This book examines the current array of incentives, which do not reflect a single, comprehensive strategy, but rather an aggregative approach to a range of discreet public policy issues, including improving environmental quality, expanding domestic manufacturing, and promoting agriculture and rural developments.

Bakken Formation as an Oil Resource, The
Xavier Frye and Anthony Odom
In series: Energy Science, Engineering and Technology
In series: Energy Policies, Politics and Prices
Soft: 978-1-61942-498-2. $47.00.
The Bakken Formation is a large unconventional petroleum and natural gas resource underlying parts of North Dakota, Montana, and the Canadian provinces of Saskatchewan and Manitoba. The Bakken began attracting interest in the mid-1970s, but well drilling and completion techniques at the time made it uneconomic to develop. The key to its development lies now in technologically advanced horizontal drilling and hydraulic fracturing methods. This combination of drilling and completion technology substantially boosts a well's production, improving its economic viability. This book examines how high oil prices and low natural gas prices have prompted shale gas producers to turn to shale oil and the Bakken Formation has emerged as a major shale oil resource.

Battle of the Bulb: Lamps, Lumens and the State of the U.S. Lighting Market

Jasper A. Bennette and Alicia M. White
In series: Energy Policies, Politics and Prices
In series: Business Issues, Competition and Entrepreneurship
Case: 978-1-62081-491-8. $110.00.
More than 4 billion incandescent light bulbs are in use in the United States. The basic technology in these bulbs has not changed substantially in the past 125 years, despite the fact that they convert less than 10% of their energy input into light. Improving light bulb performance can reduce overall U.S. energy use. About 20% of electricity consumed in the United States is used for lighting homes, offices, stores, factories, and outdoor spaces. Lighting represents about 14% of residential electricity use. This book provides an overview of lighting industry trends; with a focus on the life-cycle and energy consumption of incandescent, compact fluorescent and LED lamps.

Biofuel Use in the U.S.: Impact and Challenges

Stefania Alonso and Maria Regina Ortega
In series: Energy Science, Engineering and Technology
Case: 978-1-62100-441-7. $95.00.
e-book: 978-1-62100-488-2. $95.00.
Achieving greater energy security by reducing dependence on foreign petroleum is a goal of U.S. energy policy. The Energy Independence and Security Act of 2007 (EISA) calls for a Renewable Fuel Standard (RFS-2), which mandates that the United States increase the volume of biofuel that is blended into transportation fuel from 9 billion gallons in 2008 to 36 billion gallons by 2022. Long-term technological advances are needed to meet this mandate. This book examines how meeting the RFS-2 would affect various key components of the U.S. economy. If biofuel production advances with cost-reducing technology and petroleum prices continue to rise as projected, the RFS-2 could provide economy-wide benefits. However, the actual level of benefits to the U.S. economy depends importantly on future oil prices and whether tax credits are retained in 2022.

Biomass for Biopower: Feedstock Supply Assessments

Michael L. Ibarra and Shirley G. Polk
In series: Renewable Energy: Research, Development and Policies
In series: Energy Science, Engineering and Technology
Case: 978-1-61942-575-0. $185.00.
Biopower—a form of renewable energy—is the generation of electric power from biomass feedstocks. Biopower, which comprised about 1% of electricity generation in 2008, may reduce greenhouse gas emissions, provide energy security, and promote economic development. Federal policymakers are supporting biopower through feedstock supply analyses and biopower technology assessments.

Biomass Resource Allocation: Alternative Use Models

Ryan G. Daly and Jon Crociata
In series: Energy Science, Engineering and Technology
In series: Energy Policies, Politics and Prices
2012.
Case: 978-1-62257-529-9. $110.00.
The Biomass Scenario Model (BSM) is a system dynamics model developed by the U.S. Department of Energy (DOE) as a tool to better understand the interaction of complex policies and their potential effects on the biofuel industry in the United States. This book provides a holistic understanding of the dynamics surrounding the allocation of biomass among uses that include traditional use, wood pellet exports, bio-based products and bioproducts, biopower and biofuels. Also discussed is a methodology for modeling tradeoffs between alternative uses of scarce biomass energy resources using a linear program (LP) designed to estimate concurrent biomass allocations to the transportation and electricity market sectors. The LP model is called the Biomass Allocation Model. Also discussed are the biomass allocation results of this methodology and the ethanol production and carbon mitigating potential of biomass allocations along with relevant sensitivities to significant model parameters.

Canadian Oil Sands, Greenhouse Gases, and the Keystone XL Pipeline

Travis J. Carlson and Sharon Harper
In series: Energy Science, Engineering and Technology
In series: Energy Policies, Politics and Prices
2012.
Soft: 978-1-62257-402-5. $52.00.
After discussing the basic methodology of life-cycle assessments and examining the choice of boundaries, design features, and input assumptions, this book compares several of the publicly available assessments of life-cycle emissions data for Canadian oil sands crudes against each other and against those of other global reference crudes. As congressional concern over the environmental impacts of Canadian oil sands production may encompass both a broad understanding of the global resource as well as a specific assessment of the proposed Keystone XL pipeline, the book surveys both the general scientific literature as well as the individual findings of the State Department's Keystone XL Project Environmental Impact Statement. As lifecycle assessments have become an influential, albeit developing, methodology for collecting, analyzing, and comparing GHG emissions, this book concludes with a discussion of some tools for policymakers who are interested in using these assessments to investigate the potential impacts of U.S. energy policy choices on the environment.

Carbon Capture and Sequestration: Development Efforts and Outlook

Anderson Carter Mitchell and Ross Freeman
In series: Energy Science, Engineering and Technology
In series: Climate Change and its Causes, Effects and Prediction
2013.
Soft: 978-1-62257-810-8. $52.00.
Carbon capture and sequestration (or storage), known as CCS, has attracted congressional interest as a measure for mitigating global climate change because large amounts of carbon dioxide (CO2) emitted from fossil fuel use in the United States are potentially available to be captured and stored underground and prevented from reaching the atmosphere. Large, industrial sources of CO2, such as electricity-generating plants, are likely candidates for CCS because they are predominantly stationary, single-point sources. Electricity generation contributes over 40% of U.S. CO2 emissions from fossil fuels. Currently, U.S. power plants do not capture large volumes of CO2 for CCS. This book provides an overview of what CCS is, how it is supposed to work, why it has gained the interest and support of some members of Congress, and what some of the challenges are to its implementation and deployment across the United States.

**Carbon Capture Beyond 2020: Basic Research Needs**  
*Hal J. Compton and Brenda I. Raymond*  
*In series: Energy Science, Engineering and Technology*  
*2012. 212 pp.*  
*Case: 978-1-61942-510-1. $185.00. e-book: 978-1-61942-515-6. $185.00.*  
*The problem of thermodynamically efficient and scalable carbon capture stands as one of the greatest challenges for modern energy researchers. The vast majority of U.S. and global energy use derives from fossil fuels, the combustion of which results in the emission of carbon dioxide into the atmosphere. These anthropogenic emissions are now altering the climate. Although many alternatives to combustion are being considered, the fact is that combustion will remain a principal component of the global energy system for decades to come. This book explores today’s carbon capture technologies which are expensive and cumbersome and energy intensive. If scientists could develop practical and cost-effective methods to capture carbon, those methods could alter the future of the largest industry in the world and provide a technical solution to one of the most vexing problems facing humanity.*

**Clean Energy: Benefits and Lessons for States**  
*Gary T. Page and Archie Weber*  
*In series: Energy Science, Engineering and Technology*  
*2012. 315 pp.*  
*This book organizes and presents a comprehensive review of the multiple benefits of clean energy, together with an analytical framework that states can use to assess those benefits during the development and implementation of clean energy policies and programs. State clean energy initiatives can produce significant savings in fuel and electricity costs, the environment and public health and the economy.*

**Concentrating Solar Power: Data and Directions for an Emerging Solar Technology**  
*Burt J. Alexander and Ted F. Richardson*  
*In series: Energy Science, Engineering and Technology*  
*2012. 267 pp.*  
*As the world looks for low-carbon sources of energy, solar power stands out as the single most abundant energy resource on Earth. This book focuses on the capacity value of concentrating solar power plants and presents detailed information about solar resource data and the resulting data products needed for each stage of the concentrating solar power project, from initial site selection to systems operations. It also examines the degree to which concentrating solar power may be complimentary to solar photovoltaic via its use of thermal energy storage.*

**Emerging Advanced Energy Storage Systems: Dynamic Modeling, Control and Simulation**  
*Marcelo Gustavo Molina (CONICET, Instituto de Energía Eléctrica, Universidad Nacional de San Juan, San Juan, Argentina)*  
*In series: Energy Science, Engineering and Technology*  
*In series: Electrical Engineering Developments*  
*Although presently utility power systems operate successfully without energy storage, cost-effective ways of storing electrical energy can help make the grid more efficient and reliable. Electric energy storage systems (ESSs) can be used to store excess electricity generated during off-peak periods for discharging it at peak hours and thus substituting the generation reserve when it is more required. This book aims to provide major insights and projections regarding the future of emerging energy storage technologies in utility power systems around the world. This book provides both the comprehensive analysis and extensive data of leading emerging ESS applications. It includes a broad analysis of the new market for energy storage technologies applied in the global utility power sector.*

**Energy Efficiency: Methods, Limitations and Challenges**  
*Emmanuel F. Santos Cavalcanti and Marcos Ribeiro Barbosa*  
*In series: Energy Science, Engineering and Technology*  
*In series: Energy Policies, Politics and Prices*  
*2012. 251 pp.*  
*Case: 978-1-62081-817-6. $150.00. e-book: 978-1-62081-831-2. $150.00.*  
*In this book, the authors present current research from across the globe in the study of the different methods, limitations and challenges in energy efficiency. Topics discussed in this compilation include issues of information and communication technology in energy efficient urban communities; energy efficient appliances, road vehicles, and behaviors; hybrid models for energy efficiency in building services; methods for determination of energy efficiency in electric arc furnaces; energy assessments using pollution prevention tools; long term energy and affordability implications of residential local decisions; and challenges and opportunities for developing a framework for achieving high energy efficiency in new housing.*

**Energy Power in Latin America and the Caribbean: The current situation and the future role of conventional energy sources for the generation of electricity**  
*Jorge Morales Pedraza (Consultant on International Affairs, Vienna, Austria)*  
*In series: Latin American Political, Economic, and Security Issues*  
*In series: Energy Science, Engineering and Technology*  
*The preparation of a national energy policy in which priorities and preferences are identified should be one of the main responsibilities of
national authorities in charge of the energy sector. It is important that every country's energy mix involves a range of national preferences and priorities reflected in national policies and strategies to be applied in order to satisfy the foresee increase in the electricity demand. These policies and strategies should represent a compromise between expected energy shortages, environmental quality, energy security, energy cost, public attitudes, safety and security, available skills, as well as production and service capabilities. Relevant national authorities must take all of these elements into account when formulating an energy policy and strategy.

Energy Projects in Federal Jurisdictions: Laws and Considerations

*Michael R. Brody*

In series: *Energy Policies, Politics and Prices*

In series: *Laws and Legislation*

2012. 87 pp.

Soft: 978-1-62100-922-1. $47.00.
e-book: 978-1-62100-956-6. $47.00.

Technological advancement, financial incentives, and policy concerns have driven a global expansion in the development of renewable energy resources. Recent concerns over energy supply and pricing have led some to look increasingly to federal lands as a potential energy source. Wind energy, in particular, is now often cited as the fastest-growing commercial energy source in the world. Currently, all U.S. wind energy facilities are based on land. However, multiple offshore projects have been proposed and are at various stages of the federal permitting process. This book discusses various energy projects in federal jurisdictions including wind energy and offshore oil and gas development.

Energy Storage

*Marc A. Rosen (University of Ontario Institute of Technology, Ontario, Canada)*

In series: *Energy Science, Engineering and Technology, Regulations and Safety*


Case: 978-1-61324-708-2. $325.00.
e-book: 978-1-61324-814-0. $325.00.

Energy storage can be utilized in a wide range of applications. The main types of applications covered by the chapters in the present volume include utility and other electrical power systems, conventional and renewable power generation, renewable energy sources, heat pumps, building heating and cooling and district energy systems. The ability of energy storage to facilitate the efficient, effective and economic operation of renewable energy systems is reinforced in this volume, with chapters focusing on using energy storage to improve solar power plants and other renewable energy applications. This book addresses both existing and potential future energy storage technologies and systems.

Energy Storage Technologies for Power Grids and Electric Transportation

*Russell M. Ford and Rebecca M. Burns*

In series: *Energy Policies, Politics and Prices*

In series: *Energy Science, Engineering and Technology*

2012.

Case: 978-1-62257-351-6. $195.00.
e-book: 978-1-62257-353-0. $195.00.

Energy storage technology has great potential to improve electric power grids, to enable growth in renewable electricity generation, and to provide alternatives to oil-derived fuels in the nation's transportation sector. In the electric power system, the promise of this technology lies in its potential to increase grid efficiency and reliability, optimizing power flows and supporting variable power supplies from wind and solar generation. In transportation, vehicles powered by batteries or other electric technologies have the potential to displace vehicles burning gasoline and diesel fuel, reducing associated emissions and demand for oil. This book summarizes the current state of knowledge regarding energy storage technologies for both electric power grid and electric vehicle applications. It also addresses the significant policy, market, and other non-technical factors that may impede storage adoption, and considers eight major categories of storage technology; pumped hydro, compressed air, batteries, capacitors, superconducting magnetic energy storage, flywheels, thermal storage, and hydrogen.

Energy, Environment and Economics Research Compendium

*Riad Benmir (Univ. Henri Poincaré)*

In series: *Energy Science, Engineering and Technology*

In series: *Global Economic Studies*

2013.

Case: 978-1-62257-801-6. $150.00.

This book publishes articles from the International Journal of Energy, Environment, and Economics. It presents research papers that shed light on the interaction between the utilization of energy and the environment, as well as the economic aspects involved with this utilization. This book is a vehicle for an international exchange and dissemination of ideas in the multidisciplinary field of energy-environment-economics between research scientists, engineers, economists, policy makers, and others concerned about these issues. The emphasis will be placed on original work, either in the area of scientific or engineering development, or in the area of technological, environmental, economic, or social feasibility. Shorter communications are also invited. This book will carry reviews on important issues, which may be invited by the Editors or submitted in the normal way.

European Energy Security: Options and Challenges

*Radcliff E. Phillips and Jamison B. Cook*

In series: *Energy Policies, Politics and Prices*

2012.

Soft: 978-1-62081-814-5. $52.00.
e-book: 978-1-62081-825-1. $52.00.

Europe as a major energy consumer faces a number of challenges when addressing future energy needs. Among these challenges are a rapidly rising global demand and competition for energy resources from emerging economies such as China and India, persistent instability in energy producing regions such as the Middle East, a fragmented internal European energy market, and a growing need to shift fuels in order to address climate change policy. As a result, energy supply security has become a key concern for European nations and the European Union (EU). This book focuses on potential approaches that Europe might employ to diversify its sources of natural gas supply, and Russia's role, as well as identifying some of the issues hindering efforts to develop alternative suppliers of natural gas.

Fossil Fuels: Competition and Elasticities

*Charles M. Wright and Patricia O. Richardson*

In series: *Energy Policies, Politics and Prices*

2013.

Case: 978-1-62257-713-2. $110.00.
Energy supplies and prices are major economic factors in the United States, and energy markets are volatile and unpredictable. Thus, energy policy has been a recurring issue for Congress since the first major crisis in the 1970s. As an aid in policy making, this book presents a current and historical view of the supply and consumption of various forms of energy. This book analyzes the competition between coal, natural gas and petroleum used for electricity generation by estimating what is referred to by economists as the elasticity of substitution among the fuels.

Further Explorations in the Energy-Water Nexus
Diane A. Hughes and Brian F. Smith
In series: Energy Science, Engineering and Technology
Case: 978-1-62081-318-8. $110.00.
e-book: 978-1-62081-330-0. $110.00.
The exploration for and production of oil and gas to meet our nation's energy needs also results in the production of large quantities of water as a byproduct. This water, which is produced from wells during exploration and production, is known as "produced water." Because produced water may contain a variety of contaminants, such as salts and minerals, it is often considered to be a waste stream that oil and gas producers must appropriately manage and treat before this water can be disposed of. If it is not appropriately managed or treated, the contaminants present in produced water discharged from oil and gas operations may threaten human health and the environment. This book explores the inextricable link between energy production and water with a focus on what is known about the volume and quality of produced water from oil and gas production; what practices are generally used to manage and treat produced water; and how the management of produced water is regulated at the federal level and in selected states.

Geothermal Energy, Technology and Geology
Jianwen Yang (Department of Earth Sciences
University of Windsor Windsor, Ontario, Canada)
In series: Earth Sciences in the 21st Century
Case: 978-1-61942-765-5. $140.00.
Geothermal energy is reliable, sustainable and environmentally friendly with less greenhouse emission, and therefore is drawing increasing attention recently due to its role in serving as a complement to fossil fuels and in mitigating global warming. This book presents a diversity of topical case studies in geothermal energy, technology and geology. The collection of topics aims to present recent advances in research and application of geothermal energy systems, including ground source heat pump systems and the environmental pollution control; geological occurrence of the thermal aquifers in northeastern Slovenia; relationships between fracture zones, flow pathways and mineral precipitation corresponding to an enhanced geothermal system in France; and geological and tectonic framework favoring the occurrence of geothermal systems in Western Anatolia, Turkey.

Household Energy: Economics, Consumption and Efficiency
Bartoli Mendez and Josiah Pena
In series: Energy Science, Engineering and Technology
Case: 978-1-61470-503-1. $150.00.
This book presents topical research in the study of the economics, consumption and efficiency of household energy. Topics discussed include renovation solutions for improving the energy efficiency of existing buildings; features and technology of the zero-energy home; traveler response to the gas price spike; the economic impacts of energy taxes versus household-level emissions caps; promoting sustainable development through integrated wood stove technology, aquaculture; and the contribution of social and environmental psychology for understanding and promoting household energy conservation.

Hydraulic Fracturing and Shale Gas Production:
Issues, Proposals and Recommendations
Spencer Ferguson and Matthew T. Gilbert
In series: Energy Policies, Politics and Prices
Case: 978-1-62257-673-9. $110.00.
Hydraulic fracturing is a technique used to free oil and natural gas trapped underground in low-permeability rock formations by injecting a fluid under high pressure in order to crack the formations. The composition of a fracturing fluid varies with the nature of the formation, but typically contains mostly water; a proppant to keep the fractures open, such as sand; and a small percentage of chemical additives. Some of these additives may be hazardous to health and the environment. The Shale Gas Production Subcommittee of the Secretary of Energy Advisory Board (SEAB) has recommended public disclosure, on a well-by-well basis, of all the chemical ingredients added to fracturing fluids, with some protection for trade secrets. This book provides an overview of current and proposed laws and regulations at the state and federal levels that require the disclosure of the chemicals added to the fluid used in hydraulic fracturing.

Hydrogen Production: Prospects and Processes
Damon Robert Honnery and Patrick Moriarty
(Monash University, Victoria, Australia)
In series: Energy Science, Engineering and Technology
Case: 978-1-62100-246-8. $215.00.
As many of the authors in this book note, the energy available in the hydrogen currently produced around the world is relatively small when compared to the global primary energy use. Such comparisons however yield a poor estimate of hydrogen’s importance as we undergo the necessary transition towards low carbon intensity energy generation systems. There are many possible scenarios for future global supply of energy. Production of hydrogen is of vital importance if we wish to secure reliable supplies of low carbon energy. This book is about the methods which can be used to produce the hydrogen that is needed. The methods presented range from those which seek to further develop existing technologies through refinement of the catalysts used, to new methods relying on direct use of sunlight or microorganisms. The material presented ranges from topic reviews to experimental studies, many of which are at the forefront of their respective areas.

Hydropower and Energy Potential at Non-Powered Dams
Kevin F. Anderson and Sandra A. Collins
In series: Renewable Energy: Research, Development
and Policies
Soft: 978-1-62257-711-8. $52.00.
e-book: 978-1-62257-712-5. $52.00.
The United States has produced clean, renewable electricity from hydropower for more than 100 years, but hydropower-producing facilities represent only a fraction of the infrastructure development that has taken place on the nation’s waterways. In contrast to the roughly 2,500 dams, the United States has more than 80,000 non-powered dams (NPDs)—dams that do not produce electricity—providing a variety of services ranging from water supply to inland navigation. Importantly, many of the monetary costs and environmental impacts of dam construction have already been incurred at NPDs, so adding power to the existing dam structure can often be achieved at lower cost, with less risk, and in a shorter timeframe than development requiring new dam construction. This book discusses hydropower generation, government involvement at federal and nonfederal levels and the energy potential at non-powered dams.

Innovations in Energy: Efficient Technologies for Buildings
David I. Matthews
Case: 978-1-61761-976-2. $95.00.
e-book: 978-1-61942-574-3. $95.00.

Today’s buildings consume more energy than any other sector of the U.S. economy, including transportation and industry. The Energy Information Administration (EIA) estimates that energy consumption in buildings will exceed 50 quads in the next two decades. Investment in energy efficiency research and development (R&D) within the buildings sector could significantly reduce energy consumption. This book discusses the building technologies program, as well as technologies and products supported by them.

Ionizing Radiation: Applications, Sources and Biological Effects
Eduard Belotserkovsky and Ziven Ostaltsov
Case: 978-1-62257-343-1. $150.00.

Ionizing radiation is radiation composed of particles that individually can liberate an electron from an atom or molecule, producing ions, which are atoms or molecules with a net electric charge. These tend to be especially chemically reactive, and the reactivity produces the high biological damage caused per unit of energy of ionizing radiation. This new book examines the applications, sources and biological effects of ionizing radiation with a focus on the analytical methods for the identification of irradiated foods; protein kinases as fundamental participants in the response to DNA damage from ionizing radiation; radiative defects in nanocrystals as compared with those in bulk crystals; mechanical and optical properties of ionic crystals; mtDNA as a marker of radiation damage; antioxidant prophylaxis of radiation stress; and dosimetry characterization of a cobalt-60 y-irradiation facility for the radiation sterilization of insects.

Isochoric Heat Capacity of Fluids and Fluid Mixtures in the Critical and Supercritical Regions: Experiment and Theory
Ilmutdin M. Abdulagatov and Gennadii V. Stepanov (Geothermal Research Inst. of the Russian Academy of Sciences, National Institute of Standards and Technology, USA) Aziz I. Abdulagatov (Colorado State University, Colorado, USA)
Soft: 978-1-61470-559-8. $165.00.
e-book: 978-1-61470-667-0. $47.00.

All available sources of data for the specific isochoric heat capacity of technically important fluids and fluid mixtures have been collected and evaluated in this book. Results of critical analyses of the uncertainty of each data source, and comparisons with other sources are presented. All experimental data are compared with available reference fundamental and crossover equations of state. Special interest has been focused on the description of the isochoric heat capacity behavior along the coexistence curve, critical and supercritical regions. This book also includes a discussion of the thermodynamic background and basic thermodynamic relations connected with isochoric heat capacity as thermodynamic quantity.

Isotopes and Neutrons: Select Assessments of National Science Programs
Jordan J. Owens and Denise L. Gordon
In series: Energy Science, Engineering and Technology 2012.
Case: 978-1-62257-608-1. $52.00.

The Department of Energy is the only domestic supplier for many of the over 300 different isotopes it sells that are critical to medical, commercial, research, and national security applications. Previous shortages of some isotopes, such as helium-3, an isotope used to detect radiation at seaports and border crossings, highlight the importance of managing supplies of and demand for critical isotopes. Additionally, the U.S. neutron science effort continues to be world-class, with searches for the neutron electric dipole moment and measurements of the neutron lifetime, radiative decay, beta decay correlation coefficients, hadronic parity violation, and interferometry. This book provides an overview of select assessments of national science programs relating to both isotopes and neutrons.

Keystone XL Pipeline Project: Proposals and Considerations, The
Gregory B. Flynn and Debra Burnett
Case: 978-1-62081-221-1. $110.00.
e-book: 978-1-62081-228-0. $110.00.

TransCanada (a Canadian company) applied to the U.S. Department of State for a permit to cross the U.S.-Canada International border with the Keystone XL pipeline project in 2008. If constructed, the pipeline would carry crude oil produced from the oil sands regions of Alberta, Canada, to U.S. Gulf Coast refineries. Because the pipeline would connect the United States with a foreign country, it requires a Presidential Permit issued by the State Department. Issuance of a Presidential Permit requires a finding that the project would serve the “national interest.” This book describes the Keystone XL pipeline proposal and the process required for federal approval. It summarizes key arguments for and against the pipeline put forth by the pipeline’s developers, federal agencies, environmental groups, and other stakeholders. Also discussed is the constitutional basis for the State Department’s authority to issue a Presidential Permit, and opponents’ possible challenges to this authority.

LEDs and Solid-State Lighting: Energy Savings Potential and a Manufacturing Roadmap
Douglas H. Flores and Janet M. Anderson
Case: 978-1-62081-510-6. $110.00.
Light-emitting diodes (LEDs), a type of solid-state lighting (SSL), offers the electric lighting market a new and revolutionary light source that saves energy and improves light quality, performance, and service. Today, white-light LEDs are competing or are poised to compete successfully with conventional lighting sources across a variety of general illumination applications due to their ability to offer high quality and cost-effective performance. This book forecasts the energy savings potential of light emitting diode (LED), white-light sources compared to conventional white-light sources (i.e., incandescent, halogen, fluorescent, and high intensity discharge).

Nuclear Energy: U.S. Policies and Considerations

*Bernard L. Washington and Samuel F. Burris*

In series: *Energy Policies, Politics and Prices*

Case: 978-1-62081-000-2. $110.00.
The earthquake and resulting tsunami that severely damaged Japan’s Fukushima Daiichi nuclear power plant on March 11, 2011, raised questions in Congress about the accident’s possible implications for nuclear safety regulation, U.S. nuclear energy expansion, and radioactive waste policy. This book explores the current nuclear energy issues facing Congress which include federal incentives for new commercial reactors, power plant safety and regulation, radioactive waste management policy, research and development priorities, nuclear weapons proliferation, and security against terrorist attacks.

Nuclear Reactor History and Fuel Cycle Management Proposals

*Federico E. Diaz and Scott J. Hayes*

In series: *Energy Science, Engineering and Technology*

Case: 978-1-62081-001-9. $95.00.
A major concern about the global expansion of nuclear power is the potential spread of nuclear fuel cycle technology (particularly uranium enrichment and spent fuel processing) that could be used for nuclear weapons. Despite 30 years of effort to limit access to uranium enrichment, several undeterred states pursued clandestine nuclear programs, the A.Q. Khan black market network’s sales to Iran and Pakistan, and the construction of nuclear reactors by undeterred states. The book focuses on the proliferation of nuclear technologies and new technologies under development to capture that energy spanning: wave energy, tidal energy, marine current energy and ocean thermal energy conversion.

Offshore Oil and Gas Resources in the U.S., Cuba and Israel

*Ethan L. Conrad*

In series: *Energy Science, Engineering and Technology*

2012. 91 pp.
Soft: 978-1-62100-256-7. $47.00.
This book explores the prospects and processes of offshore oil and gas resources in the U.S., Cuba and Israel. Access to potential oil and gas resources under the U.S. Outer Continental Shelf continues to be controversial. The oil spill that occurred on April 20th, 2010, in the Gulf of Mexico brought increased attention to offshore drilling risks. Cuba is moving toward development of its offshore oil resources. In the future, the country has proven oil reserves of just 0.1 billion barrels, the U.S. Geological Survey estimates that offshore reserves in the North Cuba Basin could contain an additional 4.6 billion barrels of undiscovered technically recoverable crude oil. Israel has been dependent on energy imports since it became a nation in 1948, but recent offshore natural gas discoveries could change that and possibly make Israel an exporter of natural gas.

Offshore Wind Energy in the U.S.: Development Strategy and Resources

*Susan F. Zyga and Keith G. Callister*

In series: *Energy Science, Engineering and Technology*

Case: 978-1-62100-935-1. $125.00.
Offshore wind energy can help the nation reduce its greenhouse gas emissions, diversify its energy supply, provide cost-competitive electricity to key coastal regions, and stimulate revitalization of key sectors of the economy by investing in infrastructure and creating skilled jobs. Key challenges to the development and deployment of offshore wind technology include the relatively high cost of energy, technical challenges surrounding installation and grid interconnection, and permitting challenges related to the lack of site data and lack of
experience with permitting processes for projects in both federal and state waters. This book outlines the actions the U.S. Department of Energy will pursue to support the development of a world-class offshore wind industry and explores initiatives to promote and accelerate responsible commercial offshore wind development in the United States.

**Photovoltaic Costs in the U.S.: Analyses of Prices and Trends**

*Kelton J. Brooks and Peggy E. Edwards*

In series: *Energy Science, Engineering and Technology*

In series: *Energy Policies, Politics and Prices*

Case: 978-1-62081-543-4. $110.00.

Unlike traditional energy-production technologies that have ongoing consumables costs, nearly all of the costs of photovoltaic (PV) systems must be paid at the beginning. Reducing those initial capital costs is crucial to reducing the cost of solar electricity. In addition to module price, many factors contribute to the price of a PV system, including installation labor, power electronics, permitting and other regulatory costs, and in the case of ground-mount systems, site acquisition and preparation costs. This new book presents detailed, bottom-up 2010 benchmark system prices for residential and commercial rooftop systems and utility-scale ground-mount systems. The difference between the evolutionary projections and SunShot targets highlights the need for innovative system designs and installation methods to complement module-level cost reductions.

**Photovoltaics: Local Industry Development, Installed Cost Trends and Mineral Commodities Used**

*Eric Falchuk and Carol Woodlee*

In series: *Energy Science, Engineering and Technology*

In series: *Energy Policies, Politics and Prices*

Case: 978-1-61942-045-8. $125.00.

The U.S. photovoltaic (PV) industry is forecast to grow in both the short term and the long term. It represents a significant opportunity for economic development and job creation in communities throughout the United States. The PV industry is best regarded as two major sectors: PV products (a sector of businesses that manufacture raw materials, PV modules and other components) and PV energy generation (a sector of services centered on the purchase of components and the installation of PV systems). This book provides background on the PV industry with a focus on helping communities evaluate opportunities in the photovoltaic industry and develop a strategic approach appropriate to a specific community.

**Plug-In Electric Vehicles: A Primer for Consumers to Contractors**

*Daniel J. Foley and Gregory Reed*

In series: *Energy Science, Engineering and Technology*

In series: *Energy Policies, Politics and Prices*

2012.

More than 100 years ago, all-electric vehicles (EVs) held much of the U.S. car market, but their popularity waned as the interest in cars with internal combustion engines (ICEs) rose. The ICE vehicle had a longer driving range, petroleum fuel costs were declining, and the electric starter and manufacturing assembly line improved the affordability and usability of ICE vehicles. Gasoline and diesel-powered ICE vehicles dominated transportation in the 20th century. However, concerns about the environmental impacts of ICE vehicles sparked a plug-in electric vehicle (PEV) renaissance at the end of the 20th century. Today, PEVs are back and ready to compete with and complement the ubiquitous ICE technology. This book is a primer for consumers, electrical contractors, fleet managers, and public charging station hosts on plug-in vehicles.

**Plug-In Hybrid Electric Vehicles and Energy Use**

*Christopher B. Hummel*

In series: *Energy Science, Engineering and Technology*

Case: 978-1-61470-682-3. $185.00.

Plug-in hybrid electric vehicles (PHEVs) are being developed around the world, with much work aiming to optimize engine and battery for efficient operation, both during discharge and when grid electricity is available for recharging. However, the general expectation has been that the grid will not be greatly affected by the use of PHEVs because the recharging will occur during off-peak hours, or the number of vehicles will grow slowly enough so that capacity planning will respond adequately. This expectation does not consider that drivers will control the timing of recharging, and their inclination will be to plug in when convenient, rather than when utilities would prefer. It is important to understand the ramifications of adding load from PHEVs onto the grid. This book analyzes the potential impacts of PHEVs on electricity demand, supply, generation structure, prices and associated emission levels.

**Potential Impacts of Northeast Refinery Reduction**

*Mace R. Ward and Galen E. Smith*

In series: *Petroleum Science and Technology*

2012. 56 pp.

Reduction in refining activity in the Northeast, as reflected in recently announced plans to idle over 50% of the regional refining capacity, is likely to impact supplies of petroleum products. The transition period as supply sources shift could be problematic for Ultra-Low Sulfur Diesel (ULSD), gasoline, and jet fuel supplies. Prolonged uncertainty over the coming months with regard to the disposition and operation of important logistical assets such as pipelines, ports and storage would compound adjustment challenges. Reduced short-term product supply flexibility due to longer delivery times and potential transportation bottlenecks for sources outside the region could also increase price volatility. This book explores potential developments of Northeast refinery reductions with a focus on alternative supply options; available pipeline capacity, implications for regional transportation fuels markets, heating oil supply and prices in the Northeast, and fuel security for the military.

**Reactor Safety Recommendations Insights**

*Kenton I. Vinson and Rupert E. Gilliam*

In series: *Nuclear Materials and Disaster Research*

In series: *Safety and Risk in Society*

Case: 978-1-61942-645-0. $125.00.

This book examines the Near-Term Task Force, which was established in response to Commission direction to conduct a systematic and methodical review of the U.S. Nuclear Regulatory Commission processes and regulations to determine whether the agency should make additional improvements to its regulatory system and to make recommendations to the Commission for its policy direction, in light of the accident at the Fukushima Dai-Ichi Nuclear Power Plant. The Task Force recognizes that there likely will be more than 100 nuclear power plants operating throughout the United States for decades to come. In examining the Fukushima Dai-Ichi accident for insights for reactors in the United States, the Task Force addressed protecting against...
accidents resulting from natural phenomena, mitigating the consequences of such accidents, and ensuring emergency preparedness.

Renewable Electricity Generation: Resources, Standards, Challenges
Len G. Irwin and Raymond Macias
In series: Renewable Energy: Research, Development and Policies
In series: Energy Science, Engineering and Technology
Case: 978-1-61470-798-1. $95.00.
e-book: 978-1-61209-172-3. $95.00.
The United States faces important decisions about future energy supply and use. A key question is how renewable energy resources might be used to meet U.S. energy needs in general, and to meet U.S. electricity needs specifically. This book provides a summary of U.S. electricity generation potential from wind, solar, geothermal, hydroelectric, ocean-hydrokinetic, and biomass sources of renewable energy. An assessment of U.S. renewable electricity generation potential and how renewables might satisfy electric power sector demand is discussed, as are the challenges, issues and barriers that might limit renewable electricity generation deployment.

Renewable Energy Applications in Power Systems
Jizhong Zhu (Chongqing University, Chongqing, P.R., China)
In series: Renewable Energy: Research, Development and Policies
Case: 978-1-61470-799-8. $150.00.
An electric power system is a network of electrical components used to supply, transmit and use electric power. Burning coal produces sulfur, nitrogen oxide and mercury emissions and causes disastrous environmental and health consequences. In addition to environmental issues, fuels such as coal, oil, and natural gas are non-renewable. Once a deposit of these fuels is depleted it cannot be replenished. Thus, the renewable energy has been widely emphasized in the world. Renewable energy is energy which comes from natural resources such as sunlight, wind, rain, tides, and geothermal heat, which are renewable. Renewable energy sources are continually and naturally replenished in a short period of time. Renewable energy sources differ from conventional sources in that, generally they cannot be scheduled, and they are often connected to the electricity distribution system rather than the transmission system.

Renewable Energy Initiatives Supported by Federal Agencies
Rickey Taylor and Allen E. Martin
In series: Energy Policies, Politics and Prices
In series: Energy Science, Engineering and Technology
Case: 978-1-62081-645-5. $110.00.
e-book: 978-1-62081-653-0. $110.00.
The nation’s reliance on imported oil, rising energy costs, and fossil fuels’ potential contribution to climate change have renewed the federal focus on renewable energy. Many federal agencies support renewable energy activities, raising congressional concerns about the number and roles of agencies implementing such efforts. This book examines the wide range of federal activities related to renewable energy and the recent increase in these efforts that have raised congressional concerns about the number of agencies implementing such activities, as well as the roles of agencies responsible for regulating and providing funding to various segments of the renewable energy industry.

Shared Solar Power: Project Guides for Communities
Emily J. Rose and Duncan Marks
In series: Energy Science, Engineering and Technology
2012.
Case: 978-1-62257-527-5. $110.00.
In communities across the United States, people are seeking alternatives to conventional energy sources. Whether they aim to increase energy independence, hedge against rising fuel costs, cut carbon emissions, or provide jobs, people are looking to community-scale renewable energy projects for solutions. Falling costs and creative new financing models have made solar projects, including community shared solar projects, more financially feasible. “Community shared solar” is defined as a solar-electric system that provides power and/or financial benefit to multiple community members. This book provides current detail on projects designed to increase access to solar energy and to reduce up-front costs for participants.

Smart Meters and the Smart Grid: Privacy and Cybersecurity Considerations
Irwin E. Reid and Hale A. Stevens
In series: Privacy and Identity Protection
Case: 978-1-62081-620-2. $135.00.
Electric utilities have accelerated their deployment of smart meters to millions of homes across the United States with help from the Department of Energy’s Smart Grid Investment Grant program. As the meters multiply, so do issues concerning the privacy and security of the data collected by the new technology. This Advanced Metering Infrastructure (AMI) promises to increase energy efficiency, bolster electric power grid reliability, and facilitate demand response, among other benefits. However, to fulfill these ends, smart meters must record near-real time data on consumer electricity usage and transmit the data to utilities over great distances via communications networks that serve the smart grid. This book examines the privacy and cybersecurity considerations of smart meters and the smart grid.

Jamison E. Wood and Candace M. Robinson
In series: Energy Science, Engineering and Technology
2012. 190 pp.
Case: 978-1-62081-474-1. $195.00.
The potential economic benefits of the growing renewable energy sector have led to increased federal, state, and local investments in solar industries, including federal grants for expanded workforce training for U.S. solar installers. However, there remain gaps in the data required to understand the size and composition of the workforce needed to meet the demand for solar power. This book seeks to address that gap, improving the understanding of both the evolving needs of employers and the economic opportunity associated with solar market development. It also focuses on solar market trends through December 31, 2010. It provides an overview of the U.S. solar electricity market, including photovoltaic (PV) and concentrating solar power (CSP) technologies, identifies successes and trends within the market from both global and U.S. perspectives, and offers a general overview of the state of the solar energy market.
Solar Photovoltaics: Cost and Economic Performance Considerations
Griffin Marks and Claudia J. Unger
In series: Energy Science, Engineering and Technology
In series: Energy Policies, Politics and Prices
2013.
Case: 978-1-62257-651-7. $110.00.
Photovoltaic (PV) systems are installed by several types of market participants, ranging from residential customers to large-scale project developers and utilities. Each type of market participant frequently uses a different economic performance metric to characterize PV value because they are looking for different types of returns from a PV investment. Choice of economic performance metric by different customer types can significantly shape each customer’s perception of PV investment value and ultimately their adoption decision. In this book, PV economic performance is characterized for three ownership types: residential customers who purchase their own PV systems, commercial customers (for-profit companies) who purchase their own PV systems and residential and commercial customers who lease PV equipment or buy PV electricity from a third-party company.

Solar Photovoltaics: U.S. Manufacturing Trends and Trade
Jason E. Foster and Arthur M. Powell
In series: Energy Science, Engineering and Technology
In series: Renewable Energy: Research, Development and Policies
2012. 80 pp.
Soft: 978-1-62257-234-2. $52.00.
In recent years, job creation and the development of a domestic renewable energy manufacturing base have joined national security and environmental concerns as rationales for promoting the manufacturing of solar power equipment in the United States. The most widely used solar technology involves photovoltaic (PV) solar modules, which draw on semiconducting materials to convert sunlight into electricity. By year-end 2011, the total number of grid-connected PV systems nationwide reached almost 215,000. Domestic demand is met both by imports and by about 100 U.S. manufacturing facilities employing an estimated 25,000 U.S. workers in 2011. Production is clustered in a few states, including, California, Oregon, Texas, and Ohio. This book discusses the solar photovoltaic industry and its supply chain; employment trends; international trade flows; and federal policy efforts aimed at supporting the industry.

Solar Power for Communities: Guidance for Local Stakeholders
Dylan K. Herrera and Christopher A. Aguirre
In series: Renewable Energy: Research, Development and Policies
Case: 978-1-62100-360-1. $185.00.
As demand for energy increases, many communities are seeking ways to meet this demand with clean, safe, reliable energy from renewable sources such as sun and wind. Fortunately, many of the key technologies that can unlock the power of these renewable resources are available on the market today. While the U.S. Department of Energy (DOE) continues to fund research and development (R&D) to improve solar technologies, DOE is also focusing on accelerating a robust nationwide market for the currently available technologies. Advances in solar technology, an increase in federal and state tax incentives, and creative new financing models have made solar projects including community solar projects, more financially feasible. This book focuses on the availability of solar power for communities along with a guidance for local stockholders.

Solar Power, Renewable Portfolio Standards and Solar Renewable Energy Certificates
Vanessa M. Evans and Wade L. Reed
In series: Energy Science, Engineering and Technology
In series: Energy Policies, Politics and Prices
Case: 978-1-62081-532-8. $110.00.
e-book: 978-1-62081-570-0. $110.00.
Among the available options for encouraging the increased deployment of renewable electricity, renewables portfolio standards (RPS) have become increasingly popular. The RPS is a relatively new policy mechanism, however, and experience with its use is only beginning to emerge. One key concern that has been voiced is whether RPS policies will offer adequate support to a wide range of renewable energy technologies and applications or whether, alternatively, RPS programs will favor a small number of the currently least-cost forms of renewable energy. This book documents the design of and early experience with state-level RPS programs in the United States that have been specifically tailored to encourage a wider diversity of renewable energy technologies, and solar energy in particular. State-level RPS programs specifically designed to support solar energy have already proven to be an important, albeit somewhat modest, driver for solar energy deployment, and those impacts are projected to continue to build in coming years.

Solar Radiation: Protection, Management and Measurement Techniques
Fatih Onur Hocaoglu (Afyon Kocatepe University, Turkey)
In series: Energy Science, Engineering and Technology
Case: 978-1-61470-064-7. $150.00.
Solar energy is of vital importance for living organisms. The development of science gave us the opportunity to get much benefit from the sun. However, as all other beneficial tools, it can be very dangerous in the case of improper usage. This book presents different studies focusing on solar energy protection, measurement and applications. This book can also be used as a helpful reference of detailed knowledge about the status of solar radiation modeling and solar energy applications.

Solar Ready Buildings and Homes: Planning and Promotion Practices
Walter I. Cook and Nate M. James
In series: Energy Science, Engineering and Technology
In series: Energy Policies, Politics and Prices
2012. 81 pp.
Soft: 978-1-62081-573-1. $52.00.
e-book: 978-1-62081-596-0. $52.00.
Solar ready design is important if photovoltaic (PV) or solar hot water (SHW) technologies are to be installed on a building at any time during the building’s lifespan. Solar ready also allows owners to take advantage of a changing energy market. The economics for installing solar on a new building are not always compelling, but, in the future, that picture could change with rising electricity prices and/or falling solar technology costs. It is important to recognize that solar ready itself does not reduce energy use or replace conventional energy with green energy. Solar ready does not contribute toward carbon emissions reduction until actual solar capacity is installed. Instead, solar ready has the potential to act as a catalyst for future installations and market expansion by reducing balance of system costs at the time of...
installation. In order to see this benefit, solar ready must become a widespread practice. This book explores the mechanisms for encouraging solar ready design and construction.

Spent Nuclear Fuel: Storage Options and Efforts
Phillip T. Crawford and Alan E. Mason
In series: Nuclear Materials and Disaster Research
In series: Energy Policies, Politics and Prices
2012.
e-book: 978-1-62257-366-0. $110.00.
Recent events have renewed long-standing congressional interest in safe management of spent nuclear fuel (SNF) and other high level nuclear waste. These issues have been examined and debated for decades, sometimes renewed by world events like the 9/11 terrorist attacks. The incident at the Fukushima Dai-ichi nuclear reactor complex in Japan, combined with the termination of the Yucca Mountain geologic repository project, have contributed to the increased interest. This book focuses on the current situation with spent nuclear fuel storage in the United States. It addresses the SNF storage situation, primarily at current and former reactor facilities and former reactor sites for the potentially foreseeable future. Although no nation has yet established a permanent disposal repository for SNF and other forms of high-level radioactive waste, there is broad consensus that a geological repository is the preferred method for these wastes.

Steam Systems: Performance Improvement Opportunities
Sadie M. Baker and Valerie Parker
In series: Energy Science, Engineering and Technology
In series: Energy Policies, Politics and Prices
Case: 978-1-62081-563-2. $135.00.
There are three principal forms of energy used in industrial processes: electricity, direct-fired heat, and steam. Steam provides process heating, pressure control, mechanical drive, and component separation, and is a source of water for many process reactions. Steam has many performance advantages that make it an indispensable means of delivering energy. These advantages include low toxicity, ease of transportability, high efficiency, high heat capacity, and low cost with respect to the other alternatives. This book is designed to provide steam system users with a reference that describes the basic steam system components, outlines opportunities for energy and performance improvements, and discusses the benefits of a systems approach in identifying and implementing these improvement opportunities.

SunShot Initiative, The: Cost-Competitive Solar Energy
Ashley Sanchez and Aiden J. Hayes
In series: Energy Science, Engineering and Technology
In series: Energy Policies, Politics and Prices
Case: 978-1-62081-541-0. $230.00.
The SunShot Initiative was launched in February 2011 with the goal of making solar energy cost-competitive with conventional electricity generating technologies within the decade. Achieving this goal will require dramatic decreases in the cost structure of solar technologies, on the order of a 75% reduction, across all markets including residential, commercial and utility-scale deployments of solar. To do this most effectively, the SunShot Initiative spans the full spectrum from basic science to applied research and development. This book explores the implications of achieving the SunShot Initiative’s targets both in terms of potential benefits as well as potential challenges.

Syngas Generation from Hydrocarbons and Oxygenates with Structured Catalysts
Vladislav Sadykov, L. Bobrova, S. Pavlova, V. Simagina, L. Makarshin, V. Parmon (Boreskov Inst. of Catalysis, Russian) Julian R. H. Ross (Centre of Environmental Research Univ. of Limerick, Ireland) Claude Mirodatos (Inst. de Recherches sur la Catalyse)
In series: Energy Science, Engineering and Technology
Soft: 978-1-60876-323-8. $43.00.
Syngas generation by oxidative or steam reforming of hydrocarbons and oxygenates now attracts a lot of attention of researchers in the fields of heterogeneous catalysis and chemical engineering due to its tremendous importance for energy generation and synfuels production. This book reviews results of the long-term research of the international team of scientists aimed at development of efficient processes of syngas generation in structured catalytic reactors. Multiscale integrated optimization approach is applied throughout of this work including design of nanocomposite active components stable to coking and sintering; developing heat-conducting monolithic substrates comprised of refractory alloys and cermets (honeycomb and microchannel structures, gauzes etc) and procedures of their loading with active components; design and manufacturing of several types of pilot-scale reactors (with the radial or the axial flow direction) equipped with unique liquid fuel evaporation and mixing units and internal heat exchangers. Extended tests of these reactors fed by fuels from C1 to gasoline, mineral and sunflower oil have been carried out with a broad variation of experimental parameters including stability tests up to 1000 h. Performance analysis has been made with a due regard for equilibrium restrictions on the operational parameters. Transient behavior of the monolith reactor during start-up (ignition) of the methane partial oxidation to synthesis gas was studied and analyzed via mathematic modeling based upon detailed elementary step mechanism. This provides required bases for theoretical optimization of the catalyst bed configuration and process parameters.

The Consumer Component in Renewable Energy Use: Select Research
Georgia M. Lee and Russ L. Cooper
In series: Renewable Energy: Research, Development and Policies
In series: Energy Science, Engineering and Technology
e-book: 978-1-62081-426-0. $195.00.
Renewable energy is available to consumers in three forms: (1) utility green pricing programs offered in regulated states, (2) competitive retail electricity products in deregulated or competitive markets, and (3) renewable energy certificates (RECs) purchased in over-the-counter transactions or through independent REC marketers. The objective of this book is to explore trends in consumer interest and awareness of renewable energy options through analysis of historical and regional survey data. This book documents green power marketing activities and trends in the United States and discusses the social acceptance of utility-scale renewable energy projects.

The Energy Basis of Reversible Adaptation
Rafik D. Grygoryan (Cybernetics Center of National Academy of Sciences of Ukraine, Kiev, Ukraine)
In series: Cell Biology Research Progress
In series: Environmental Science, Engineering and Technology
Fuel cells (FCs) are considered essential future energy technologies by governments internationally. This book provides a comprehensive energy theory of reversible adaptation (ETRA) explaining general rules and mechanisms of organism adaptation to shifts in both external and internal environments. The theory is based on cellular mechanisms of reactive adaptation (CMRA) controlling long-term energy balance. CMRA and an organism-scale distributed functional system called energy mega-system (EMS) provide human reversible adaptation to unstable external/internal environmental conditions.

**The Financial Cost of Wind Energy: A Multi-National Case Study**

*Terry B. Wood and Nicholas C. Ross*

In series: *Energy Policies, Politics and Prices*

In series: *Energy Science, Engineering and Technology* 2012. 176 pp.

Case: 978-1-62081-244-1. $110.00.
e-book: 978-1-62081-254-0. $110.00.

The lifetime cost of wind energy is comprised of a number of components including the investment cost, operation and maintenance costs, financing costs, and annual energy production. Accurate representation of these cost streams is critical in estimating a wind plant's cost of energy. Some of these cost streams will vary over the life of a given project. From the outset of project development, investors in wind energy have relatively certain knowledge of the plant's lifetime cost of wind energy. This is because a wind energy project's installed costs and mean wind speed are known early on, and wind generation generally has low variable operation and maintenance costs, zero fuel cost, and no carbon emissions cost. Despite these inherent characteristics, there are wide variations in the cost of wind energy internationally. This book provides a cross-country comparative analysis of the cost of wind energy with a focus on country-specific case studies that describe the unique cost elements of a typical wind energy facility in each of the represented countries.

**The U.S. Non-Automatic Fuel Cell Industry: Status and Outlook**

*Roland J. Clarke and Peter DeFelice*

In series: *Renewable Energy: Research, Development and Policies*

In series: *Energy Science, Engineering and Technology* 2012.

Case: 978-1-62257-558-9. $110.00.
e-book: 978-1-62257-559-6. $110.00.

Fuel cells (FCs) are considered essential future energy technologies by developed and developing economies alike. Several countries, including the United States, Japan, Germany, and South Korea have established publicly funded R&D and market transformation programs to develop viable domestic FC industries for both automotive and non-automotive applications. Important non-automotive applications include large scale and small scale distributed combined heat and electrical power, backup and uninterruptible power, material handling and auxiliary power units. The U.S. FC industry is in the early stages of development, and is working to establish sustainable markets in all these areas. To be successful, manufacturers must reduce costs, improve performance, and overcome market barriers to new technologies. This book examines the FC industry's progress with a focus on bringing both stack and system costs down by more than a factor of two while improving durability and efficiency, thanks in part to government support.

**U.S. Natural Gas Exports: Opportunities, Uncertainties and Effects**

*Gavin F. Morris and Steve R. Green*

In series: *Energy Policies, Politics and Prices*

In series: *Energy Science, Engineering and Technology* 2012. 77 pp.

Soft: 978-1-62081-668-4. $52.00.
e-book: 978-1-62081-693-6. $52.00.

Within the next five years, the United States may become a large exporter of natural gas for the first time in decades. Increased development of U.S. natural gas resources, particularly shale gas, along with low domestic prices in recent years and idle liquefied natural gas (LNG) infrastructure, have drive: change in the US. The United States has exported some amounts of natural gas for close to 100 years, but has generally imported more than it has exported. However, imports have been declining since 2005, while exports have been climbing. As the debates over the economy, energy independence, climate change, and energy security continue, Congress is beginning to face important questions regarding a potential increase in U.S. natural gas exports. This book examines the changes in the U.S. natural gas market and the prospects and implications of the United States becoming a significant net natural gas exporter.

**U.S. Nuclear Waste: Critical Management Strategies and Future Needs**

*Gregory Hall and Steven L. Greene*

In series: *Nuclear Materials and Disaster Research*

In series: *Energy Science, Engineering and Technology* 2012. 279 pp.

Case: 978-1-62081-312-6. $195.00.

The Blue Ribbon Commission on America's Nuclear Future was chartered to recommend a new strategy for managing the back end of the nuclear fuel cycle. The Nation's failure to come to grips with the nuclear waste issue has already proved damaging and costly and it will be more damaging and more costly the longer it continues: damaging to prospects for maintaining a potentially important energy supply option for the future, damaging to state-federal relations and public confidence in the federal government's competence, and damaging to America's standing in the world - not only as a source of nuclear technology and policy expertise but as a leader on global issues of nuclear safety, non-proliferation, and security. This book examines the use of nuclear energy as a low-carbon energy resource with a focus on the management of the nuclear fuel cycle, based on emerging technologies and developments.

**U.S. Oil Sources: Turmoil and Tranquility**

*Natalie B. Kelleher*

In series: *Energy Science, Engineering and Technology* 2012. 165 pp.

Case: 978-1-62100-415-8. $95.00.
e-book: 978-1-62100-484-4. $95.00.

Despite long standing concern by policy makers, U.S. oil imports have generally increased for decades. This book explores U.S. oil sources with a focus on the U.S.-Canada energy relationship; the Keystone XL Pipeline project; Middle East and North Africa unrest and the implications for oil and natural gas markets; Egypt's turmoil on the global oil and natural gas supply; hedge fund speculation and oil prices and The Strategic Petroleum Reserve and Refined Product Reserves Act.
U.S. Renewable Energy and Energy Efficiency Export Initiative

**Kelvin Norris and Cameron Steele**

In series: *Renewable Energy: Research, Development and Policies*

In series: *Energy Policies, Politics and Prices*


The Obama Administration believes strongly that the United States must lead the clean energy economy of the 21st century. When more of our electricity comes from clean energy, our economy will be more stable, our country more secure, our people healthier and our environment more sustainable. In addition, building a robust clean energy industry will help create the high-paying, high-technology jobs our country’s future requires. This book examines the U.S. Renewable Energy and Energy Efficiency Export Initiative which the Obama Administration has launched and which is the most concerted effort to date to develop America’s capacity for manufacturing clean energy technologies.

Weatherization Assistance Program, The

**Sherwyn L. King and Dally R. Griffiths**

In series: *Energy Policies, Politics and Prices*

Case: 978-1-62081-745-2. $110.00.  

The DOE Weatherization Assistance Program enables low-income families to permanently reduce their energy bills by making their households more energy efficient. The DOE program guidelines specify that a variety of energy efficiency measures are eligible for support under the program. The measures include insulation, space-heating equipment, energy-efficient windows, water heaters, and efficient air conditioners. This book explores the Department of Energy’s (DOE’s) Weatherization Assistance Program, with a focus on its background, brief history of funding, program evolution, program activity, and program assessments and benefit-cost evaluations.

Wind and Hydropower Integration: Concepts, Considerations and Case Studies

**Craig Anderson and Rudolf I. Howard**

In series: *Energy Science, Engineering and Technology*

Case: 978-1-62081-450-5. $230.00.  

Worldwide, hydropower facilities possess a significant amount of installed electric generating capacity. IEA statistics indicate that at the end of 2001 there was in excess of 450,000 MW of installed capacity within IEA member countries, with about half in Europe and half in North America. In addition to conventional hydropower, there is more than 80,000 MW of installed pumped–hydro capacity in IEA countries. In contrast, utility-scale wind power is relatively new in the electric market, but increasing rapidly. This book describes the background, concepts, issues and conclusions related to the feasibility of integrating wind and hydropower. It also describes in detail the study methodologies and participant case studies.

Wind Power: Systems Engineering Applications and Design Models

**Ted R. Moore and Ewarld I. Bailey**

In series: *Energy Science, Engineering and Technology*

In series: *Renewable Energy: Research, Development and Policies*

Case: 978-1-62081-787-2. $195.00. 

Over the past 30 years, wind energy has evolved from a small industry active in a few countries to a large international industry involving major players in the manufacturing, development, and utility sectors. Coinciding with the industry growth, significant innovation in the technology has resulted in larger sized turbines with lower associated costs of energy and more complex designs in all subsystems, from the rotor to the drivetrain to the electronics and control systems. However, as deployment of the technology grows and its role within the electricity sector has become more prominent, so have the expectations of the technology in terms of performance, reliability, and cost. This book surveys the landscape of systems engineering methods and catalogs the various existing modeling tools that relate to the design of wind energy systems from components to entire plants.

**Wind Turbine Manufacturing in the U.S.: Developments and Considerations**

**Lyle G. Parks and Hubert Dawson**

In series: *Energy Science, Engineering and Technology*

In series: *Manufacturing Technology Research*

2012. 113 pp. 
Soft: 978-1-61942-348-0. $52.00.  

U.S. and foreign manufacturers have expanded their capacity in the United States to assemble and produce wind turbines and components in order to increase energy supply diversity. This book discusses the U.S. wind turbine manufacturing industry, its supply chain, employment and international trade trends, major federal policy efforts aimed at supporting the industry, and issues affecting its future.

**ENGINEERING**

Advances in Engineering Research. Volume 3

**Victoria M. Petrova**

In series: *Advances in Engineering Research*

Case: 978-1-62100-069-3. $215.00. 

This book covers leading-edge research in a cross-section of fields centering on engineering applications including current research data on the field measurement methods for fatigue life evaluation of steel bridges; silicon PV solar cell manufacturing technologies and cost reduction trends; internal flows of Non-Newtonian fluids; abrasion of cermets; physical modeling for wave–mud interaction in ocean engineering; global optimization methods applied to the nuclear reactor core design and experimental evaluation of hydraulic oils based on pump performance.

Advances in Engineering Research. Volume 4

**Victoria M. Petrova**

In series: *Advances in Engineering Research*

Case: 978-1-62100-695-4. $140.00. 
e-book: 978-1-62100-721-0. $140.00.

This book covers leading-edge research in a cross-section of fields centering on engineering applications including current research data on the environmental impacts of future technologies of commercial aircraft; health and safety in engineering; high temperature degradation of plasma sprayed thermal barrier coatings in the oxidizing
environment; neutrino telescopes and neutrino interactions and a rotocraft trim procedure for the prediction of fuselage vibrations.

Advances in Engineering Research. Volume 5
Victoria M. Petrova
In series: Advances in Engineering Research
Case: 978-1-61942-496-8. $150.00.
This book covers leading-edge research in a cross-section of fields centering on engineering applications including current research data on large-eddy simulation of turbulent natural convection flows; using high performance computing to model levees; surface modification of carbon black by plasma polymerization for enhanced compatibility with elastomers; oxidation-assisted ultrasound desulfurization of diesel fuels and development of a precise automatic riveting system using web-based monitoring and control.

Advances in Microelectronics and Photonics
Satyabrata Jit (Banaras Hindu University, Varanasi, India)
In series: Electrical Engineering Developments
In series: Physics Research and Technology
Case: 978-1-61470-956-5. $185.00.
The tremendous growth and development in modern information and communication technology have been made possible due to the rapid advances in the fields of microelectronics and photonics. The area of microelectronics deals with the study and development of semiconductor-based electronic components and circuits of very small size starting from the micrometer to nanometer scale. This book examines and presents recent developments in the semiconductor devices for future generation microelectronics and photonics technologies. It includes some advanced CMOS device structures for future generation nanoscale IC technology, microdevices for pressure sensors, source and detectors for photonic applications and lithography process for nanoscale fabrication.

Capillary Electrophoresis: Fundamentals, Techniques and Applications
Zhongqi He (USDA-ARS Southern Regional Research Center, New Orleans, LA)
In series: Chemistry Research and Applications
Case: 978-1-62081-785-8. $150.00.
e-book: 978-1-62081-867-1. $150.00.
Capillary electrophoresis (CE) is an analytical technique that separates ions based on their electrophoretic mobility with the use of an applied voltage. With the high efficiency and broad separating capabilities, CE has continuously spurred research interests among the scientific society to execute further developments in the technique. This book is a timely synthesis of the on-going CE development and application research in the formats of general reviews and detailed case studies. All chapters are invited contributions and peer-reviewed. This book is basically the result of the combined efforts of the dedicated international group of contributors who are from Argentina, Canada, China, Czech Republic, France, Italy, Japan, and USA. This book should be of interest to university faculty, graduate students, research scientists, industrial engineers, and anyone who works and deals with various aspects of CE development and application.

Computational Engineering: Design, Development and Applications
Jaclyn E. Browning and Alexander K. McMann (Editor)
In series: Engineering Tools, Techniques and Tables
In series: Computer Science, Technology and Applications
Case: 978-1-61122-806-9. $150.00.
Computational engineering encompasses both development and application of software tools and systems, including physical, mathematical, and geometric modeling, solution algorithms, computer simulations, and visualization, analysis, interpretation, synthesis and the use of computed results to solve practical problems. This book presents current research in the study of computational engineering, including computer-aided design of tissue engineering applications; crash test simulations and their application in automotive design and quantum neural computation.

Electrodeposition: Properties, Processes and Applications
Udit Surya Mohanty (National Cheng Kung University, Taiwan, Japan)
In series: Electrical Engineering Developments
2012. 373 pp.
Case: 978-1-61470-826-1. $165.00.
The present book has been contributed by prominent experts in the field of electrochemical science and technology. It identifies gaps in current knowledge and barriers to applications, and recommends research areas that need to be addressed to enable the rapid development of technologies. Some of the key areas covered in this book are electrochemical synthesis of non-stoichiometric hydroxyapatite-nanodiamond composite coating; electrodeposited biomimetic hydroxyapatite functionalized by lactoferrin for its potential use as bone-implantable biomaterials; development of new types of layered manganese oxides intercalated with cationic polymers applicable for the manufacturing of pseudocapacitor electrodes, electrochromic materials, catalysts, and biosensors and preparation of CunSe2 thin films and its potential application in photovoltaic devices.

Encyclopedia of Electrical Engineering Research (2 Volume Set)
Zachary L. Fink (Editor)
In series: Electrical Engineering Developments
Case: 978-1-61324-671-9. $325.00.
e-book: 978-1-61470-293-1. $325.00.
This book presents current research in the field of electrical engineering. Topics discussed include voltage stabilization using a storage capacitor; AC bridge circuitry for the capacitive position sensor inside the superconducting linear motor system; ferromagnetism in semiconductors doped with non-magnetic elements; spin transfer torque effect and its applications; fundamentals of half-metallic full-heusler alloys; electronics, spintronics and orbitronics and electric motor drives for battery, hybrid and fuel cell vehicles.

Encyclopedia of Engineering Research (2 Volume Set)
Filippo A. Pasqualli (Editor)
In series: Engineering Tools, Techniques and Tables
2012. 797 pp.
Fluid mechanics provides the theoretical foundation for hydraulics, which focuses on the engineering uses of fluid properties. In fluid power, hydraulics is used for the generation, control, and transmission of power by the use of pressurized liquids. This new book discusses hydraulic mechanical applications and roles in engineering. Topics include axial piston pumps; turbulence structure and related mass transfer mechanisms in vegetated canopy open-channel flows; the hydraulic mechanism features of jet-curtain operation; experimental design and calibration of grid gates used in open channels; surface runoff simulation models; and applications of static and dynamic infinite elements to hydraulic engineering problems involving infinite domains.

Light-Emitting Diodes and Optoelectronics: New Research
Joshua T. Hall and Anton O. Koskinen
In series: Electrical Engineering Developments
Case: 978-1-62100-448-6. $140.00.
This book presents topical research in the field of light-emitting diodes and the systems, uses and efficiency of optoelectronics. Topics discussed include fabricating high efficiency organic light-emitting diodes for flat panel displays and solid-state lighting; reliability estimation from the junction to the packaging of LED; next-generation intelligent and green energy LED backlighting 3D display; inorganic-organic hybrid emitting material fabricated by solvothermal synthesis and photonic bandgap defect structure based on IV-VI semiconductors.

Quality Control: Developments, Methods and Applications
José A. Orosa (Marine Engineer and Naval architecture, University of a Coruña, Paseo de Ronda, Spain)
In series: Quality Control Engineering and Manufacturing
In series: Medical Procedures, Testing and Technology
Case: 978-1-62257-139-0. $150.00.
Quality control is defined as a set of activities or techniques whose purpose is to ensure that all quality requirements are being met. In scientific areas quality control for an analytical laboratory is essential to ensure good comparability of data in applications like insulin administration decision and transfusion-associated graft-versus-host disease. In engineering, statistical process control is one of the most important tools employed to monitor a production process over time in applications like wind farms maintenance and to control indoor environments. All these points of view were treated in depth in this book. This book aims to be an updated link between applications of quality control and its developments to serve as a guide for responsible person of process control and researchers in these areas.

Toroidal Shells
Bohua Sun (Department of Mechanical Engineering, Cape Peninsula University of Technology, Cape Town, South Africa)
In series: Mechanical Engineering Theory and Applications
2012. 194 pp.
Case: 978-1-61942-247-6. $150.00.
Although research papers on toroidal shells can be found in academic journals, unfortunately, there is no published book dedicated to this
subject. This book is the first one in the field, which covers analytical solutions, slender toroidal shells, vibration, pipe system etc. This book is suitable for all engineering under and postgraduates, researchers and scientists.

**Ultrasonics: Theory, Techniques and Practical Applications**
*Hanako Ayabito and Mitsuko Katsukawa*
In series: *Engineering Tools, Techniques and Tables*
In series: *Mechanical Engineering Theory and Applications*
2013.
Case: 978-1-62257-685-2. $120.00.
e-book: 978-1-62257-686-9. $120.00.
Ultrasonics has been recognized not only as a viable and dependable tool to prognosticate diseases in medical practices but also a prevailing technique in non-destructive detection and manufacturing. In this book, the authors study the theory, techniques and practical applications of ultrasonics. Topics include mechanochemical cleavage of DNA by ultrasound; using ultrasonic wave transmission and wave reflection methods to monitor the setting and hardening process of cement based materials; ultrasonic spray-pyrolysis process for materials processing; ultrasonic assisted fixed abrasive machining of hard-brittile materials; dynamics and kinetics of supercooled liquids under ultrasonic field; mathematical model of a traveling wave ultrasonic motor; ultrasonic array image in anisotropic weld structures; and ultrasonics in machining operations.

**Uranium Mining and Management: Federal Considerations**
*Jordan Dunn and Dwayne Arnold*
In series: *Mining Engineering - Research and Technology*
In series: *Environmental Remediation Technologies, Regulations and Safety*
2012.
Case: 978-1-62257-412-4. $110.00.
e-book: 978-1-62257-413-1. $110.00.
This book examines uranium mining and management in the United States with a focus on federal considerations. From 2005 to 2007, uranium prices increased from about $20 a pound to over $140 a pound, which led to renewed interest in uranium mining, both exploration and extraction, on federal land in the U.S. In early 2012, thousands of claims have been filed to explore for and potentially extract uranium on federal land. This increase in claims filed, has raised concerns about the potential impacts that an increased level of uranium exploration and extraction could have on the environment. During uranium extraction, the waste rock piles that are formed can introduce radionuclides (such as radium) and heavy metals (such as selenium and arsenic) into the environment. Before the mid-1970s, many mines on federal land, were abandoned without any reclamation, leaving a costly legacy of abandoned mines that pose potential health, safety, and environmental hazards.

**ENVIRONMENT**

**Adapting to Climate Change: National Strategy and Progress**
*Gerard Robinson and Lillian K. Moore*
In series: *Climate Change and its Causes, Effects and Prediction*

In series: *Environmental Science, Engineering and Technology*
2012. 139 pp.
Case: 978-1-61942-749-5. $95.00.
As concentrations of greenhouse gases and heat-trapping particles increase in the atmosphere, it is becoming ever more urgent to understand and prepare for the resulting changes in climate. These changes include not only temperature increases but also shifts in precipitation patterns, storm tracks, and other parameters. Climate change affects human health, water and energy supplies, food production, coastal communities, ecosystems, and many other aspects of society and the environment. This book presents an overview of the national strategy and progress that the federal government is taking in adapting to climate change with a focus on the progress report of the Interagency Climate Change Adaptation Task Force.

**Advances in Environmental Research. Volume 17**
*Justin A. Daniels (Editor)*
In series: *Advances in Environmental Research*
Case: 978-1-61209-965-1. $165.00.
This series covers leading-edge research focusing on the environment, including current research data on the management of agro-ecosystem services in Bulgaria; environmental problems of harbors in Hong Kong; heavy metals dispersal due to industrial activity; constraints in the environmental risk assessment of pesticides; carbon mitigation; management of forests in hurricane regions in the southern United States and molecular ecology.

**Advances in Environmental Research. Volume 21**
*Justin A. Daniels (Editor)*
In series: *Advances in Environmental Research*
Case: 978-1-61470-007-4. $140.00.
e-book: 978-1-61470-159-0. $140.00.
This series covers leading-edge research focusing on the environment, including current research data on plant canopy conservation; environmental responsibility through ethnocoeology education; human activity, landscape transition and the evolving biotope association; incentive programs to promote clean power technologies for regional economic/environmental sustainable development; morphometric studies and possible relations to evolution and environmental adaptations and a study of the urbanization process around water-bodies which has caused damage to environmental balance.

**Advances in Environmental Research. Volume 23**
*Justin A. Daniels*
In series: *Advances in Environmental Research*
Case: 978-1-62100-837-8. $140.00.
This series covers leading-edge research focusing on the environment, including current research data on coal fly ash as a recycling treasure and environmental application; airborne fungi and bacteria in public indoor environments; integrated management of Natura 2000 forest spaces; biochemical biomarkers in aquatic ecotoxicology; the vulnerability of northern cities in North America to weather-related hazards; impact of decreasing Arctic pack ice on the higher trophic levels and new bioindicator sampling procedures in indoor and outdoor air quality control.

**Advances in Environmental Research. Volume 24**
*Justin A. Daniels*
In series: *Advances in Environmental Research*
Advances in Environmental Research. Volume 26
Justin A. Daniels
In series: Advances in Environmental Research
Case: 978-1-62081-468-0. $150.00.
This series covers leading-edge research focusing on the environment, including current research data on energy systems, greenhouse gases and environmental protection control; ecology and impact of Ciguatera on coral reef ecosystems; climate change; particulate matter concentration in residential areas; cobia; millepora species; loss on ignition; and heavy metal accumulation in water.

Advances in Environmental Research. Volume 27
Justin A. Daniels
In series: Advances in Environmental Research
2012.
Case: 978-1-62257-425-4. $150.00.
e-book: 978-1-62257-426-1. $150.00.
This series covers leading-edge research focusing on the environment, including current research data on habitat degradation and changes in Lake Victoria fisheries; conservation status of zostera marina populations in the Mexican Pacific; sustainable water resources management in the Sudan; organic and inorganic particulate matter in urban ambient air; the distribution of organic carbon and composition of the carboniferous mud in the Baltic Sea; heavy metals in the environment; outdoor air pollution and total suspended particles concentration; toxic metalloid arsenic contaminants; and post dam hydro-geomorphic alteration of the Dwarka River in Eastern India.

Aerosols: Properties, Sources and Management Practices
Yakov Alekseyev and Klavdiy Plisetskaya
In series: Environmental Science, Engineering and Technology
Case: 978-1-61942-182-0. $140.00.
e-book: 978-1-61942-210-0. $140.00.
In this book, the authors present current research in the study of the properties, sources and management practices of aerosols. Topics discussed in this compilation include the aerosol nanoparticles of metals, alloys and compounds; aerosol properties and applications in atomic analytical spectroscopy; physicomathematical modeling of the explosion-induced generation of submicron liquid-droplet aerosols; efficiency of separation of aerosols in industrial apparatuses; and Saharan dust contribution to PM10 measurements.

Air and Water Management for the Home: Select Research and Techniques
Kenneth J. Wright and John A. Nelson
In series: Energy Science, Engineering and Technology
Case: 978-1-62081-303-4. $135.00.
The occurrence of hypoxia, or low dissolved oxygen, is increasing in coastal waters worldwide and represents a significant threat to the health and economy of our Nation's coasts and Great Lakes. This trend is exemplified most dramatically off the coast of Louisiana and Texas, where the second largest eutrophication-related hypoxic zone in the world is associated with the nutrient pollutant load discharged by the...
Mississippi and Atchafalaya Rivers. Aquatic organisms require adequate dissolved oxygen to survive. The term "dead zone" is often used in reference to the absence of life from habitats that are devoid of oxygen. The inability to escape low oxygen areas makes immobile species, such as oysters and mussels, particularly vulnerable to hypoxia. This book examines the progress in understanding the dynamics of hypoxia where it occurs; understanding monitoring nutrient fluxes in watersheds; and how to reduce nutrient transport across the landscape.

**Carbon Dioxide Emissions: New Research**  
**Mitchell Carpenter and Everett J. Shelton**  
In series: *Environmental Remediation Technologies, Regulations and Safety*  
2012.  
Case: 978-1-62257-436-0. $95.00.  
This book examines new research in carbon dioxide emissions. CO2 is emitted in a number of ways naturally through the carbon cycle and through human activities like the burning of fossil fuels. Since the Industrial Revolution in the 1700s, human activities, such as the burning of oil, coal and gas, and deforestation, have increased CO2 concentrations in the atmosphere. Topics discussed in this compilation include mitigating climate change and CO2 emissions; CO2 emissions from best practice landfills versus compost; evaluation of the potential carbon dioxide emissions reductions from the use of CHP systems in commercial buildings; renewable energy technology sources to mitigate CO2 emissions; and allocating carbon dioxide and other emissions with exergy.

**Carbon Monoxide: Sources, Uses and Hazards**  
**Dante DiLoreto and Idina Corcoran**  
In series: *Public Health in the 21st Century*  
Case: 978-1-61942-055-7. $95.00.  
e-book: 978-1-61942-056-4. $95.00.  
Carbon monoxide (CO) is a colorless, odorless, highly toxic, poisonous gas. Exposure to a few hundreds ppm can cause permanent health damages or death. CO can thus be considered as one of the most dangerous environmental pollutants and therefore, its removal and detection is of extreme importance for safe living. This book presents current research in the study of the sources, uses and hazards of carbon monoxide. Topics discussed include the cardiace effects of carbon monoxide intoxication; CO oxidation using gold supported on Ce-Mn-O composite materials; heterogeneous catalysis in carbonylative coupling reactions and the evaluation of carboxyhemoglobin (CO-Hb) by oximeter in the forensic practice.

**Carbon Sequestration: Technology, Measurement Techniques and Environmental Effects**  
**Brooke J. Ryan and Darnall E. Anderson**  
In series: *Climate Change and its Causes, Effects and Prediction*  
Case: 978-1-62081-018-7. $95.00.  
e-book: 978-1-62081-041-5. $95.00.  
In this book, the authors present current research in the study of the technology, measurement techniques and environmental effects of carbon sequestration. Topics discussed include biomass and its role in climate change; forestry carbon sequestration projects in the agricultural sector; assessing the carbon-stock potential by biomass of a Mediterranean agroforestry landscape; biochar as a fertilizer substitute and method to sequester carbon in soils; and the impact of crop plant residues on carbon sequestration in soil.

**Climate Change Disclosure and Financial Risk: Merits and Concerns**  
**Carolyn S. Lawrence and Lloyd T. Wheeler**  
In series: *Climate Change and its Causes, Effects and Prediction*  
2012.  
Publicly traded companies are required to transparently disclose material business risks to investors through regular filings with the Securities and Exchange Commission (SEC). On January 27, 2010, the SEC voted to publish "Commission Guidance Regarding Disclosure Related to Climate Change", which clarifies how publicly traded corporations should apply existing SEC disclosure rules to certain mandatory financial filings with the SEC regarding the risk that climate change developments may have on their businesses. The Guidance has been controversial and has prompted the legislation in the 112th Congress to repeal it. This book provides an overview of the Guidance, with a focus on opposing views; congressional legislation; potential corporate costs and benefits of implementing the Guidance; and the impact of the Guidance from the perspective of investors, corporations, and finance professionals.

**Contaminated Fish: Chemical Residues and Mercury**  
**Patrizio Da Como and Vincenzo Uber (Editor)**  
In series: *Fish, Fishing and Fisheries*  
Case: 978-1-61470-785-1. $215.00.  
Results from the National Lake Fish Tissue Study indicate that mercury, PCBs, and dioxins and furans are widely distributed in lakes and reservoirs in the lower 48 states. These waterbodies occur in a variety of landscapes, and they can receive contaminants from several sources, including direct discharges in the water, air deposition and agricultural or urban runoff. Monitoring fish contamination in lakes and reservoirs is a critical activity for protecting human and ecosystem health because lakes and reservoirs provide important sports fisheries and other recreational opportunities. Lake ecosystems also provide critical habitat for aquatic species, and they support wildlife populations that depend on aquatic species for food. This book is a study of contaminants found in fish and their environmental impact.

**Desalination: Solutions and Roadmap for an Improved Water Supply**  
**James S. Dawson and Joe Brennan**  
In series: *Water Resource Planning, Development and Management*  
2012. 194 pp.  
Case: 978-1-61942-042-7. $95.00.  
e-book: 978-1-61942-044-1. $95.00.  
This book explores desalination technologies in the United States, which are increasingly used for municipal and industrial water supplies and reclamation of contaminated supplies. An issue for Congress is the federal role in desalination research, demonstration and full-scale facilities, and regulatory requirements. Constraints on wider adoption include financial, environmental, regulatory issues and concerns. Desalination processes generally treat seawater or brackish water to produce a stream of freshwater, and a separate, saltier stream of water.
that has to be disposed (often called waste concentrate). Its attractions include creation of a new freshwater source from otherwise unusable waters, and its independence from precipitation, runoff, storage, and recharge. Many states (most notably Florida, California and Texas) and cities are actively researching and investigating the feasibility of large-scale desalination plants for municipal water supplies.

**Diesel Emissions: Reduction Efforts**

*Jarrett F. Price and Sheryl E. Mitchell*

In series: *Energy Science, Engineering and Technology*

*In series: Environmental Remediation Technologies, Regulations and Safety*

2012. 142 pp.

Case: 978-1-62081-561-8. $110.00.

e-book: 978-1-62081-567-0. $110.00.

Reducing emissions from diesel engines is one of the most important public health challenges facing the country. Despite the EPA's stringent diesel engine and fuel standards taking effect over the next decade, the 20 million engines already in use will continue to emit large amounts of nitrogen oxide and particulate matter, both of which will contribute to serious public health problems for years to come. Fortunately, a variety of cost-effective technologies can dramatically reduce harmful emissions, save fuel, and help our nation meet its clean air and sustainability goals. This book analyzes the cost-effectiveness of various diesel emission reduction strategies, wherein the EPA compares the amount of federal grant funds used, to the lifetime tons reduced, to evaluate the effectiveness of federal investments in spurring diesel emission reductions.

**Dispersants and Well Containment: Assessing Spill Response Capability**

*Colton Adams and Edward J. Coombs*

In series: *Environmental Remediation Technologies, Regulations and Safety*

In series: *Environmental Health - Physical, Chemical and Biological Factors*

2013.

Soft: 978-1-62257-664-7. $52.00.


When an oil spill occurs in coastal waters of the United States, responders have several options for managing the environmental impacts of the spill, including the use of chemical dispersants and well containment. Dispersants do not reduce the total amount of oil entering the environment; rather, they help break down oil into small droplets that can more easily mix into the water below the surface, increasing biodegradation rates and potentially decreasing the impact of spilled oil on the shoreline. However, because chemical dispersants promote the movement of oil below the surface, their use exposes the underwater environment and the ocean floor to more of the spilled oil, where it may also have harmful effects. This book examines and assesses new spill response capabilities and technologies, with a focus on dispersants and well containment.

**Drought in the United States: Causes, Considerations and Policy Recommendations**

*Julie Simonetti and Matt Suricka*

In series: *Environmental Science, Engineering and Technology*

2012.

Soft: 978-1-62257-560-2. $52.00.


Drought is a natural hazard with potentially significant societal, economic, and environmental consequences. Public policy issues related to drought range from how to identify and measure drought to how best to prepare for, respond to, and mitigate drought impacts, and who should bear such costs. This book provides information relevant to drought policy discussions by describing the physical causes of drought, drought history in the United States, examples of regional drought conditions, and policy challenges related to drought.

**Dust: Sources, Environmental Concerns and Control**

*Laurent B. Wouters and Michel Pauwels*

In series: *Environmental Health - Physical, Chemical and Biological Factors*

In series: *Public Health in the 21st Century*


Case: 978-1-61942-547-7. $140.00.


In this book, the authors present current research in the study of the sources, environmental concerns and control of dust. Topics discussed in this compilation include the characterization of heavy metals content in attic dust from copper ore and ferronickel smelter processing plants in Macedonia; dust control in the mining industry of Australia; the health and environmental effects of dust storms in the Arabian Peninsula; dust fallout and its potential hazard on public health in Kuwait; photochemical and climate implications of airborne dust and assessing the quality of the urban environment by the elemental concentrations of foliage dust.

**Ecological Modeling**

*Wen-Jun Zhang (Sun Yat-sen (Zhongshan) University, Guangzhou, China)*

In series: *Environmental Science, Engineering and Technology*


Case: 978-1-61324-567-5. $165.00.

Ecological modeling is a fast growing science. More and more innovative methodologies and theories on ecological modeling are emerging around the world. This book presents models, methods and theories on ecological modeling. Topics discussed include artificial neural networks; individual-based modeling; ecological niche models; landscape and GIS modeling; population dynamics; nutritional ecology; remote sensing and decision support systems. This book reflects recent achievements of scientists in the study of ecological modeling.

**Ecosystems and Natural Resources: An Adaptive Management**

*Laura S. Koppel (Editor)*

In series: *Environmental Science, Engineering and Technology*


Case: 978-1-61324-779-2. $95.00.

e-book: 978-1-61324-914-7. $95.00.

Adaptive management is the process of incorporating new scientific and programmatic information into the implementation of a project or plan to ensure that the goals of the activity are being reached efficiently. It promotes flexible decision-making to modify existing activities or create new activities if new circumstances arise or if projects are not meeting their goals. The complex and dynamic nature of ecosystems make their restoration and management amenable to an adaptive management approach, and the concept is being implemented at scales that include entire regions or river basins. This book provides an introduction to the concept of adaptive management and focuses on the application of this concept to large, freshwater aquatic ecosystem restoration projects with multiple stakeholders.
Electronic Waste: Reuse, Recycling and Export Considerations
Jermaine L. Price and Richard C. Cooper
In series: Environmental Remediation Technologies, Regulations and Safety
In series: Waste and Waste Management
Case: 978-1-62081-617-2. $110.00.
Each year, consumers purchase millions of electronic devices, such as televisions, computers, and cell phones, and are faced with what to do with their used electronics. Recycling can recover a variety of materials, including precious metals, and many electronics can be reused or contain reusable components. Yet, the Environmental Protection Agency (EPA) and industry data show that tens of millions of used electronics are thrown away each year, because used electronics often contain toxic substances, such as lead and mercury, their end-of-life management raises concerns about the potential adverse impacts on human health and the environment, particularly when used electronics are exported to countries that lack a safe recycling and disposal capacity. This book examines the EPA’s current efforts to facilitate the environmentally sound management of used electronics, with a focus on the view of manufacturers, retailers, recyclers, state and local governments, and other stakeholders.

Emissions of Methane and Nitrous Oxide from Natural Sources
Anderson T. Scott and Baylee L. Campbell
In series: Environmental Remediation Technologies, Regulations and Safety
Methane (CH4) and Nitrous Oxide (N2O) are “greenhouse gases,” meaning that they trap infrared radiation (heat) from the earth’s surface and increase the temperature of the earth. Without this natural “greenhouse effect,” temperatures would be about 33 degrees Celsius (60 degrees Fahrenheit) lower than they are now, and life as we know it today would not be possible. During the past century, humans have substantially added to the amount of greenhouse gases in the atmosphere through activities such as burning fossil fuels and deforestation. The added gases are enhancing the natural greenhouse effect, and very likely contributing to an increase in global average temperature and related climate changes. This book summarizes the latest research and provides global estimates of current and future emissions of CH4 and N2O from natural sources, including emissions from newly identified sources.

Environment, Ecology and Exergy: Enhanced Approaches to Environmental and Ecological Management
Marc A. Rosen (UOIT, Oshawa, ON, Cananda)
In series: Environmental Science, Engineering and Technology
In series: Environmental Remediation Technologies, Regulations and Safety
Case: 978-1-62081-712-4. $175.00.
Growing concerns about the environmental and ecological implications of industrial and other systems, as well as the impact of energy resource utilization, are fostering increasing interest in environmental and ecological protection. Such understanding is crucial to advancing the quest for a cleaner environment and sustainability. New approaches to ecology and the environment that provide an engineering perspective and a scientific basis to activities are of particular interest. The integration of the thermodynamic quantity exergy with the environment and ecology provides a novel approach that offers significant potential to improve environmental and ecological management. A brief summary is presented here of existing analysis techniques which integrate exergy with ecological and environmental factors.

Environmental Capital: Government’s Role in Protecting Ecosystem Services and Biodiversity
Cameron Dewhurst and Firat Katirci
In series: Environmental Science, Engineering and Technology
In series: Environmental Remediation Technologies, Regulations and Safety
2012.
Case: 978-1-62257-594-7. $110.00.
This book examines ecosystems and the biodiversity they embody which constitute “environmental capital” on which society depends in multifaceted ways. The “ecosystem services” that flow from this capital including formation of soil and renewal of its fertility, management of flows of fresh water, maintenance of the composition of the atmosphere, pollination of flowers and crops, control of the distribution and abundance of pests and pathogens, production of fish and game in unmanaged and lightly managed ecosystems, aesthetic and recreational values from pristine landscapes, maintenance of the “genetic library” of global biodiversity as a source of future insights and innovations benefiting humankind, and important contributions to keeping climatic conditions in the range to which human society and current ecosystems are adapted. It has become clear, however, that biodiversity and other important components of the environmental capital producing these services are being degraded by human activities, and that the degradation of this capital has already impaired some of the associated services, with significant adverse impacts on society.

Environmental Justice Efforts at the EPA
Hudson F. Brenton and Edith A. Bray
In series: Environmental Remediation Technologies, Regulations and Safety
In series: Environmental Science, Engineering and Technology
Case: 978-1-61942-606-1. $185.00.
This book examines the efforts by the Environmental Protection Agency (EPA) to protect human health and the environment for overburdened populations by developing and implementing guidance on incorporating environmental justice into the EPA’s rulemaking process. All too often, low-income, minority and tribal Americans live in the shadows of the worst pollution, facing disproportionate health impacts and greater obstacles to economic growth in communities that cannot attract businesses and jobs. Every American deserves clean air, water and land in the places where they live, work, play and learn. The EPA hopes to lead by example in expanding the conversation on environmentalism and working for environmental justice, now and in the future.

Environmental Research Biographical Sketches and Research Summaries
Danila S. Melekhin and Mikolai F. Dolukhanov
In series: Environmental Research Advances
Environmental Research Summaries. Volume 1
Danila S. Melekhin and Mikolai F. Dolukhanov
In series: Environmental Research Advances
Case: 978-1-62257-598-5. $195.00.
This book is a continuation of the book Environmental Researcher Biographical Sketches and Research Summaries which compiles biographical sketches of top professionals in the field of environmental research, as well as research summaries from a number of different focuses in this important field.

Environmental Research Summaries. Volume 2
Danila S. Melekhin and Mikolai F. Dolukhanov
In series: Environmental Research Advances
Case: 978-1-62257-599-2. $195.00.
This book is a continuation of the book Environmental Researcher Biographical Sketches and Research Summaries which compiles biographical sketches of top professionals in the field of environmental research, as well as research summaries from a number of different focuses in this important field.

Environmental Research Summaries. Volume 3
Danila S. Melekhin and Mikolai F. Dolukhanov
In series: Environmental Research Advances
Case: 978-1-62257-600-5. $195.00.
This book is a continuation of the book Environmental Researcher Biographical Sketches and Research Summaries which compiles biographical sketches of top professionals in the field of environmental research, as well as research summaries from a number of different focuses in this important field.

Environmental Research Summaries. Volume 4
Danila S. Melekhin and Mikolai F. Dolukhanov
In series: Environmental Research Advances
Case: 978-1-62257-601-2. $195.00.
e-book: 978-1-62257-605-0. $195.00.
This book is a continuation of the book Environmental Researcher Biographical Sketches and Research Summaries which compiles biographical sketches of top professionals in the field of environmental research, as well as research summaries from a number of different focuses in this important field.

Environmental Review in Highway Projects
Todd L. Griffin and Carol E. Harrison
In series: Environmental Science, Engineering and Technology
In series: Transportation Infrastructure - Roads, Highways, Bridges, Airports and Mass Transit
2012.
This book identifies issues relevant to the debate over the role of the environmental review process in transportation project delivery. It identifies social and environmental issues that led Congress to enact the range of requirements that now make up the environmental review process, as well as selected requirements applicable to its implementation. Also discussed are the complexities in tying the environmental review process to federal-aid highway project delivery time. Issues that make it difficult to determine the time it takes to complete the project development, in general or individual stages of development (e.g., activities related explicitly to environmental reviews); or to identify root causes of project delays tied to specific elements of the environmental review process, are also explored.

Estuaries: Classification, Ecology, and Human Impacts
Steve Jordan (Special Assistant to the Director USEPA, Gulf Ecology Division, Gulf Breeze, FL)
In series: Environmental Science, Engineering and Technology
In series: Marine Biology
Case: 978-1-61942-083-0. $165.00.
Estuaries are minor geographical features at the global scale, but have major importance for society and the world’s economies. This book, with case studies from three continents, offers a perspective on estuaries as ecosystems that are intimately linked to society in both positive and negative ways. As focal points of trade, industry, energy production, fisheries, and tourism, estuaries provide a bounty of services to society; they are also centers of human population and vulnerable to the accompanying environmental stresses. This book covers a wide range of topics, from the definition and classification of estuaries, to chemical and physical properties, ecological processes, habitat values, fisheries, and tools for improving management and policy.

Evergreens: Types, Ecology and Conservation
Adriano D. Bezerra and Tadeu S. Ferreira
In series: Environmental Science, Engineering and Technology
2012. 194 pp.
Case: 978-1-61942-177-6. $150.00.
e-book: 978-1-61942-207-0. $150.00.
In this book, the authors present current research in the study of the types, ecology and conservation of evergreens. Topics discussed in this compilation include evergreen conifer forests in Hokkaido and Sakhalin, Japan; light responses and gender issues in male evergreens; spatio-temporal variation in edge effects on the herpetofauna of a Mexican tropical rain forest; conservation of the Chinese cathay silver fir; ecological significance of leaf longevity of the cerrado woody species; and temperature and transpiration effects of selective cutting of large trees in a broad-leaved evergreen forest in central Cambodia.

Federal Control of Air Emissions: Select Types of Considerations
Harrison M. Graham and Todd E. Lee
In series: Environmental Remediation Technologies, Regulations and Safety
In series: Environmental Science, Engineering and Technology
2012.
Case: 978-1-62081-808-4. $110.00.
This book examines select types of considerations in the federal control of air emissions. Topics discussed in this compilation include controlling air emissions from outer continental shelf sources; the EPA's Boiler MACT standards to control emissions of hazardous air pollutants; tall smokestacks and their contribution to interstate transport of air pollution; the revisions and associated issues relating to the National Ambient Air Quality Standards for Particulate Matter; and a summary of the Clean Air Act and its major requirements.

**Fishery Management**

*Janice S. Intilli*

In series: *Fish, Fishing and Fisheries*


Flood Risk and Flood Management

*Tommy Wong (Singapore)*

In series: *Hydrological Science and Engineering*

Edited by: *Dr. Tommy S. W. Wong*


Forest Management for Resilience, Adaptation and Watershed Protection

*Kenneth Colston and Raymond Flik*

In series: *Environmental Remediation Technologies, Regulations and Safety*

In series: *Environmental Science, Engineering and Technology*

2012. 201 pp.

The United States is the global leader in installed geothermal capacity with approximately 3,086 megawatts (MW) of installed capacity, and is expected to continue that leadership in the next decade. Even so, less than 0.5% of the United States' electricity generation currently comes from geothermal resources. Yet, geothermal energy could be an important contributor to a sustainable energy portfolio in the United States. One of the main constraints on geothermal project development is the ability to secure capital. Despite the technology's 50-year history of providing power at the utility scale, challenges remain in raising...
sufficient capital, especially during the early stages of project development. This book presents a brief primer on geothermal technology and the most relevant policies related to geothermal project development with a focus on geothermal project finance.

**Global Climate Change and U.S. Security Interests**  
**Angelo C. DiStefano and Mary Hurley**  
In series: *Climate Change and its Causes, Effects and Prediction*  
Case: 978-1-62081-288-4. $110.00.  
Changes in climate patterns and their impact on the physical environment can create profound effects on populations in parts of the world and present new challenges to global security and stability. Failure to anticipate and mitigate these changes increases the threat of more failed states with the instabilities and potential for conflict inherent in such failures. Because of the increasing importance of climate change on U.S. security, this book examines the need to adapt, manage, and mitigate these consequences. An overview of the impacts of climate change over recent decades is discussed with a focus on the political consequences of climate change as it relates to national and international security, with special attention to the African continent due to the vulnerability of African nations with high potential to intersect with U.S. national interests.

**Grasslands: Types, Biodiversity and Impacts**  
**Wen-Jun Zhang (Sun Yat-sen University, Guangzhou, China)**  
In series: *Environmental Health - Physical, Chemical and Biological Factors*  
2012. 185 pp.  
Case: 978-1-61470-555-0. $95.00.  
Grasslands, being one of most important ecosystems on earth, provide not only forage, livestock and fur, but also biodiversity and other ecosystem service functionalities. How to prevent grasslands from overgrazing, desertification, and other types of over-exploitation is a pressing issue. In recent years, grasslands have been dramatically changing as the changes of global climate and aggravation of human activities. Protection and reasonable use of grasslands are thus attracting more attention worldwide. This book provides researchers with diverse aspects of the latest advances in grasslands research. This book also covers a varied range of topics, for example, global biodiversity review, biotic interactions in the Rhizosphere, evaluation of soil quality, insect assemblages, orchard grass, soil microbial communities, grassland biodiversity management and soil nematodes.

**Greenhouse Gas Emissions: Drivers of Intensity and Country Variances**  
**Michael Knox and Jonathan D. Mark**  
In series: *Climate Change and its Causes, Effects and Prediction*  
In series: *Environmental Remediation Technologies, Regulations and Safety*  
Case: 978-1-62081-287-7. $110.00.  
The interaction of three variables underlie debates on the issue of climate change and what responses might be justified: the magnitude and rates of change of (1)population, (2)incomes, and (3)intensity of greenhouse gas emissions relative to economic activities. This book examines the interrelationships of the variables to explore their implications for policies that address climate change. Both internationally and domestically, initiatives are underway both to better understand climate change and to take steps to slow, stop, and reverse the overall growth in greenhouse gas emissions, the most important of which is carbon dioxide (CO2), emitted by the combustion of fossil fuels.

**Handbook of Wastewater Treatment: Biological Methods, Technology and Environmental Impact**  
**Cesaro J. Valdez and Enrique M. Maradona**  
In series: *Water Resource Planning, Development and Management*  
2012. 159 pp.  
Case: 978-1-62257-591-6. $150.00.  
Wastewater treatment represents a continuous challenge for engineers, environmental scientists and regulators. Today, an increasing number of new contaminants are being found such as pharmaceuticals, personal care products, and nanomaterials. In this book, the authors present current research in the study of the biological methods, technology and environmental impact of wastewater treatment processes. Topics include anaerobic membrane bioreactors for wastewater treatment; ecotoxicological approaches to assess wastewater's environmental impact to saltwater; EBPR for wastewater treatment; innovative sequencing batch reactors for industrial wastewater treatment; PAHs in the water environment; and cationic tannins as a coagulant/floculant agent.

**International Financing Efforts to Address Climate Change**  
**Randy N. Matthews**  
In series: *Climate Change and its Causes, Effects and Prediction*  
2012. 159 pp.  
Case: 978-1-62100-702-9. $95.00.  
e-book: 978-1-62100-710-4. $95.00.  
Many voices, domestic and international, have called upon the United States to increase foreign assistance to address climate change. Proponents maintain that such assistance could help promote low-emissions and high-growth economic development in lower income countries, while simultaneously protecting the more vulnerable countries from the effects of a changing climate. Recent studies estimate the needs for climate change financing in the developing world to range from US$4 billion to several hundred billion annually by the year 2030. This book examines the needs, sources and delivery methods for international climate change financing with a focus on the fundamental dispute concerning who should pay for it and how.

**Land Management**  
**Surendra Suthar (School of Environment & Natural Resources, Doon University, Ajaphur, India)**  
In series: *Environmental Remediation Technologies, Regulations and Safety*  
Case: 978-1-62081-421-5. $150.00.  
This book addresses the issues and problems related with land resources degradations and its meaningful solution using local tool and technological interventions at regional as well as global scale. A variety of subjects has been covered in this edited volume dealing issues of current interest – national policy frameworks for land restoration, land improvements through inputs quality management, geomorphic dynamic assessment, conceptual models in land
restoration plans, agro-forestry practices and its reliability in land restoration programmes etc. This edited volume will serve as an interesting reference text for a wide range of stakeholders from land managers to policy makers, farmers, environmentalist, researchers, and decision makers.

Landfills: Waste Management, Regional Practices and Environmental Impact
Gustavo B. C. Cabral and Beatriz A. E. Botelho
In series: Waste and Waste Management
In series: Environmental Remediation Technologies, Regulations and Safety
2012.
Case: 978-1-62257-121-5. $150.00.
Although several countries have been introducing more stringent laws to reduce the amount of waste to be landfilled, in an attempt to maximize recycling and materials recovery, landfilling is still the most generalized practice for municipal solid waste treatment. In this book, the authors discuss waste management in landfills, regional practices and its environmental impact. Topics include the reduction of environmental impact of municipal landfill leachate during oxidative treatment; polymers recycling; management of electronic waste in the Basque Country; and toxicity of landfills by plant cyto genetic and mutagenic effects.

Macro and Micro Green- Celebrating the International Year of Forests
Adriana Galvani (University of Bologna (IT), Member of Major Groups of UN, Department of History, Anthropology, Geography, Bologna, Italy)
In series: Environmental Research Advances
2012.
Case: 978-1-62257-470-4. $150.00.
UN declared 2011 as the International Year of Forests (IYF). Many organizations and stakeholders have been involved all around the world and many issues have been discussed. This book offers a full list of all the conferences held on the theme during the IYF as well as several other case studies. Additionally, it reviews the most important organizations that seek to protect the environment and safeguard forests. It presents the policies implemented at a local, national, and international level for afforestation and against desertification. It discusses the benefits and economic advantages connected to forests, the greatest of which is their ability to mitigate climate change and regulate pollution. Topics concerning the forest are interesting and multifaceted, so this work is essentially interdisciplinary or, better, “trans-disciplinary”.

Mangroves of the South China Sea Ecology and Human Impacts on Indonesia’s Forests
Sukristijono Sukardjo (Indonesian Institute of Sciences, Jakarta, Indonesia), Daniel M. Alongi (Australian Institute of Marine Science, Queensland, Australia)
In series: Environmental Health - Physical, Chemical and Biological Factors
Case: 978-1-61470-558-1. $75.00.
Mangrove forests along the vast expanses of Indonesia’s 95,180 kilometers of shoreline have long attracted man’s curiosity for some time. These unique tidal forests have developed luxuriantly along the low-gradient, passive-margins of the wide continental shelf of Indonesia. No books concerning Indonesia’s mangroves have been published previously by the Research Centre for Oceanography of the Indonesian Institute of Sciences (LIPI), despite the fact that these forests are areas of amazing beauty, exceptionally high biodiversity, and are the home and basis for the sociocultural and economic livelihoods of millions of Indonesians. This book highlights a particular problem regarding our 13 provinces that border with the South China Sea — we have insufficient information about the vast coastal tracts of Indonesia’s South China Sea region.

Mediterranean Ecosystems: Dynamics, Management and Conservation
Gina S. Williams
In series: Earth Sciences in the 21st Century
In series: Environmental Science, Engineering and Technology
Case: 978-1-61209-146-4. $129.00.
This new book presents topical research in the study of the management and conservation of Mediterranean ecosystems. Also discussed in this compilation is conserving biodiversity through the protection and management of forest fragments in changing semi-arid Mediterranean landscapes and the implications of land use changes in Mediterranean mountain ecosystems by rural abandonment.

Municipal Solid Waste
Gianni Konno and Claudio Machado
In series: Environmental Science, Engineering and Technology
Case: 978-1-62100-257-4. $140.00.
Municipal solid waste (MSW) is a commodity resulting from human endeavor and will always exist in the world’s cities. It comprises of material originating from households, commercial and medical establishments, construction and demolition activities, street cleaning, and park maintenance. In this book, the authors present topical research in the study of municipal solid waste, including its management in developing countries; the synchronization of solid waste management in urban centers with integrated nutrient management in Indian agriculture; NO and N2O emissions during fluidised bed combustion of lignite and the use of industrial waste and municipality solid waste as an aggregate, filler or fiber in cement mortar and concrete.

National Forest System: Special Management and Roadless Areas
Michael J. Gordon
In series: Environmental Science, Engineering and Technology
Case: 978-1-62100-513-1. $95.00.
e-book: 978-1-62100-568-1. $95.00.
This book explores the National Forest System with a focus on congressionally designated special management areas and roadless area initiatives. Congress authorized the President to reserve public forests to protect the lands and resources. The many presidential proclamations and subsequent land purchases have led to the current National Forest System. These lands are managed to balance the many purposes and values under the Multiple Use-Sustained Yield Act of 1960 through an interdisciplinary planning process, with public involvement, under the National Forest Management Act of 1976. Congress has also designated many specific national forest areas to emphasize particular values or resources, and continues to consider
legislation to designate additional specially managed areas within the national forests.

Nature Science and Sustainable Technology Compendium. Volume 2
M. R. Islam (Dalhousie University, Canada)
In series: Environmental Science, Engineering and Technology
2012.
Case: 978-1-62257-513-8. $150.00.
Nature thrives on diversity and flexibility, gaining strength from heterogeneity, whereas the quest for homogeneity seems to motivate much of modern engineering. Nature is non-linear and inherently promotes multiplicity of solutions. Modern applied science, however, continues to define problems as linearly as possible, promoting “single”-ness of solution, while particularly avoiding non-linear problems. Nature is inherently sustainable and promotes zero-waste, both in mass and energy. Engineering solutions today start with a “safety factor” while promoting an obsession with excess (hence, waste). Nature is truly transient, never showing any exact repeatability or steady state. Engineering today is obsessed with standards and replicability, always seeking “steady-state” solutions. This book promotes the approach that breaks out of the traditional path of linearizing natural phenomena and accepting research that is inherently pro-nature. This book offers the best hope of finally emulating nature rather than deviating from it.

Oil Spill Governance and Proposals after Deepwater Horizon
Kody E. Powell and Landon D. Webb
In series: Environmental Remediation Technologies, Regulations and Safety
In series: Environmental Science, Engineering and Technology
2012.
Case: 978-1-62081-924-1. $110.00.
The impacts of an oil spill depend on the size of the spill, the rate of the spill, the type of oil spilled, and the location of the spill. Depending on timing and location, even a relatively minor spill can cause significant harm to individual organisms and entire populations. Oil spills can cause impacts over a range of time scales, from days to years, or even decades for certain spills. On April 20th, 2010, an explosion occurred at the Deepwater Horizon drilling platform in the Gulf of Mexico, resulting in 11 fatalities. The incident led to approximately 206 million gallons of oil released, before it was contained on July 15th. The 2010 Gulf oil spill generated considerable interest in oil spill governance issues. This book provides background information regarding oil spills in the U.S. coastal waters and identifies the legal authorities governing oil spill prevention, response, and cleanup.

Precipitation: Prediction, Formation and Environmental Impact
Henry Dohring and Jeremy Dixon
In series: Environmental Science, Engineering and Technology
Case: 978-1-62100-447-9. $95.00.
e-book: 978-1-62100-553-7. $95.00.
In this book, the authors present current research in the study of the prediction, formation and environmental impact of precipitation. Topics discussed in this compilation include the precipitation of anions in aqueous systems; inter-decadal trend turnings of climate modes and dynamic/thermodynamic structures associated with a series of winter precipitation events over China; stochastic modeling and simulation of daily precipitation for weather generation; anion intercalation during Mg-Al LDH precipitation and main water-soluble ions in precipitation of the central Mediterranean region.

Radon: Properties, Applications and Health
Zachary Li and Christopher Feng
In series: Environmental Health - Physical, Chemical and Biological Factors
Case: 978-1-62100-177-5. $215.00.
The unique characteristics of radon make it very attractive for earth science studies, as it can migrate over large distances within the earth and the atmosphere, be measured with accuracy, and be used as a tracer for many environmental processes of interest. This book presents properties, applications and health aspects of radon. Some of the topics discussed include spatial and temporal variations of soil-radon activity in fault zones; beta and gamma dose assessment due to radon short lived progeny; adverse health effects of radon; geological applications of radon anomalies in groundwater and soil-gas; radon and earthquake forecasting; dynamic assessment of radon source in buildings and influence of water-rock interactions on the presence of dissolved radon in groundwater.

Regional EIA and Risk Assessment in a Fast Developing Country
S. A. Abbasi (Pondicherry University, Kalapet, India), E. V. Ramasamy (Mahatama Gandhi University), F. I. Khan (University of Newfoundland), Tasneem Abbasi (Pondicherry University)
In series: Environmental Research Advances
In series: Environmental Remediation Technologies, Regulations and Safety
Case: 978-1-61942-234-6. $140.00.
This book presents in graphic detail what is arguably the first-ever regional environmental impact assessment and risk assessment done in India, perhaps the first-ever of its kind in the third world. More importantly the book is archetypal; its utility value and message goes well beyond its immediate context because the story of the Manali Industrial Complex that it narrates can very easily be a story of any other industrial cluster in the third world.

Removal of Toxic Cr(VI) from Wastewater
Tonni Agustino Kurniawan (United Nations University-Institute of Advanced Studies, Japan)
In series: Environmental Remediation Technologies, Regulations and Safety
In series: Environmental Science, Engineering and Technology
Case: 978-1-62081-025-5. $75.00.
e-book: 978-1-62081-031-6. $75.00.
The presence of toxic Cr(VI) in the aquatic environment and their harmful effects on living organisms has emerged as one of the most serious environmental concerns in Thailand, located in the Southeast Asian region. The research, undertaken at the Sirindhorn International Institute of Technology of Thammasat University (2001-2003), directly addressed the need of our society for clean water. This book
reports the technical applicability of coconut shell waste, a low cost material from local agricultural waste for treatment of Cr(VI)-contaminated water, and can be a useful resource for environmental scientists, engineers, researchers, policy and decision makers, and engineering students worldwide.

**Revised Sulfur Dioxide Air Quality Standard: Costs and Benefits**
*Gary F. Richards and Tabatha E. Jones*
In series: *Environmental Remediation Technologies, Regulations and Safety*
In series: *Environmental Health - Physical, Chemical and Biological Factors*
Case: 978-1-62100-926-9. $185.00.
In setting primary ambient air quality standards, EPA’s responsibility under the law is to establish standards that protect public health, regardless of the costs of implementing a new standard. The Clean Air Act requires EPA, for each criteria pollutant, to set a standard that protects public health with “an adequate margin of safety.” As interpreted by the Agency and the courts, the Act requires EPA to create standards based on health considerations only. This book provides illustrative estimates of the incremental costs and monetized human health benefits of attaining a revised short-term Sulfur Dioxide (SO2) National Ambient Air Quality Standard (NAAQS) within the current monitoring network.

**Soil Fertility: Characteristics, Processes and Management**
*Bolanche Adewuyi and Kayin Chukwu*
In series: *Agriculture Issues and Policies*
In series: *Biotechnology in Agriculture, Industry and Medicine*
Soft: 978-1-62081-087-3. $65.00.
e-book: 978-1-62081-094-1. $65.00.
This book presents topical research in the study of the characteristics, processes and management of soil fertility in agriculture. Topics discussed include agricultural management changes in Pampean soils related to rotation and tillage; agroforestry systems in the Eastern Amazon; soil and crop management practices in bioenergy cropping systems; evaluation of the potassium supplying abilities of animal manures; nitrogen fertilization in the modern sustainable farming systems of Moldova; and soil fertility enhancing microorganisms and their application as biofertilizers.

**Soil Microbes and Environmental Health**
*Mohammad Miransari* *(Shahed University, Tehran, Iran)*
In series: *Environmental Research Advances*
Case: 978-1-61209-647-6. $145.00.
Soil microbes have important functions in the ecosystem including cycling of nutrients, immobilization and mineralization of organic matter, controlling pathogens, improving soil structure and enhancing plant growth. The importance of soil microbes in the ecosystem is becoming more elucidated by every day research progress. A wide range of soil microbes, especially the culturable ones, has been so far recognized and there are some other important microbes, which must yet be identified. In the present book, a team of researchers and scientists have contributed their research, ideas and thoughts regarding the microbial methods by which the environment can be kept clean and healthy.

**Soil Organic Matter: Ecology, Environmental Impact and Management**
*Pedro A. Björklund and Frederick V. Mello*
In series: *Environmental Science, Engineering and Technology*
Case: 978-1-62100-272-7. $150.00.
e-book: 978-1-62100-399-1. $150.00.
Soil organic matter (SOM) is a key constituent of soil as it is a “revolving nutrient fund” and improves soil structure, maintains crop production and minimizes erosion. In semiarid environments, the major problem for sustainable farming systems is the continuous decline of SOM towards levels too low for agricultural purposes. In this book, the authors present topical research in the study of the ecology, environmental impact and management of soil organic matter. Topics include soil organic carbon stocks and changes due to modifications on land use and management practices in Brazil; the preservation of SOM in semiarid Mediterranean environments; effects of SOM on the transport of non-aqueous phase liquid in soils and soil organic carbon stocks in relation to different land-use types in a mountainous watershed.

**Soot: Sources, Formation and Health Effects**
*Manosh C. Paul* *(Lecturer in Thermofluids, Adviser of Studies Systems, Power and Energy, UK)*
In series: *Environmental Science, Engineering and Technology*
In series: *Environmental Health - Physical, Chemical and Biological Factors*
Case: 978-1-61942-941-3. $140.00.
During combustion of fossil fuels soot particles form as a byproduct when a sufficient amount of oxygen is not present to yield a complete conversion of fuel into major combustion products such as carbon dioxide and water vapour. The soot particles (unburnt carbon) significantly affect the performance and durability of many engineering systems such as gas turbines and diesel engines and are the cause of significant human health problems associated with the respiratory system. Environmentally, the emissions of soot particles from combustion systems are also harmful as they contribute to the global warming. This book covers the important technological issues related to the formation, nanostructure, modelling, health effects, reduction and impact of soots.

**Syngas: Production, Applications and Environmental Impact**
*Antonius Indarto* *(Università di Torino, Turin, Italy)*
*Jelliarko Palguandi* *(University of Kyunghee, South Korea)*
In series: *Environmental Science, Engineering and Technology*
Case: 978-1-62100-870-5. $165.00.
The production and purification technology of syngas has received huge attention from researchers and industries for the last few years because its development represents one of the major efforts toward more efficient, sustainable, and environmentally benign use of the fossil hydrocarbon resources. The decline of global fossil fuels – petroleum, natural gas, and coal supplies and the need for clean and alternative energy have become major motives of research worldwide for sustainable energy development. The energy supply of the world today still heavily relies on combustion of fossil fuels for stationary
systems, domestic use, and transportation vehicles. Alternative fuels, are needed to fill the supply gap that will continue to grow. This book focuses on syngas technology as well as its production, applications and impact on the environment.

The Environment and the Role of Renewable Resources Use in Technology Transfer and Achieving Sustainable Development in Sudan
Abdeen Mustafa Omer (Engineer and Researcher at Energy Research Institute (ERI), Forest Road West, Nottingham, UK)
In series: Energy Science, Engineering and Technology
In series: Renewable Energy: Research, Development and Policies
2012.
Case: 978-1-62081-317-1. $175.00.
Energy is an essential factor in development, since it stimulates, and supports economic growth, and development in Sudan. Any form of energy can be transformed into another form, but the total energy always remains the same. Sustainable energy is the provision of energy such that it meets the needs of the present without compromising the ability of future generations to meet their needs. Sustainable energy sources are most often regarded as including all renewable sources, such as biofuels, solar power, wind power, wave power, geothermal power and tidal power. It usually also includes technologies that improve energy efficiency. This book discusses new developments in this field, as well as the impact that renewable energy, and alternative energy might have in the future. This new and important book gathers the latest research in the study of sustainable energy and highlights such topics as: monitoring sustainable energy development; methane; energy and territory; biodiesel production; environmental policies in an electricity sector and others.

The Environmental Protection Agency "Regulation Train": Proposals and Controversies
Terry F. Cooper and Clark D. Morgan
In series: Environmental Science, Engineering and Technology
In series: Laws and Legislation
Case: 978-1-62100-914-6. $110.00.
In the two and one-half years since Barack Obama was sworn in as President, the Environmental Protection Agency (EPA) has proposed and promulgated numerous regulations implementing the pollution control statutes enacted by Congress. This book discusses the concerns raised about the cost and potential impact of regulations under development at the EPA that would impose new requirements on coal-fired power plants and coal combustion waste disposal.

The European Union's Emissions Trading Scheme: Climate and Aviation Considerations
Anthony R. Moore and Mia F. Ryan
In series: Environmental Remediation Technologies, Regulations and Safety
In series: Climate Change and its Causes, Effects and Prediction
2012.
Soft: 978-1-62081-955-5. $52.00.
e-book: 978-1-62081-983-4. $52.00.
Climate change is generally viewed as a global issue, but proposed responses typically require action at the national level. With the 1997 Kyoto Protocol now in force and setting emissions objectives for 2008-2012, countries that ratified the protocol are implementing strategies to begin reducing their emissions of greenhouse gases. The European Union's EU Emissions Trading Scheme (ETS) is a cornerstone of the EU's efforts to meet its obligation under the Kyoto Protocol. It covers more than 10,000 energy intensive facilities across the 27 EU Member countries; covered entities emit about 45% of the EU's carbon dioxide emissions. This book examines the European Union's Emissions Trading Scheme (ETS) with a focus on climate and aviation considerations.

The Peat Swamp: Productivity, Trafficability and Mechanization
Ataur Rahman, Rafia Afroz, Azmi Yahya (International Islamic University Malaysia, Malaysia)
In series: Environmental Science, Engineering and Technology
In series: Environmental Research Advances
Case: 978-1-61942-670-2. $150.00.
This book has been written with emphasis on the fundamental engineering principles underlying the peat characteristics, importance of peat, environmental effects of peat, determination of the mechanical properties of peat terrain, mechanization of peat based on the vehicle for highland, moderate peatland and peat swamp . The mechanization of peat has been discussed in regards to the development of peat vehicle and their performance. This book intends to introduce senior undergraduate and postgraduate students to the study of the peat terrain and theory of peat vehicle mobility.

Theory and Application for Warning and Prediction of Disastrous Weather Downstream from the Tibetan Plateau
Xiangde Xu, Xiaohui Shi, and Chungu Lu (Chinese Academy of Meteorological Sciences, Beijing, China)
In series: Climate Change and its Causes, Effects and Prediction
In series: Environmental Science, Engineering and Technology
Soft: 978-1-62100-433-2. $47.00.
The dramatic rise of the Tibetan Plateau's land surface exerts a particular thermal and mechanical force on air flows above and surrounding this highland, which gives rise to many unique weather patterns and climate environments. A case in point is the Asian summer monsoon, the largest monsoonal system on Earth. Apart from its special role in the Asian summer monsoon, the Tibetan Plateau also imposes significant influences on global and regional weather and climate systems. This book unravels several aspects of land-water-atmosphere interaction over the plateau, and describes most recent advances in scientific research and technological developments related to the Tibetan Plateau.

Traditional Rural Landscapes in Island Topography in East Asia
Bixia Chen and Yuei Nakama (University of the Ryukyus, Japan)
In series: Environmental Research Advances
Case: 978-1-61470-497-3. $95.00.
fulfill its mission and the challenges it faces in doing so. Priorities and recent steps FS R&D has taken to improve its ability to R&D work and the effects of those trends on its research efforts and resulting accomplishments; trends in of research and development carried out by FS R&D and some of its complexities. The Department of Agriculture has become increasingly complex, requiring a sound understanding of science and science e.

In recent decades, managing the nation's public and private forests and e. Soft: 978-1-62081-533-5. $52.00. Greenhouse gas emissions have increased markedly since the pre-industrial era and are increasing at such a rate that their concentration in the atmosphere is producing a warming influence on the global climate. In order to make well-informed decisions on ways to reduce greenhouse gas emissions, it is important to understand how the different economic sectors contribute to the production of greenhouse gases, which sectors are relatively carbon dioxide (CO2) intensive, and how these patterns have evolved over time. This book analyzes energy-related CO2 emissions and intensities for 349 industries, Government (Federal, state and local), and Households. The 349 industries cover the entire economy, providing information on detailed subsectors within the aggregate sectors of Agriculture, Forestry and Fisheries, Mining, Construction, Manufacturing, Transportation Services, and all other services.

U.S. Carbon Dioxide Emissions and Intensities: Trends Across Economic Sectors Jayden T. Miller and Brittany O. Harris
In series: Environmental Remediation Technologies, Regulations and Safety
In series: Environmental Science, Engineering and Technology
2012. 103 pp.
Soft: 978-1-62081-569-4. $52.00.
e-book: 978-1-62081-569-4. $52.00.
Greenhouse gas emissions have increased markedly since the pre-industrial era and are increasing at such a rate that their concentration in the atmosphere is producing a warming influence on the global climate. In order to make well-informed decisions on ways to reduce greenhouse gas emissions, it is important to understand how the different economic sectors contribute to the production of greenhouse gases, which sectors are relatively carbon dioxide (CO2) intensive, and how these patterns have evolved over time. This book analyzes energy-related CO2 emissions and intensities for 349 industries, Government (Federal, state and local), and Households. The 349 industries cover the entire economy, providing information on detailed subsectors within the aggregate sectors of Agriculture, Forestry and Fisheries, Mining, Construction, Manufacturing, Transportation Services, and all other services.

U.S. Forest Service Research and Development Assessments Vincent J. Degraw
In series: Environmental Science, Engineering and Technology
2012. 120 pp.
Soft: 978-1-62100-639-8. $47.00.
In recent decades, managing the nation's public and private forests and rangelands has become increasingly complex, requiring a sound understanding of science and science-based tools to address these complexities. The Department of Agriculture's Forest Service maintains a research and development program (FS R&D) to help provide scientific information and tools. This book examines the scope of research and development carried out by FS R&D and some of its resulting accomplishments; trends in resources used in performing FS R&D work and the effects of those trends on its research efforts and priorities and recent steps FS R&D has taken to improve its ability to fulfill its mission and the challenges it faces in doing so.

Waste Management: New Research Ademir S. F. Araujo (Universidade Federal do Piauí, Campus da Socopo – Departamento de Engenharia Agrícola e Solos, Teresina - Piauí – Brazil)
In series: Environmental Remediation Technologies, Regulations and Safety
Case: 978-1-62081-995-1. $120.00.
e-book: 978-1-62257-109-3. $120.00.
Rapid urbanization coupled with increasing populations has brought in new socio-economic and environmental problems in the world, particularly for third world countries. One such issue that requires urgent attention is the mounting waste problem, which has grown from being an annoyance for regional and local governments to an issue of national importance in many developing countries. Solid wastes are produced after wastewater treatment and their characteristics are influenced by anthropogenic activities. This book brings important information and results of new research with waste management in all of the world. In this volume there are contributions of experts from different countries. Each one of them shows interesting views about this fascinating and important subject.

Water Quality: Issues and Options for Congress and the EPA Vince O. Bryant and Lane M. Alexander
In series: Water Resource Planning, Development and Management
In series: Environmental Health - Physical, Chemical and Biological Factors
Case: 978-1-61942-922-2. $95.00.
e-book: 978-1-61942-961-1. $95.00.
Much progress has been made in achieving the ambitious goals that Congress established more than 35 years ago in the Clean Water Act (CWA) to restore and maintain the chemical, physical, and biological integrity of the nation's waters. However, long-standing problems persist, and new problems have emerged. Water quality problems are diverse, ranging from pollution runoff from farms and ranches, city streets, and other diffuse or "nonpoint" sources, to toxic substances discharged from factories and sewage treatment plants. This book provides an overview of water quality issues in the 112th Congress with a focus on pesticide use and water quality; animal waste and water quality; and a summary of the Clean Water Act.

Water Supply Systems, Distribution and Environmental Effects Shane Quinn and Vaughn O’Neill
In series: Environmental Science, Engineering and Technology
In series: Water Resource Planning, Development and Management
Case: 978-1-61470-367-9. $140.00.
This book presents current research in the study of water supply systems and their distribution and environmental effects. Topics discussed in this compilation include water resources and technologies in Sudan and Costa Rica; adapting water supply systems in a changing climate; pollutants in groundwater supply systems in Sao Paulo, Brazil, as well as water supply for agricultural, environmental and urban uses in California's borderlands.
Watersheds: Processes, Management and Impact
Gavyn L. Kuhn and Jason R. Emery
In series: Water Resource Planning, Development and Management
In series: Environmental Science, Engineering and Technology
Case: 978-1-62081-057-6, $95.00. e-book: 978-1-62081-103-0, $95.00.
This book examines the management and impacts of watersheds on the ecosystem process. The authors present topics including the effects of thinning on material transformation in a stand of Cryptomeria japonica in a watershed in eastern Japan; natural and human influences on the inorganic water chemistry of the northern Xinjiang rivers in China; current land use within the Conecuh/Escambia River watershed in the Gulf of Mexico; factors affecting farmers’ adoption of best management practices in Ontario’s Grand River watershed; and the adaptation of national elevation dataset to estimate depression storage in a glaciated watershed.

Wetlands: Ecology, Management and Conservation
András Baranyai and Dionysius Benkô
In series: Environmental Remediation Technologies, Regulations and Safety
In series: Environmental Research Advances
Wetlands have already been recognized to hold the capacity for efficiently reducing or removing large amounts of pollutants from point sources (e.g. municipal and certain industrial effluents) as well as non-point sources (e.g. mining, agricultural and urban runoff) including organic matter, suspended solids, excess of nutrients, pathogens, metals and other micropollutants. This pollutant removal is accomplished by the interdependent action of several physical, chemical and biological processes which include sedimentation, filtration, chemical precipitation, sorption, biodegradation, and plants uptake among others. In this book, the authors present studies on the ecology, management and conservation of these valuable wetlands.

FOOD SCIENCE
Clostridium Botulinum: A Sporbingre Fo Organism and a Challenge to Food Safety
Christine Rasetti-Escargueil (National Institute for Biological Standards and Control (Health Protection Agency, UK), Susanne Surman-Lee (HPA London Regional Food Water & Environmental Microbiology Laboratory, UK)
In series: Advances in Food Safety and Food Microbiology
Edited by: Dr. Anderson de Souza Sant’Ana and Dr. Bernadette D.G.M. Franco
This book presents a wide overview of the Clostridium botulinum organism alongside the description of food borne botulism and the review of methods used to detect Clostridium botulinum in food. Clostridium botulinum produces extremely potent neurotoxins involved in severe paralytic illness called botulism. Starting from the history of Clostridium botulinum discovery, international experts on the topic explain the key steps involved in its neurotoxicity. Among the many topics presented is a study on the Botulism hazards from native foods prepared by inhabitants of Arctic regions. Other chapters explore experimental techniques and methods used to detect Botulinum in food, including principles of control of Clostridium botulinum, guidelines and codes of practice. New data or methods used to control Clostridium botulinum presence in meat, fish, in vegetable or in processed food are discussed.

Coffee Consumption and Health
Bernard Albert Goodman (Guangxi Key Laboratory of Subtropical Bioresource Conservation and Utilization, Guangxi University, Nanning, Guangxi, China)
In series: Food and Beverage Consumption and Health
In series: Nutrition and Diet Research Progress
Although coffee has been one of the World’s most popular drinks for many years, there has been much conflicting evidence in the media about the links between its consumption and the health of consumers. As a consequence there is considerable public confusion as to whether consumption of this beverage is beneficial or detrimental to health. Thus, the principal objective of this book is to provide an up-to-date assessment of the links between coffee consumption and health with an emphasis on the results of scientific investigations performed during the past 20 years.

Cost Realities of Healthy Foods
Regina Snyder and Robert P. Wagner
In series: Food and Beverage Consumption and Health
In series: Food Science and Technology
2012.
Most Americans consume diets that do not meet Federal dietary recommendations. This perception may be influenced by studies that found healthy foods to cost more per calorie than less healthy foods. This is one way, but not the only way, to measure the cost of a healthy

EUROPE
Focus on Science and Technology from a Georgian Perspective
Sergo Gotsiridze
In series: Scientific Revolutions
Edited by: Vladimir N. Uversky (University of South Florida, USA)
Case: 978-1-61209-970-5, $129.00.
This new book presents and discusses current research from Georgian authors in all areas of science and technology. Topics discussed include mathematical simulation of capillary blood flow disorders; infinite versions of some classical results in linear algebra and vector analysis; measurability of unions of plane disks; modelling of elastic waves generated by a point explosion; investment environment in Georgia; uniform measures in banach spaces and Riemann integrability and uniform distribution in infinite-dimensional rectangles.
diet. For a balanced assessment, this book compares the price of healthy and less healthy foods using three metrics: the price per calorie, per edible gram, and per average portion. These studies conclude that the higher prices of healthy foods present barriers to consumer ability to buy recommended amounts of foods like fruits and vegetables.

Curcumin: Biosynthesis, Medicinal Uses and Health Benefits  
Jun Sasaki and Masaki Kichida  
In series: Food Science and Technology  
In series: Biotechnology in Agriculture, Industry and Medicine  
Case: 978-1-61942-481-4. $140.00.  
Curcumin is a natural product found in the rhizome of Curcuma longa. Ongoing research and clinical trials prove this natural phenolic compound to possess diverse pharmacological potency and is effective as an antioxidant, anti-inflammatory, antimicrobial/antiviral property and is also being considered as a cancer chemo-preventive agent. Topics discussed in this book include the implications of curcumin treatment of central nervous system disease; phosphorylase kinase inhibition in skin disease; PEGylated curcumin; the potential role of curcumin as a chemotherapeutic drug and the pharmaceutical implications of curcumin in the development of drugs for cystic fibrosis pharmacotherapy.

Enterococcus and Safety  
Teresa Semedo-Lemsaddek, Maria Teresa Barreto-Crespo, Rogério Tenreiro (Avenida da Universidade Técnica, Lisboa, Portugal)  
In series: Advances in Food Safety and Food Microbiology  
Edited by: Dr. Anderson de Souza Sant’Ana and Dr. Bernadette D.G.M. Franco  
Case: 978-1-61470-569-7. $249.00.  
The book “Enterococcus and Safety” is presented as a journey to the enterococcal world. The genus Enterococcus comprises a wide variety of both pathogenic and commensal gram-positive bacteria. These microorganisms are common constituents of fermented products such as traditionally manufactured cheeses and dry sausages, in which it is believed that they contribute to the development of organoleptic characteristics. In addition, enterococci are also used to extend the shelf life and improve the hygienic safety of foodstuffs because they produce bacteriocins which may have a promising potential in bio-preservation and in the enhancement of the hygienic quality of food products. However, in recent years enterococci have emerged as serious pathogens in hospital environments, where vancomycin-resistant strains are gaining major importance. This dual role of enterococci as beneficial organisms or opportunistic pathogens leads to an increasing need for studies intended to discriminate between food-grade and pathogenic strains.

Finger Millet: A Valued Cereal  
K.S. Premavalli (Project Coordinator, Head, Food Preservation Division, Defence Food Research Laboratory, Siddharthanagar, Karnataka, India)  
In series: Food and Beverage Consumption and Health  
In series: Nutrition and Diet Research Progress  
2012. 194 pp.  
Finger millet though a small cereal grain is a most promising millet for its strength of calcium, iron, dietary fibre and polyphenols. These compounds provide better skeletal health and the cereal possess anti-diabetic properties. But the information documented so far on finger millet refers more to varieties and cultivation practices. This book covers the global information within 9 chapters in a methodological way, the finger millet strength, history and cultivation of varieties, nutrients, non-nutrients, the finger millet processing methods, processed products development and their health benefits evaluation which creates a scientific evidence for the benefits.

Food Chemistry  
Dongfeng Wang (Qingdao, P. R. China), Hong Lin (Ocean University of China, P. R. China), Jianqian Kan, (Southwest University, P. R. China), Linwei Liu, Xiaoxing Zeng and Shengrong Shen  
In series: Food Science and Technology  
In series: Food and Beverage Consumption and Health  
Case: 978-1-61942-125-7. $165.00.  
This book introduces the chemistry and properties of six essential nutrients contained in foods, including water, carbohydrates, lipids, proteins, vitamins, and minerals and special attention is given to their changes undergone during processing and storage and the effects of these changes on the quality of foods. Food additives and toxic substances in foods are also included in this book. Tables and illustrations will be widely employed in the book to offer readers with in-depth insight into food chemistry. These features make the book a valuable tool for food chemists, food technologists, engineers, biochemists, nutritionists, and analytical chemists for food and agricultural research, food control and other related purposes. The book can also be used as a textbook for university students and teachers for leaning and teaching Food Chemistry.

Food Labeling: FDA Protections and Country-of-Origin Labels  
Joseph K. Scott and Mary I. Hayes  
In series: Government Procedures and Operations  
In series: Food Science and Technology  
2012. 91 pp.  
Soft: 978-1-61942-759-4. $47.00.  
Consumers increasingly seek information on food labels to help them make healthy food choices, and they rely on federal agencies to ensure that such information is truthful. Food companies may use health- and/or nutrient-related claims on food labels to appeal to consumers, distinguish their products from their competitors’ and otherwise increase their sales. However, when those claims are false or misleading, consumers’ efforts to seek healthy food may be undermined. This book provides an overview of FDA protocols to reassess its approach in detecting and protecting consumers from false or misleading claims on food labeling.

Food Packaging: Procedures, Management and Trends  
Michael G. Kontominas (Laboratory of Food Chemistry and Food Technology, Department of Chemistry, University of Ioannina, Ioannina, Greece)  
In series: Progress in Food Science and Technology  
Case: 978-1-62257-310-3. $150.00.
the primary objective of food packaging is to contain and protect foods from physical, chemical and mostly microbiological spoilage. At the same time food packaging serves as a powerful marketing tool attracting the consumer with features such as easy opening and handling, information on the nutrient and caloric content of the contained product, instructions on the preparation and use of the package contents etc. It is difficult to imagine modern society without packaged goods. The authors or contributors of this book volume come from a variety of different backgrounds and are well respected each one in their own field of research. Their contributions have made the objective of the book possible. Professionals such as food scientists, packaging technologists and engineers as well as students engaging in food packaging and seeking to update their knowledge will find the contents of this book useful.

**Fructose: Synthesis, Functions and Health Implications**

*Brandon M. Johnston and Aaron B. Collins*

In series: *Nutrition and Diet Research Progress*

In series: *Food Science and Technology*


Case: 978-1-62081-126-9. $150.00.


Fructose is a carbohydrate found in plants and humans. It was isolated in 1947 from sugar cane, where it is a component of sucrose. In this book, the authors discuss the synthesis, functions and health implications of fructose. Topics include high-fructose consumption and metabolic disease; detrimental neuroendocrine and metabolic effects of fructose during perinatal and adult periods; fructose and non-alcoholic fatty liver disease; and fructose ingestion effects on brain functions.

**Healthy Down Home Cooking and Diversity Cookbook**

*Louis M. Capitanelli*

In series: *Food and Beverage Consumption and Health*

2012. 89 pp.

Case: 978-1-60692-849-3. $55.00.

e-book: 978-1-62081-870-1. $55.00.

Healthy Down Home Cooking and Diversity Cookbook is two cookbooks in one. In the first, Healthy Down Home Cooking, recipes and nutritional information developed by the National Cancer Institute are provided. Consideration is given to preparing meals for African Americans who suffer from higher rates of serious diseases like high blood pressure, Type 2 diabetes, heart disease and some types of cancer. In the second cookbook, a Diversity Team from the National Cancer Institute has provided a sampling of recipes exploring different countries and cultures from around the globe. Please note, this second cookbook is meant to provide flavorful dishes and makes no health claims.

**Honey: Current Research and Clinical Applications**

*Juraj Majtan (Institute of Zoology SAS, Bratislava, Slovakia)*

In series: *Food and Beverage Consumption and Health*


Case: 978-1-61942-656-6. $140.00.


In the last few years, with increasing frequency, modern medicine directs attention to natural products with biological and therapeutic properties and their use in clinical practice. The major arguments for implementing natural products, such as honey, are low cost and the absence of antimicrobial resistance risk. This book presents original research and clinical results on the leading edge of research. Topics discussed include antimicrobial and anti-biofilm properties of honey; possible anticancer and anti-diabetic properties of honey; immunomodulatory effects of honey on cutaneous and immune cells during wound healing process; topical applications of honey and the use of honey in the treatment of burns, non-healing wounds and eye diseases.

**Local Food Systems: Markets, Trends and Federal Programs**

*William H. Gibson and Danielle J. Cole*

In series: *Food Science and Technology*

2012. 130 pp.

Soft: 978-1-62081-248-8. $52.00.

e-book: 978-1-62081-256-3. $52.00.

Sales of locally produced foods comprise a small, but growing, part of U.S. agricultural sales. The U.S. Department of Agriculture (USDA) estimates that farm-level value of local food sales totaled about $4.8 billion in 2008, about 1.6% of the U.S. market for agricultural products. An estimated total of 107,000 farms were engaged in local food systems, about 5% of all U.S. farms. This book provides background on local and regional food systems, focusing on available data on direct-to-consumer sales, farmers' markets, farm-to-school programs, community-supported agriculture, and community gardens. Also discussed are the available resources within existing federal programs administered by USDA and other agencies that may be applied to support local food systems as well as the legislative options and proposals that will be part of the next farm bill debate.

**Molecular Typing Methods for Tracking Foodborne Microorganisms**

*Steven L. Foley and Rajesh Nayak (National Center for Toxicological Research, U.S. Food and Drug Administration, Jefferson, AR) Timothy J. Johnson (Department of Veterinary and Biomedical Sciences, College of Veterinary Medicine, University of Minnesota) Sanjay K. Shukla*

In series: *Advances in Food Safety and Food Microbiology*

Edited by: Dr. Anderson de Souza Sant'Ana and Dr. Bernadette D.G.M. Franco


Case: 978-1-62100-643-5. $195.00.


Foodborne illness remains a major problem throughout the world. In the United States, for example, it is estimated that there are over 48 million illnesses each year associated with the consumption of contaminated foods. Of those with known etiologies, approximately 39% are associated with bacterial pathogens. These bacterial infections often tend to be more severe than their viral counterparts resulting in approximately 64% of hospitalizations and deaths each year from foodborne pathogens. Thus, being able to get to the source of the contamination of foods is an important endeavor to begin to develop strategies to lessen the burden of bacterial foodborne illness on the human population. This book is a useful reference to students, practitioners and food safety scientists who desire to gain a fundamental understanding of the different options available for molecular typing of foodborne pathogens.
New Trends in Marine and Freshwater Toxins: Food and Safety Concerns
Ana G. Cabado and Juan Manuel Vieites (ANFACO-CECOPESCA, Spanish National Association of Sea Food Producers, Vigo, Spain)
In series: Advances in Food Safety and Food Microbiology
Edited by: Dr. Anderson de Souza Sant’Ana and Dr. Bernadette D.G.M. Franco
Marine and freshwater biotoxins are known problem in food safety, mainly for filter-feeding mollusks and for freshwater aquaculture. This is a challenging matter since, in recent years, toxic algal blooms seem to grow in frequency and duration, leading to longer closure of harvesting areas, disruption in trade, mortality in farmed fish and a growing concern in producers, consumers and health authorities. Unfortunately, in recent years toxins from far latitudes are emerging, leading to new human health problems. Research and exhaustive knowledge of a problem makes it easier to draw a scenario where the best management strategies are gathered. This book combines information related to food-borne illness associated with marine or freshwater biotoxins, the anthropogenic and environmental factors that cause the appearance of toxic episodes and all available analytical procedures for phycotoxin detection.

Onion Consumption and Health
Candelario B. Aguirre and Leticia M. Jaramillo
In series: Food Science and Technology
In series: Nutrition and Diet Research Progress
Flavonoids and organosulfur compounds are the two major classes of secondary metabolites found in onions that are believed to play a role as health-promoting, disease-preventing dietary supplements, including antioxidant activity. In this book, the authors present topical research in the study of onion consumption and health effects. Topics include an overview of the bioactivity of onions; an ultrasound-assisted flavonoid extraction from onions, and the physiological attributes of GST, Gly I, Gly II and allinase in onion bulbs and cultured cells.

Pathogenic Vibrios and Food Safety
Yi-Cheng Su (Oregon State University, Astoria, Oregon)
In series: Advances in Food Safety and Food Microbiology
Edited by: Dr. Anderson de Souza Sant’Ana and Dr. Bernadette D.G.M. Franco
Members of the genus Vibrio are natural inhabitants of the marine environments. Many of them are human pathogens and can cause illness associated with seafood consumption. Infections caused by pathogenic vibrios are consistently reported in countries around the world, which is a major food safety concern for consumers and the food industry. Understanding the characteristics, virulence factors, methods for detection, and strategies for prevention is critical to minimize infection caused by vibrios. This book is a comprehensive guide to the understanding of infectious vibrios and application of control measures to prevent foodborne Vibrio infections.
economic adulteration of food and medical products that could affect the public health.

**Soy: Nutrition, Consumption and Health**  
Aamir Ahmad (Karmanos Cancer Institute, Department of Pathology, School of Medicine, Detroit, MI, USA)  
In series: Food Science and Technology  
In series: Food and Beverage Consumption and Health  
This book is a collection of articles detailing the very diverse roles of soy-derived compounds. Many cultures around the world have realized the importance of soy in diet. Through a total of 20 chapters, this book showcases the very diverse chemistry, biology and functions of soy. In view of the many reported effects of soy-derived compounds against diverse human cancers, this book concludes with few chapters on the anticancer activity of soy-derived compounds. Thus, through a collection of articles authored by renowned experts from across the globe, this book is an attempt to touch upon and highlight the importance of soy in diet with emphasis on its various health beneficial effects.

**Tea Consumption and Health**  
Gautam Banerjee (Director and Science leader-Nutrition and Health, Unilever Research Bangalore, India)  
In series: Food and Beverage Consumption and Health  
Case: 978-1-61942-702-0. $140.00.  
Tea has been consumed for the the last 3,000 years. Tea, either green or black tea has been consumed as a beverage and its health benefits have been widely explored. Tea is known for its benefits against cardiovascular disease, anti-inflammatory benefits, antimicrobial, as well as skin and oral care agent. In this book, experts in tea explore its health effects in various aspects such as skin, diabetes, cardiovascular disease etc. This book is an excellent collection of literature evidence on health benefits of tea for the global reader.

**Wine: Types, Production and Health**  
Arthur S. Peeters  
In series: Food Science and Technology  
In series: Food and Beverage Consumption and Health  
Case: 978-1-61470-635-9. $325.00.  
This book presents topical research from across the globe in the study of the types, production and health issues relating to wine. Topics discussed in this compilation include the microbiological, chemical and health aspects of wines from tropical plants; the effect of winemaking techniques on bioactive compounds in white and red wine; micro-oxygenation of red wine; effects of wine consumption on the cardiovascular system; the use of inactive dry yeast preparations to improve fermentation and the organoleptic characteristics of wine; analytical methods for the detection of Ochratoxin A in wines; wine and neurodegenerative diseases; Madeira wine composition; controlling the alcohol content in wine; wine quality through the use of oak barrels and non-saccharomyces yeasts in wine.

**GENETICS**

**Genetic Diversity: New Research**  
Julian A. Cervantes Amaya and Miguel M. Franco Jimenez  
In series: Genetics - Research and Issues  
In series: Environmental Science, Engineering and Technology  
Case: 978-1-62081-598-4. $150.00.  
Genetic diversity plays a very important role in survival and adaptability of a species because when a species’s environment changes, slight gene variations are necessary to produce changes in the organisms' anatomy that enables it to adapt and survive. A species that has a large degree of genetic diversity among its population will have more variations from which to choose the most fit alleles. In this book, the authors discuss topics that include genetic diversity of human and animal papilloma viruses; conservation genetics of the lion; genetic diversity for quality traits in wild and ancient wheats; the genetic history of Morocco; different approaches to assess structure and genetic diversity in forest species; new genetic provisions for the reinstatement of ginseng natural populations; genetic and epigenetic variations in disease and drug response; genetic diversity and genetic rescue within wildlife populations; and genetic variability and advances in taxonomy.

**Genetics Researcher Biographical Sketches**  
Lyndsay E. Hewitt and John W. O’Neil  
In series: Genetics - Research and Issues  
Case: 978-1-61942-647-4. $140.00.  
This book compiles biographical sketches of top professionals in the field of genetics research, as well as research summaries from a number of different focuses in this important field.

**GEORGIAN STUDIES**

**David Kakabadze: Georgian Modern Artist and Inventor**  
Ketevan Kintsurashvili (Georgian State University of Theatre and Film, Georgia)  
In series: Fine Arts, Music and Literature  
2012.  
Case: 978-1-61942-850-8. $75.00.  
This book is dedicated to the great Georgian modern artist David Kakabadze (1889-1952). This book compares the importance of David Kakabadze’s creative work against the background of world avant-garde art of the beginning of the 20th century. This book is of interest for art historians and other experts, studying Georgian and Soviet art/culture, modern art and, especially, abstract art.
HEALTH CARE

Knowledge Transfer in a Multidisciplinary Health Care Arena: Positions and Plots
Carmen W.H. Chan (The Nethersole School of Nursing, The Chinese University of Hong Kong, Hong Kong, China)
In series: Public Health in the 21st Century
Case: 978-1-62081-160-3. $85.00.
This book is a collection of latest works that show the unique roles and positions of different health care professionals on the arena of health care knowledge transfer. Although the transfer of knowledge-based evidence into practice and service has long been advocated, the gap between the conduct of research and the application of research findings remains a concern. This book describes innovative knowledge transfer projects in real life situations, ranging from health care education, health promotion, disease prevention and control to end-of-life care.

INTERNATIONAL TRADE

Intellectual Property Rights: Protections and Enforcement
Harold E. Price and Linda S. Cox
In series: Trade Issues, Policies and Laws
In series: Business Issues, Competition and Entrepreneurship
2012. 139 pp.
Soft: 978-1-62257-233-5. $52.00.
Intellectual property rights (IPR) traditionally have been matters of national concern. Individual nation states have developed IPR regimes reflecting their domestic needs and priorities. Over time, intellectual property protection and enforcement have come to the forefront as a key international trade issue for the United States, figuring prominently in the multilateral trade policy arena and in regional and bilateral U.S. free trade agreements (FTAs). This book reflects the Administration's resolve to encourage and maintain adequate and effective IPR protection and enforcement worldwide. It identifies a wide range of concerns, including troubling "indigenous innovation" policies that may unfairly disadvantage U.S. rights holders in China, the continuing challenges of copyright piracy over the Internet in countries such as Canada, Italy, and Russia, and other ongoing, systemic IPR enforcement issues presented in many trading partners around the world.

INTERNET

E-Commerce Coming into its Own
Blanton K. Nescott (Editor)
In series: Internet Theory, Technology and Applications
Case: 978-1-60021-991-7. $95.00.
e-book: 978-1-61470-278-8. $95.00.
E-commerce, which is also known as electronic commerce, can be simply defined as 'carrying out business over the Internet'. Business anywhere has its own fixed set of rules either written or unwritten.

This book examines some of the underlying assumptions of e-commerce, new developments and prospects for future directions.

Explorations of Internet Usage and Access in U.S. Homes
Bernard L. Foster and Marcelino E. Gonzales
In series: Internet Theory, Technology and Applications
Case: 978-1-61942-923-9. $95.00.
The Internet is an extraordinary platform for innovation, economic growth, and social communication. High-speed Internet services delivered over broadband networks are critical to maintaining the United States' competitiveness in a global economy. A strong correlation exists between broadband and indices of economic growth, such as GDP, employment, and property values. The Administration recognizes the importance of broadband to improve health care, enhance education, and provide essential job training and employment assistance for Americans seeking work. This book examines the digital nation of computer and internet use at home with a focus on the disparities in broadband Internet adoption that exist between demographic and geographic groups.

Security in Cyberspace: Select Assessments and Policy Considerations
Martin E. Owens and Deborah R. Simpson
In series: Internet Policies and Issues
2012.
Case: 978-1-62257-349-3. $110.00.
Today, the Internet is at a crossroads. Protecting security of consumers, businesses and the Internet infrastructure has never been more difficult. Cyber attacks on Internet commerce, vital business sectors and government agencies have grown exponentially. In the first quarter of this year, security experts were seeing almost 67,000 new malware threats on the Internet every day. This means more than 45 new viruses, worms, spyware and other threats were being created every minute. As these threats grow, security policy, technology and procedures need to evolve even faster to stay ahead of the threats. This book explores a new framework for addressing internet security issues for companies outside the orbit of critical infrastructure or key resources. While securing energy, financial, health and other resources remain vital, the future of innovation and the economy will depend on the success of Internet companies, and ensuring that these companies are trusted and secure is essential.

Social Networking and the Libraries in the New Millennium: An Annotated Bibliography
Deva Eswara Reddy (Associate Professor of Library Science, Texas A&M University, College Station, Texas)
In series: Social Issues, Justice and Status
2012. 70 pp.
Soft: 978-1-62081-758-2. $52.00.
e-book: 978-1-62081-792-6. $52.00.
This publication documents the role of social networking sites in all types of libraries such as school, college, university, public, special, and community libraries in the New Millennium covering the period 2000-2011. Each analyzed entry highlights the usefulness of the article. Highlighted aspects of social networks include teens and young adults, privacy and trust, behavioral and social sciences, health sciences, and the role of Congress. This handy reference work and the literature it covers would enable libraries and decision makers to
decide on how libraries can adapt social networks and for what ends, how much time and effort one should invest in these platforms, and how to monitor their success. Title, author, and subject indexes are an added pathway to the users of this book.

**LAW**

**Cybercrime: Federal Criminal Laws and Digital Evidence Field Guide**  
*Dana E. Mendelson*  
In series: *Law, Crime and Law Enforcement*  
In series: *Computer Science, Technology and Applications*  
Case: 978-1-62100-420-2. $95.00.  

The federal computer fraud and abuse statute, 18 U.S.C. 1030, protects computers in which there is a federal interest (federal computers, bank computers, and computers used in or affecting interstate and foreign commerce). It shields them from trespassing, threats, damage, espionage and from being corruptly used as instruments of fraud. It is not a comprehensive provision; instead it fills cracks and gaps in the protection afforded by other state and federal criminal laws. This book provides an overview of the federal computer fraud and abuse statute and related federal criminal laws with a focus on the proper handling of digital evidence and forensics.

**DNA Testing and Data Banking**  
*Edward J. Donovan and Rose G. McCullen*  
In series: *Law, Crime and Law Enforcement*  
In series: *DNA and RNA: Properties and Modifications, Functions and Interactions, Recombination and Applications*  
Case: 978-1-62100-321-2. $95.00.  
e-book: 978-1-62100-370-0. $95.00.  

DNA is the fundamental building block for an individual's entire genetic makeup. DNA is a powerful tool for law enforcement investigations because each person's DNA is different from that of every other individual. DNA can be extracted from a number of sources, such as hair, bone, teeth, saliva and blood. This book provides an overview of how DNA is used to investigate crimes and help protect the innocent. It also reviews current statutory law on collecting DNA samples, sharing DNA profiles and providing access to post-conviction DNA testing.

**MARINE BIOLOGY**

**Clam Fisheries and Aquaculture**  
*Fiz da Costa Gonzalez (Centro de Cultivos Marinos de Ribadeo- CIMA, Muelle de Porcillán, Lugo, Spain)*  
In series: *Marine Biology*  
2012.  
Case: 978-1-62257-518-3. $195.00.  

Mollusca is one of the largest phyla in the animal kingdom, over 50,000 species having been described, thus comprising more than a half of the marine species. Molluscs are scientifically and economically important invertebrates, representing 8% of all captured marine species. One of the six molluscan classes is Bivalvia, which is composed of both marine and freshwater animals enclosed in shells with two valves. Among these, the groups of greatest economic importance are oysters, scallops, mussels and clams. This book deals with clams in the broad sense of the term, since there are several bivalve families falling into the “clam” category. The selection of the families is primarily based on their respective economic importance, in terms of fisheries and aquaculture production. These selected families are Veneridae (venus shells), Macridae (surf clams), Donacidae (wedge shells), Myidae (softshell clams), Phairidae and Solenidae (razor clams). It must be remarked that, in some chapters or sections within them, species belonging to other families of clams are cited.

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**Crabs: Anatomy, Habitat and Ecological Significance**  
*Kumiko Saruwatari and Miharu Nishimura*  
In series: *Marine Biology*  
In series: *Animal Science, Issues and Professions*  
Case: 978-1-61942-225-4. $95.00.  

This book presents topical research in the study of the anatomy, habitat and ecological significance of crabs. Topics discussed in this compilation include the different species of crabs and viral susceptibility; distribution and habitat of cold water crab species on the Grand Bank of Newfoundland; behavioral differences in fiddler crabs; cellular cadmium transport in gills and hepatopancreas of the mangrove crab and invasive swimming crabs.

**Deep-Sea: Marine Biology, Geology, and Human Impact**  
*Dennis R. Bailey and Susan E. Howard*  
In series: *Oceanography and Ocean Engineering*  
In series: *Marine Biology*  
2012.  
Case: 978-1-62257-173-4. $150.00.  

The deep-sea ecosystems include waters and sediments at the lowest layer in the ocean, existing below the thermocline and above the seabed, at a depth of 1000 fathoms (1800 m) or more. They represent the world's largest biome, covering more than 65% of the world surface and including more than 95% of the global biosphere. This book examines the marine biology, geology and human impact of the deep-sea environment. Topics discussed include the stratigraphical distribution and evolutionary classification of the schackoid planktic foraminifera; the biological characteristics of the skiffish, erilepis zonifer in the North Pacific Ocean; protein degradation at deep-sea sediment; primary production and carbon cycling in the deep-sea; and biodiversity and ecosystem function in the deep-Mediterranean Sea.

**Eels: Physiology, Habitat and Conservation**  
*Nakashima Sachiko and Michiyo Fujimoto*  
In series: *Marine Biology*  
In series: *Animal Science, Issues and Professions*  
2012. 194 pp.  
Case: 978-1-61942-231-5. $95.00.  
e-book: 978-1-61942-242-1. $95.00.  

This book presents topical research in the study of the physiology, habitat and conservation of eels. Topics discussed in this compilation include the species and geographic distribution of freshwater eels; the ecological risk for organotin accumulation in relation to life history in the anguillid eel; habitat use and migration in the Japanese eel anguilla japonica and quality and vitamin content of the eggs of the Japanese eel.
MATERIALS SCIENCE

Advances in Materials Science Research. Volume 11
Maryann C. Wythers (Editor)
In series: Advances in Materials Science Research
Case: 978-1-61470-594-9. $185.00.
Materials science encompasses four classes of materials, the study of each of which may be considered a separate field: metals, ceramics, polymers and composites. This volume gathers important research from around the globe in this dynamic field including research on the effective thermal conductivity of fluid-saturated sandstones; the structural evolution and mechanical properties of nanocrystalline FeAl intermetallics; silicon based drug delivery systems; diradical based organic molecular magnetic materials; the mechanochemical effect of hematite; transparent conducting oxides for thin film solar cells and polydimethylsiloxane (PDMS) used in microfluidic devices.

Advances in Materials Science Research. Volume 13
Maryann C. Wythers
In series: Advances in Materials Science Research
Case: 978-1-62100-749-4. $140.00.
e-book: 978-1-62100-804-0. $140.00.
Materials science encompasses four classes of materials, the study of each of which may be considered a separate field: metals, ceramics, polymers and composites. This volume gathers important research from around the globe in this dynamic field including research on resin-based dental composites; controlled delivery materials; DC art plasma jet; organic potential of rubber tyre wastes; limestone as sorbent for toxic species in energy production; recycling of rubber; fire-induces color modifications on limestones used as building materials in monuments; poly (vinyl alcohol) ferrogels and electrowinning of precious metals using a modified electrochemical cyclone reactor.

Advances in Materials Science Research. Volume 14
Maryann C. Wythers
In series: Advances in Materials Science Research
Case: 978-1-61942-937-6. $150.00.
Materials science encompasses four classes of materials, the study of each of which may be considered a separate field: metals, ceramics, polymers and composites. This volume gathers important research from around the globe in this dynamic field including research on polybenzimidazoles polymer synthesis and applications; N-type diamond materials; transparent conducting oxides for thin film solar cells; valorization of gneiss rock powder waste in ceramic materials; and metal-on-metal hip prostheses.

Advances in Materials Science Research. Volume 5
Maryann C. Wythers (Editor)
In series: Advances in Materials Science Research
Case: 978-1-61122-878-6. $129.00.
Materials science encompasses four classes of materials, the study of each of which may be considered a separate field: metals, ceramics, polymers and composites. This volume gathers important research from around the globe in this dynamic field including research on liquid metals; advanced glass fiber composites; the behavior of building structures subjected to high temperatures; an integrated adhesive wear testing methodology and organometallic compounds in therapy.

Advances in Materials Science Research. Volume 9
Maryann C. Wythers (Editor)
In series: Advances in Materials Science Research
Case: 978-1-61324-485-2. $95.00.
Materials science encompasses four classes of materials, the study of each of which may be considered a separate field: metals, ceramics, polymers and composites. This volume gathers important research from around the globe in this dynamic field including research on scanning acoustic correlation microscopy; analytical applications of borates; mechanical behavior of masonry structures; use of isocyanate as a primer for synthetic rubber; fatigue of high temperature polymer matrix composites; efficiency analysis for multi-junction PV heterostructures and high electrical field effect in the copper-zinc-phosphate glasses.

Anisotropy Research: New Developments
Hirpa Lemu (University of Stavanger, Norway)
In series: Mechanical Engineering Theory and Applications
Case: 978-1-62081-977-7. $150.00.
Anisotropy is a term used to indicate the directional dependence of a biological, chemical, geometrical, mechanical or physical property of a system that develops in different ways along different spatial axes. This material behavior is observed in many engineering disciplines, computer graphics, geology and geophysics, medicine, neurosciences and natural sciences. Thus the research approaches within those disciplines accordingly varies. This book has collected contributions of new research developments and the corresponding research results from different disciplines with particular focus on experimental, numerical and theoretical studies of material property variations. Thus, the materials in this book indicate significant directions on new research progresses and are expected to give future research perspectives in anisotropy behavior.

Antimony: Characteristics, Compounds and Applications
Manijeh Razaeehi (Northwestern University, Evanston, IL, USA)
In series: Materials Science and Technologies
2012. 343 pp.
Case: 978-1-62100-598-8. $140.00.
e-book: 978-1-62100-651-0. $140.00.
This book is a collection of diverse research activities on antimony where 12 groups of prominent authors from different part of the worlds presented their latest achievement on antimony-related materials. In the past, despite being widely known and utilized by many countries and cultures, antimony's status as an alchemical substance and its high toxicity have obscured understanding of the material, resulting in controversial usage of antimony, especially in medicine. Today, knowledge about antimony compounds has tremendously increased, and the application range of antimony has become much wider. Due to the diversity of the applications of antimony, researchers may stay focused on their own field while lacking familiarity with antimony-related activities in other fields.

Benzene and its Derivatives: New Uses and Impacts on Environment and Human Health
Giovanna Tranfo (INAIL Research, Department of Occupational Medicine, Rome, Italy)
In series: Materials Science and Technologies
In series: Environmental Remediation Technologies, Regulations and Safety
Case: 978-1-62100-026-6. $140.00.
Benzene, one of the main building blocks of the petrochemical industry today, is used mainly as an intermediate to make other chemicals. Smaller amounts of benzene are used to make some types of rubbers, lubricants, dyes, detergents, drugs, explosives, napalm and pesticides. Due to the concerns and increasing restrictive legislation, our knowledge on benzene must stick to a changing scenario: the uses and industrial processes are changing, environmental and occupational exposure limits are decreasing and the scientific community is currently engaged in deeper understanding of the toxicity mechanism that impact on human health and in studying technologies to reduce its impact as a water and air pollutant. This book presents new uses of benzene and its derivatives.

Bismuth: Characteristics, Production and Applications
Kamakhya Prasad Ghatak (University of Calcutta, Kolkata, India) Sitangshu Bhattacharya (Indian Institute of Science, Bangalore, India)
In series: Materials Science and Technologies
Case: 978-1-61470-640-3. $140.00.
Bismuth (Bi) is an important subset of the generalized set of materials science in general and finds wide applications in different aspects of modern technology since its inception. This book presents the different physical properties of bismuth for researchers and engineers, postgraduate students, professionals in the fields of solid state science, nanoscience and technology and nanoscale structure thermodynamics in addition to materials science.

Cerium: Molecular Structure, Technological Applications and Health Effects
Aleksey Izyumov and Gulnaz Plaksin
In series: Materials Science and Technologies
Cerium is the most abundant of the rare earth elements, making up about 0.0046% of the Earth's crust by weight. It is found in a number of minerals, the most important being monazite and bastnasite. Commercial applications of cerium include catalysts, additives to fuel to reduce emissions and to glass and enamels to change their color. In this book, the authors study the molecular structure, technological applications and health effects of cerium. Topics include the synthetic and structural features of cerioperoxidase states; cerium-based corrosion inhibitors; tetravalent cerium chemistry; comparative toxicity of cerium and other rare earth elements (REEs) in plant and invertebrate test systems; cerium-based catalysts for the selective catalytic reduction of NOx with NH3; cerium oxide and its reduction in composite materials under hydrogen containing atmosphere; cerium as fertilizer for soils in Russia; and the structure and reactivity of cerium IV complexes with aliphatic organic compounds.

Characterization and Development of Novel Materials Research Compendium
Rafiq Islam
In series: Materials Science and Technologies
In series: Nanotechnology Science and Technology
2012.

This book compiles articles from the Journal of Characterization and Development of Novel Materials. Topics discussed include the perspectives of polymer nanocomposites applications as engineering materials; polymeric nanocomposites based on the organomodified layered silicates; structural analysis of nanocomposites polymer/organoclay microhardness and kinetics and mechanism of emulsion copolymerization of methyl acrylate with hydrophobic monomers.

E-Waste: Management, Types and Challenges
Yuan Chun Li and Benci Lian Wang
In series: Computer Science, Technology and Applications
With advancements in the electronic world almost occurring on a day-to-day basis and increased availability of products to the public, it is not surprising to see a staggering increase in the generation of electronic wastes over the past decade. This book explores the management, types and challenges related to e-waste. Topics discussed include the processing of plastic materials from e-waste; challenges and opportunities of e-waste management in developing countries; an e-waste quantification study of the People's Republic of China; e-waste environmental contamination and public health effects; and recovery of valuable metals from flat panel displays of spent liquid crystal and plasma televisions.

Encyclopedia of Materials Science Research (2 Volume Set)
Batuhan B. Chinhbat and Sora H. Mori (Editor)
In series: Materials Science and Technologies
Case: 978-1-61209-954-5. $295.00.
This new book presents and discusses current research in the study of materials science. Topics discussed include constitutive models for shape memory alloys; structure and properties of a monocristalline alloy; the shape-memory effect in antiferromagnetic alloys; micromechanical modeling of shape memory alloy composites; computer modeling of amorphous metals; novel amorphous and nanocrystaline soft magnetic materials; fundamentals and technological applications of hydrogen absorbing Mg amorphous alloys and amorphous superconducting structures.

Engineered Metal Matrix Composites: Forming Methods, Material Properties and Industrial Applications
Luca Magagni (Dip. Chimica, Materiali e Ingegneria Chimica “Giulio Natta”, Politecnica di Milano, Milano, Italy)
In series: Materials Science and Technologies
In series: Nanotechnology Science and Technology
2012.
Case: 978-1-62081-719-3. $195.00.
Metal-Matrix Composites MMCs are being used or considered for use in a variety of applications in the automotive, aerospace and many other industries, together with applications in many areas of daily life. These materials open up unlimited possibilities for modern material science and engineering, tailoring the design and the characteristics on any usage. This book contains fifteen chapters, all written by experts in the field, which focus on forming methods, material properties and industrial applications of a wide variety of metal matrix composites.
This book surveys the latest results and development possibilities for MMCs as engineering and functional materials, making it an utmost source of knowledge to all materials scientists and engineers on the potentials these materials can offer in research, development and design engineering.

Fatigue Crack Growth: Mechanisms, Behavior and Analysis
*Ping Tang and Jm Leor Zhang*
In series: *Mechanical Engineering Theory and Applications*
Case: 978-1-62081-599-1. $150.00.
In this book, the authors present current research in the study of the mechanisms, behavior and analysis of fatigue crack growths. Topics discussed in this compilation include the unified fatigue crack growth rate model; practical tools for statistical fatigue design; probabilistic algorithms performance evaluation and application in multi-fractured structures; three dimensional effects in the fracture mechanics of bi-dimensional specimens; fatigue crack propagation mechanism in porous open pore metal foams; lifetime predictions for short fatigue crack’s initiation-propagation by basic mechanical properties; variable amplitude fatigue crack growth in selected aluminum alloys; fatigue threshold R-curves for analysis of short fatigue cracks; and multiaxial fatigue life prediction for lateral notched round bars made of high strength steel.

Granite: Occurrence, Mineralogy and Origin
*Miroslava Blasik and Bogdashka Hanika*
In series: *Earth Sciences in the 21st Century*
Case: 978-1-62081-566-3. $150.00.
In this book, the authors gather and present topical research in the study of the occurrence, mineralogy and origin of granite. Topics discussed in this compilation include the occurrence of Th, U, Y, Zr and REE-bearing accessory minerals in granites and their petrogenetic significance; contrasting petrological attributes of granites in Nigeria; nonlinear acoustic phenomena in granite; experimental methods of determining thermal properties of granite; and the mineralogy of the rare-earth element-bearing granites from Central India.

Graphene and Carbon Nanotube Field Effect Transistors
*Thomas H. Caine*
In series: *Materials Science and Technologies*
Case: 978-1-61324-276-6. $95.00.
This book describes initial efforts, as part of the new Strategic Technology Institute (STI) on carbon electronics, to model and simulate the performance of graphene field-effect transistors (FETs) using macroscopic descriptions that are classical for semiconductor devices. It is argued that the underlying physics that differentiates these devices from their normal semiconductor-based counterparts is most clearly revealed by non-computer-intensive descriptions that allow the designer to compare their behavior with that of their well-studied semiconductor counterparts. Because it admits a reasonable description of both the lateral and vertical field and transport functionality of the FET structure, the gradual-channel approximation is key to this approach.

**Lithium Use in Batteries: Demand and Supply Considerations**
*Donald R. Taylor and Ryan I. Young*
In series: *Materials Science and Technologies*
2012. 90 pp.
Soft: 978-1-62257-037-9. $52.00.
Lithium has a number of uses but one of the most valuable is a component of high energy-density rechargeable lithium-ion batteries. Because of concerns over carbon dioxide footprint and increasing hydrocarbon fuel cost (reduced supply), lithium may become even more important in large batteries for powering all-electric and hybrid vehicles. Estimates of future lithium demand vary, based on numerous variables. Some of those variables include the potential for recycling, widespread public acceptance of electric vehicles, or the possibility of incentives for converting to lithium-ion-powered engines. This book addresses some of the issues raised by the increased focus on lithium, including the context of the lithium market into which future lithium-based large batteries must fit, the projected effect of electric and hybrid cars on lithium demand, various estimates for future lithium demand, and obstacles to reaching the more optimistic estimates.

**Long-Term Deformability and Aging of Polymer Matrix Composites**
*K. Aniskevich, Olesja Starkova, Juris Jansons and Andrej Aniskevich (University of Latvia, Latvia)*
In series: *Polymer Science and Technology*
Case: 978-1-61470-291-7. $75.00.
e-book: 978-1-61470-406-5. $75.00.
In the 20th century, the composite materials with polymer matrices, i.e. polymer matrix composites (PMC), became the engineering structural materials of choice because of low cost, ease of processing, weight savings, corrosion resistance and other major advances. The PMC are used in automotive and aeronautical industry, bridge structures, water and waste systems and more recently in the offshore exploration and oil production. Prevailing use of PMC is stipulated by high specific characteristics, a possibility of properties modification matching the matrices and fillers, and their relative content. The book is based on the research results obtained in the time period of 1990-2010 at the Laboratory of Long-Term Deformation, in the Institute of Polymer Mechanics, Riga, Latvia. This book examines the results of experimental investigations of present-day composite materials.

**Materials Science Research Summaries**
*Satomi Matsumoto and Ueda Iwate*
In series: *Materials Science and Technologies*
Case: 978-1-62257-639-5. $195.00.
This book is a continuation of the book Materials Science Reseacher Biographical Sketches and Research Summaries which compiles biographical sketches of top professionals in the field of materials science research, as well as research summaries from a number of different focuses in this important field.
This new book compiles biographical sketches of top professionals in the field of materials science, as well as research summaries from a number of different focuses in this important field.

Mechanics of Functionally Graded Materials and Structures
Zheng Zhong, Linzhi Wu and Weiqiu Chen (Tongji University, Shanghai, China)
In series: Engineering Tools, Techniques and Tables
Case: 978-1-61668-920-9. $145.00.
e-book: 978-1-61728-824-1. $145.00.
This new book reviews research results in the field of mechanics research. Also discussed herein are the most important areas in the mechanics of functionally graded materials and structures, including the analytical and the semi-analytical solutions of functionally graded beams, plates and shells as well as their simplified theories, fracture analysis of functionally graded materials, a micro-element method for the macro-micro scale analysis and the optimal design of functionally graded structures.

Metal Matrix Composites
J. Paulo Davim (University of Aveiro, Portugal)
In series: Materials and Manufacturing Technology
Edited by: Professor J. Paulo Davim (University of Aveiro, Portugal)
Case: 978-1-61209-771-8. $69.00.
Recently, the utilization of metal matrix composites (MMCs) has increased in various areas of industry due to their special mechanical and physical properties. MMC’s, particularly aluminium based composites have a high specific strength and stiffness at elevated temperatures as well as fatigue, corrosion and wear resistance. Therefore MMC’s have the potential to replace conventional materials in various fields of application such as automotive, aeronautical and aerospace, as well as in others advanced industries because of its own properties. This new book reviews current research on metal matrix composites.

Nuclear Regulation in the U.S.: A Short History
Emily S. Fisher
In series: Nuclear Materials and Disaster Research
Case: 978-1-61470-871-1. $95.00.
e-book: 978-1-61470-928-2. $95.00.
The U.S. Nuclear Regulatory Commission (NRC), created by Congress, began operating in 1975. Its mission is to regulate commercial and institutional uses of nuclear materials, including nuclear power plants. The nuclear industry is strictly regulated because radioactive materials are potentially hazardous. The NRC protects the public by setting limits on radiation exposure from the radioactive materials it licenses and requires those with licenses who use such materials to take steps to keep exposures well below the limits. This book examines the history of nuclear regulation from 1946-2009 and the NRC as an independent regulator of nuclear safety.

Piezoelectrics and Related Materials: Investigations and Applications
Ivan A. Parinov (Vorovich Mechanics and Applied Mathematics Research Institute, Southern Federal University, Head of Laboratory, Russia)
In series: Materials Science and Technologies
e-book: 978-1-61942-393-0. $140.00.
Piezoelectrics and other related materials and composites have wide applications in modern science and technology. Tremendous interest is also connected with piezoelectric technology used in processing novel micro- and nanoscale devices. This book presents chapters prepared by internationally recognized teams in the field of theoretical, model and experimental methods.

Plasticity of Crystals in a Microscopic Viewpoint on the Basis of Dislocation Motion
Yohichi Kohzuki (Oshima National College of Maritime Technology, Doctor of Engineering, Oshima-gun, Yamaguchi, Japan)
In series: Materials Science and Technologies
Case: 978-1-62081-419-2. $150.00.
Plasticity of crystals in a microscopic viewpoint, especially on the basis of dislocation (linear defects in crystal) motion, is detailed from the data obtained mainly by the strain-rate cycling tests associated with ultrasonic oscillation for several kinds of alkali-halide single crystals at low temperatures. Topics discussed include process for thermal activated overcoming of the short-range obstacle by a dislocation; strain-rate cycling tests associated with ultrasonic oscillation; influence of state of impurities on the effective stress due to the impurities; effective stress and critical temperature of KCl doped with various divalent cations; and the Friedel relation and thermally activated flow parameters of KCl doped with various divalent cations.

Polymer Morphology
Hongshun Yang (College of Food Science and Technology, Henan University of Technology, Henan, China)
In series: Polymer Science and Technology
Case: 978-1-61470-880-3. $165.00.
Polymers, natural or synthetic, have been widely applied in various areas. This new book is dedicated to related research on calculating, preparing polymers and characterizing the morphology of them, involving polymers from inorganic to organic materials including natural macromolecules. It contains a considerable amount of information on the techniques and methods used for the characterization and analysis of polymer morphology. Various techniques covered include but not limited to electron microscopy and atomic force microscopy.

Polymer Relaxation
Peter J. Graham and Catherine M. Neely
In series: Polymer Science and Technology
2012. 192 pp.
Case: 978-1-61470-381-5. $95.00.
e-book: 978-1-61470-404-1. $95.00.
Stress relaxation describes how polymers relieve stress under constant strain. Because they are viscoelastic, polymers behave in a nonlinear, non-Hookean fashion. This book presents current research in the study of polymer relaxation, including the secondary relaxations in amorphous polymers; nuclear magnetic resonance relaxation approaches; electrochemical relaxation studies of polythiophenes and dielectric relaxation of onion-like carbon based polymer composites.
Polymers as Natural Composites
Abdulahk K. Mikitaev; Georgii V. Kozlov and Gennady E. Zaikov
In series: Nanotechnology Science and Technology 2012. 95 pp.
Case: 978-1-61668-168-5. $69.00.
A polymer is a large molecule (macromolecule) composed of repeating structural units typically connected by covalent chemical bonds. Due to the extraordinary range of properties accessible in polymeric materials, they have come to play an essential and ubiquitous role in everyday life — from plastics and elastomers to natural biopolymers such as DNA and proteins. This new book examines the role polymers play as natural nanocomposites.

Polyurethane: Properties, Structure and Applications
Luis Inácio Cavaco and Joana Almeida Melo
In series: Polymer Science and Technology 2012. 173 pp.
Case: 978-1-61942-453-1. $150.00.
Polyurethanes (PUs) are an important class of thermoplastic and thermoset polymers obtained by polycondensation reactions among different polyols, isocyanates and chain extenders, leading to a wide variety of polymers with many different properties and applications. In this book, the authors present current research in the study of the properties, structure and applications of polyurethane. Topics include polyurethanes in analytical chemistry applications from sorbent foams to conductive materials and sensors; biomedical polyurethane-based materials and blocked polyurethanes in x-ray shielding and electrically conductive adhesives.

Porous Silicon Multilayers: Synthesis and Applications
Afrah Bardaoui, Radhouan Chtourou, Mosbah Amlouk (Laboratory of Photovoltaic, Centre de Recherches et de Technologies de l’Energie, Hamnam-Lif, Tunisia)
Soft: 978-1-62100-578-0. $47.00.
This book gives the synthesis of porous silicon multilayers (PSL) by a simple route called electrochemical etching. The prepared multilayers and their physical characterizations have been carried out. These multilayers have been used to prepare distributed Bragg reflectors and planar microcavities for a potential sensing application. This book also deals with an optical study based on the refractive index deduced by experimental ellipsometric measurements as well as calculating and modelling manners such as the Bruggeman effective medium approximation.

Powder Metallurgy of Copper Matrix Composite: Properties and Application for Spot Welding Electrode
Zuhailawati Hussain, Indra Putra Almanar (School of Materials and Mineral Resources Engineering, School of Mechanical Engineering, Universiti Sains Malaysia, Engineering Campus, Penang, Malaysia)
In series: Manufacturing Technology Research
In series: Mechanical Engineering Theory and Applications 2012.

Recent Trends in Fracture Mechanics
Yunan Prawoto (University Technology Malaysia, Johor, Malaysia)
Case: 978-1-61470-615-1. $140.00.
Since the development of linear elastic fracture mechanics (LEFM) decades ago, its limitations have been discussed extensively. Methods of manipulation on how to overcome the problems have been proposed by many enthusiasts. This book also highlights the limitation and at the same time proposes solutions. The effect of fracture on the structure of nano-catalyst and diamond-like carbon coating de-lamination are some of the microscopical research covered in this book. The format of this book is such that the reader can use each chapter independently. It starts with the first chapter outlining the classical review that traces back to early fracture mechanics. It is then continued to broader ranges from experimental and commercial software implementation, to the formulation and implementation of XFEM and piezoelectricity problems.

Silk: Properties, Production and Uses
Pornanong Aramwit (Chulalongkorn University, Bangkok, Thailand)
Case: 978-1-62100-692-3. $140.00.
e-book: 978-1-62100-723-4. $140.00.
This book is a general introduction to the use of the silkworm and its products for the textile industry and in the human body for the purposes of aiding healing and correcting deformities. In addition, this book provides a familiarity with the uses of silk materials in textile and biological applications and also the rational basis for these applications. It covers subjects such as silkworm silk fiber composites, silk materials in medicine and cellular immunological responses to silk materials.

Simulation of Deposition Processes with PECVD Apparatus
Juergen Geiser and Meraa Arab (Humboldt University of Berlin, Germany)
Case: 978-1-62100-365-6. $75.00.
This book discusses the study of simulating the growth of a thin film by chemical vapor deposition (CVD) processes. In recent years, due to the research in producing high-temperature films by depositing low pressures, the processes have increased and understanding the control
mechanism of such processes has become very important. An underlying hierarchy of models for low-temperature and low-pressure plasma is presented in order to discuss the processes that can be used to implant or deposit thin layers of important materials. Due to the multi-scale problem of the flow and reaction processes, the authors propose multi-scale problems which are divided into near-field and far-field models.

**Superconductivity: Recent Developments and New Production Technologies**

*Muralidhar Miryala (Railway Technical Research Institute (RTRI), Tokyo, Japan)*

In series: *Materials Science and Technologies*

In series: *Superconductivity Research and Applications* 2012.

Case: 978-1-62257-137-6. $150.00.


This book consists of thirteen chapters each of them defining in depth the chapter subject and surveying recent developments in the field. The main objective of this book is to summarize the recent advances in material science of high-Tc superconductors, specify their properties, processing, and applications. New and challenging issues appearing in this book, like superconducting nano wires, low cost RE-123, infiltration growth, processing of single domain porous Y-123, novel cold seeding method for the production of LRE-123 materials, flux pinning, magnetic shielding, and innovation in synthesis of MgB2. Further, it also covers large scale applications of bulk materials, HTS Maglev systems with bulk superconducting parts, development of superconducting permanent magnet system, pulsed field magnetization and its application, and production and characterization of HTS roebel cable.

**Textiles: Types, Uses and Production Methods**

*Ahmed El Nemr (National Institute of Oceanography and Fisheries, Alexandria, Egypt)*

In series: *Materials Science and Technologies*


Case: 978-1-62100-239-0. $325.00.


Fiber is a class of materials that are continuous filaments or are in discrete elongated pieces, similar to lengths of thread. Fibers are very important in the biology of both plants and animals for holding tissues together. Plants yielding fibers have been only second to food plants in their usefulness to humans and their influence on the furthering of civilization. Textiles stand next to agriculture as an income generation activity for most of the rural population. The structure of the fabric is as much a determining factor in its functions, as it is the choice of raw material. Some structures of the fabric lend themselves to any specific end use where as many other structures are versatile lending them to a variety of functions and end users. Good understandings of simple woven structures make it possible to apply them in the woven cloth in a variety of ways. This book discussed recent studies in different branches of textile research.

**Tribology of Composite Materials**

*J. Paulo Davim (University of Aveiro, Aveiro, Portugal)*

In series: *Materials and Manufacturing Technology*

Edited by: *Professor J. Paulo Davim (University of Aveiro, Portugal)*

2012. 221 pp.

Case: 978-1-61668-319-1. $130.00.

Soft: 978-1-62100-999-3. $69.00.


Recently, the use of composite materials has increased in various areas of science and technology due to their special properties, with applications in biomedical, aircraft, automotive, defense and aerospace, as well other advanced industries. Tribology is defined as the “science and technology of interacting surfaces in relative motion”. It includes the research and application of principles of friction, wear and lubrication. This book reviews research on the tribology of composite materials.

**Wood and Wood Products**

*J. Paulo Davim (University of Aveiro, Department of Mechanical Engineering Camus, Santiago, Portugal)*

In series: *Materials and Manufacturing Technology*

Edited by: *Professor J. Paulo Davim (University of Aveiro, Portugal)*

2012.

Soft: 978-1-62081-973-9. $52.00.


Wood as an engineering material can be technically defined “as a hygroscopic, orthotropic, biological, and permeable material having extreme chemical diversity and physical complexity with structures, that vary extensively in their shape, size, properties and function”. Therefore, using wood to its best advantage and most efficiency in engineering and technology applications, specific characteristics or chemical, physical and mechanical properties must be considered. This book aims to provide the research and review studies on wood and wood products with special emphasis in machining aspects. The present research book can be used for final undergraduate engineering course (for example, wood, materials, mechanical, manufacturing, etc) or as a subject on wood and wood products at the postgraduate level. Also, this book can serve as a useful reference for academics, wood researchers, mechanical, manufacturing and materials engineers, professionals in areas related to the wood and wood products.

**MATHEMATICS**

**A Treatise of Biological Models**

*Farai Nyabadza, M. Kgosimore, E.M. Lungu (Department of Mathematical Sciences University of Stellenbosch, Maiteland, South Africa)*

In series: *Mathematics Research Developments*

2012.

Case: 978-1-62257-390-5. $150.00.


This book is a compendious collection of papers designed to expose the current trends in mathematical modeling. It details current research on models of in-host dynamics, epidemics, population dynamics and psycho-social dynamics. The chapters are written in a simple and concise way for readers who are familiar with basic mathematical modeling offered in undergraduate courses. The main objective of this book is to detail various applications of mathematics in biomedical sciences, resources management and social settings. Many of the book chapters contain current contentious issues in mathematical modeling and as such, the book can be used to generate projects for bio-mathematical students. Graduate students wishing to acquire and consolidate knowledge in mathematical modeling will find this an excellent text for their research.
Advanced Mathematics for Engineers with Applications in Stochastic Processes
Aliakbar Montazer Haghighi, Jian-ao Lian, Dimitar P. Mishev (Prairie View A&M Univ., Prairie View, Texas)
In series: Mathematics Research Developments
Case: 978-1-60876-880-6. $98.00.
Soft: 978-1-62257-610-4. $59.00.
Topics in advanced mathematics for engineers, probability and statistics typically span three subject areas, are addressed in three separate textbooks and taught in three different courses in as many as three semesters. Due to this arrangement, students taking these courses have had to shelve some important and fundamental engineering courses until much later than is necessary. This practice has generally ignored some striking relations that exist between the seemingly separate areas of statistical concepts, such as moments and estimation of Poisson distribution parameters. On one hand, these concepts commonly appear in stochastic processes - for instance, in measures on effectiveness in queuing models. On the other hand, they can also be viewed as applied probability in engineering disciplines - mechanical, chemical, and electrical, as well as in engineering technology. There is obviously, an urgent need for a textbook that recognizes the corresponding relationships between the various areas and a matching cohesive course that will see through to their fundamental engineering courses as early as possible. This book is designed to achieve just that. Its seven chapters, while retaining their individual integrity, flow from selected topics in advanced mathematics such as complex analysis and wavelets to probability, statistics and stochastic processes.

Advances in Mathematics Research. Volume 16
Albert R. Baswell (Editor)
In series: Advances in Mathematics Research
Case: 978-1-61324-928-4. $140.00.
Advances in Mathematics Research presents original studies on the leading edge of mathematics. Each article has been carefully selected in an attempt to present substantial research results across a broad spectrum. Topics discussed include Blackwell's ordering on the set of monotone transition matrices; symplectic polynomial invariants; new results concerning the Bernstein-Nikolskii inequality theory; approximation theory by neural networks; torsion fields, quantum geometrics, Brownian motions and statistical thermodynamics and the harmonic analysis of finite groups, number theory and efficient quantum cryptographic algorithms.

Advances in Mathematics Research. Volume 17
Albert R. Baswell
In series: Advances in Mathematics Research
Case: 978-1-62100-828-6. $95.00.
Advances in Mathematics Research presents original studies on the leading edge of mathematics. Each article has been carefully selected in an attempt to present substantial research results across a broad spectrum. Topics discussed include multi-parts geometry-based finite elements modeling in biomechanics; categorical abstract algebraic logic; parallelization of neural network building and training; over-determined boundary value problems for linear equations of elastodynamics and their applications to elastic wave diffraction theory and two finite methods for nearly incompressible linear elasticity using simplicial meshes.

African Diaspora Mathematics Compendium.
Volume 1
Toka Diagana (Howard Univ.)
2012. 177 pp.
Case: 978-1-60456-661-1. $95.00.
This is an international book of mathematical research. It presents mathematical research with some emphasis on the contributions of African mathematicians and the rich connections between African universities and those of other continents.

African Diaspora Mathematics Compendium.
Volume 3
Toka Diagana (Howard Univ.)
2012. 347 pp.
Case: 978-1-60692-015-2. $95.00.
This is an international book of mathematical research. It presents mathematical research with some emphasis on the contributions of African mathematicians and the rich connections between African universities and those of other continents.

Analysis of Min-Puls Algebra
Ming Li (East China Normal University, Shanghai, China), Wei Zhao (University of Macau, Taipa, Macau SAR, China)
In series: Mathematics Research Developments
2012. 80 pp.
Computer networks need novel communication theory for transmitting data from sources to destinations within a predetermined restrict period of time according to a given quality of service (QoS). This book provides an analysis of min-plus algebra that is applied to network calculus in computer networks. The key contribution of this book is to discuss the analytical expressions of identity in min-plus algebra. Overall, this book can be used as a reference for researchers, engineers and postgraduates in the fields of communication networks, internet studies and cyber-physical networking systems in the aspect of applied functional analysis, in addition to min-plus algebra used in network calculus for computer scientists.

Analysis of Min-Pulse Algebra
Ming Li (East China Normal University, Shanghai, China), Wei Zhao (University of Macau, Taipa, Macau SAR, China)
In series: Mathematics Research Developments
2012.
e-book: 978-1-62100-029-6. $47.00.
Computer networks need novel communication theory for transmitting data from sources to destinations within a predetermined restrict period of time according to a given quality of service (QoS). This book provides an analysis of min-plus algebra that is applied to network calculus in computer networks. The key contribution of this book is to discuss the analytical expressions of identity in min-plus algebra. Overall, this book can be used as a reference for researchers, engineers and postgraduates in the fields of communication networks, internet studies and cyber-physical networking systems in the aspect of applied functional analysis, in addition to min-plus algebra used in network calculus for computer scientists.
Boundary Value Problems for Analytic and Harmonic Functions in Nonstandard Banach Function Spaces
Vakhtang Kokilashvili, Vakhtang Paatashvili (A. Razmadze Mathematical Institute, I. Javakhishvili Tbilisi State University, Tbilisi, Georgia)
In series: Mathematics Research Developments
Case: 978-1-61942-301-5. $140.00. 
This monograph is devoted to the boundary value problems (BVPs) for analytic and harmonic functions in domains with non-smooth boundaries within the framework of nonstandard Banach function spaces, namely, variable exponent Lebesgue spaces and grand Lebesgue spaces. This book is aimed at a wide audience, ranging from researchers in BVPs of function theory and mathematical physics to experts in theory of elasticity and post-graduate students.

Classification and Application of Fractals: New Research
Eric W. Mitchell and Scott R. Murray
In series: Mathematics Research Developments
Case: 978-1-61324-104-2. $140.00. 
This new book presents current research in the study of the classification and application of fractals. Topics discussed include the fractal model application for nanocomposite polymer/organomolybdenum structures; generalized Rauzy fractals and quasiperiodic tilings; the fractal characterization of zooplankton motion; fractal space-time theory; Higuchi’s fractal dimension method in neurophysiological studies; fractal based classification of brain tumors angioarchitecture and fractal analysis in clinical screening and investigation.

Encyclopedia of Mathematics Research (3 Volume Set)
Joshua D. Mathias and Sophia I. Cleaves (Editor)
In series: Mathematics Research Developments
Case: 978-1-61324-228-5. $395.00. 
This book discusses current research developments in the field of mathematics. Topics presented include exceptional groups; symmetric spaces and applications; LIE group analysis; graph groupoids and corresponding representations; fuzzy logic in molecular computing; closed-loop optimal fuzzy reasoning; nozzle design optimization; a branch-and-price algorithm for the stochastic generalized assignment problem; parametric dual regularization in a linear-convex mathematical programming and fast multilevel algorithms for diverse application in computational biology and bioinformatics.

Evolution Equations
Arthur L. Claes
In series: Mathematics Research Developments
Case: 978-1-61209-652-0. $129.00. 
This new book presents topical research in the study of evolution equations. Topics discussed include understanding the theory of noisy dynamical systems in Markovian and non-Markovian settings using evolution equations; Einstein’s evolution equation for fluid with exponential free paths distribution; a theorem on the optical cubic-quantum Schrodinger equation; methods for solving nonlinear partial differential equations based on Riccati equations; homogeneous and nonlinear generalized master equations and the cosmological linear and nonlinear growth in the accelerating Universe.

Evolution Equations Research Compendium. Volume 2
Gaston M. N’Guerekata (Morgan State University)
In series: Mathematics Research Developments
2013. 
Case: 978-1-61942-917-8. $230.00. 
This book presents and discusses new developments in the study of evolution equations. Topics discussed include global attractors for semilinear parabolic equations with delays; exact controllability for the vibrating plate equation in a non smooth domain; weighted pseudo almost automorphic solutions for some partial functional differential equations in fading memory spaces; periodic solutions to the nonlinear parabolic equation; and infinite-time admissibility of observation operators for volterra systems.

Frontiers of Combinatorics and Number Theory. Volume 2
Zhi-Wei Sun
In series: Mathematics Research Developments
2012. 
Case: 978-1-61942-918-5. $140.00. 
This book is a collection of articles in the second volume of the Journal of Combinatorics and Number Theory. As scheduled this volume consists of three issues and it contains nineteen contributed papers from eminent experts or active young mathematicians which cover various important topics in number theory and combinatorics.

Geometry of Quantum Computations
Gia Giorgadze (Department of Mathematics, Faculty of Exact and Natural Sciences, Ivane Javakhishvili Tbilisi State University 2, Tbilisi, Georgia)
In series: Computational Mathematics and Analysis Series
2012. 
Case: 978-1-62257-325-7. $150.00. 
This book is concerned with the geometric theory of computation. We have in mind the known paradigm according to which the computation is the combination of an algorithm and a computation process. The latter process is performed by some dynamical system. If for the description of the computing dynamical system, a configuration space with nontrivial-geometry or topology is chosen, one can talk about the geometric character of the computation. The book examines the known holonomic and topological models of quantum computation and the new monodromic model of quantum computation is discussed in detail.

Handbook of Evolution Equations
Gaston M. N’Guerekata
In series: Mathematics Research Developments
Case: 978-1-61668-429-7. $165.00. 
This new book presents current mathematical research in the study of evolution equations. Topics discussed include the complexity of evolutionary dynamics; variational hyperbolic inequality in spatial variables; the superposition of functions; evolutionary dynamics equations and the information law of evolution and time periodic solutions for quasigeostrophic motion and their stability.
Information Theory: New Research
Pierre Deloumeaux and Jose D. Gorzalka
In series: Mathematics Research Developments
2012. 293 pp.
Case: 978-1-62100-325-0. $150.00.
Information theory is a branch of applied mathematics and engineering involving the quantification of information. In this book, the authors present topical research in the study of the new developments in information theory, including information theory as applied to the analysis of biological sequences; information theory based on fractional calculus via modified Riemann-Liouville derivatives; two-phase flows entropy in gravity cascade separation; the role of information theory in gene regulatory network inference; Quantum Information Processing (QIP) and the link between information processing and physics.

Laplace Transforms and their Applications
Alexander Apelblat (Ben-Gurion University of the Negev, Beer Sheva, Israel)
In series: Mathematics Research Developments
Case: 978-1-61470-893-3. $175.00.
e-book: 978-1-61470-927-5. $175.00.
There is a lot of literature devoted to operational calculus, which includes the analysis of properties and rules of integral transformations and illustrates their usefulness in different fields of applied mathematics, engineering and natural sciences. The integral transform technique is one of most useful tools of applied mathematics employed in many branches of science and engineering. Typical applications include the design and analysis of transient and steady-state configurations of linear systems in electrical, mechanical and control engineering, and heat transfer, diffusion, waves, vibrations and fluid motion problems. The Laplace transform receives special attention in literature because of its importance in various applications and therefore is considered as a standard technique in solving linear differential equations. For this reason, this book is centered on the Laplace transformation.

Mathematical Experiments Planning in Concrete Technology
L. Dvorkin, O. Dvorkin (National University of Water Management and Natural Resources Use, Rivne, Ukraine) Y. Ribakov (Ariel University Center of Savannah, Ariel, Israel)
In series: Mathematics Research Developments
Case: 978-1-62100-283-3. $110.00.
Mathematical planning presents methods of experiments for the decision of tasks of concrete compositions design with the set of given properties are presented in this book. The procedures for obtaining different types of mathematical models and their technological analysis are presented. Examples of application of the mathematical planning methods of experiments and decision of the basic types of concrete technology tasks are also considered. This book can be used by civil engineers, specialists in concrete technology, research workers and students of various universities.

Mathematical Models of Non-linear Phenomena, Processes and Systems: From Molecular Scale to Planetary Atmosphere
Alexey B. Nadykto, (State University of New York at Albany, Atmospheric Sciences Research Center, Albany, NY, USA) Ludmila Uvarova, (Moscow State University of Technology Stankin, Vadkovski, Moscow) Anatoli V. Latyshev (Moscow University, ult. Radi)
In series: Mathematics Research Developments
2012.
Case: 978-1-60876-994-0. $125.00.
The book consists of twenty seven chapters, which can be divided into three large categories: (i) articles with the focus on the mathematical treatment of non-linear problems, including the methodologies, algorithms and properties of analytical and numerical solutions to particular non-linear problems; (ii) theoretical and computational studies dedicated to the physics and chemistry of non-linear micro- and nano-scale systems, including molecular clusters, nano-particles and nano-composites; (iii) papers focused on non-linear processes in medico-biological systems, including mathematical models of ferments, amino acids, blood fluids and polynucleic chains.

Mathematics, Game Theory and Algebra Compendium. Volume 3
Jacob H. Mathías
In series: Mathematics Research Developments
2013.
Case: 978-1-62257-749-1. $150.00.
This book is devoted to new advances in all branches of mathematics, game theory and applications, and pure and applied algebra and geometry including mathematical formulation of NMR experimental parameters for diffusion magnetic resonance imaging; optimization of Kalman Filtering performance in received signal strength based mobile positioning; ORE extensions over near pseudo valuation rings; subset selection of treatments; rigorous kinetic analysis of the racket flick-motion in tennis for generating topspin and backspin and linear versus nonlinear human operator modeling.

Mechanics of the Continuous Environment Issues: Dedicated to the 120th Birth Anniversary of Academician Nikoloz Muskhelishvili
Ivane Gorgidze (Georgian Technical University, Tbilisi, Georgia)
In series: Mathematics Research Developments
Case: 978-1-62100-496-7. $75.00.
e-book: 978-1-62100-670-1. $75.00.
This book is dedicated to the 120th birth anniversary of the famous Georgian Academician Nikoloz Muskhelishvili. Works of academician N. Muskhelishvili had a great impact in the further development of the elasticity theory and deferential and integral equations of mathematical-physics. Works of N. Muskhelishvili represents a basis of the numerous scientific researches in number of fields, which are used in order to solve technical problems. In the represented book, the following problems are considered: non-classical mathematical models describing pollution transfer and diffusion of various mixtures in the water streams; a non-stationary magneto hydrodynamic flow of conducting fluid between two infinite rotating porous discs lying from each other at a distance-h and the problem of wave propagation in an orthotropic half-plane.
Yeol Je Cho, Jong Kyu Kim and Shin Min Kang (Gyeongsang National University, Chinju, Korea)
In series: Nonlinear Functional Analysis and Applications
2012. 269 pp.
Case: 978-1-60876-841-7. $195.00.
Soft: 978-1-61942-060-1. $79.00.
This book reviews topics on the areas of fixed point theory, convex and set-valued analysis, variational inequality and complementarity problem theory, nonlinear ergodic theory, difference, differential and integral equations, control and optimization theory, dynamic system theory, inequality theory, stochastic analysis and probability theory, and their applications.

On the Borders of Complexity
Franco F. Orsucci (Catholic University, Rome), Nicoletta Sala (University of Italian Switzerland, Switzerland)
In series: Mathematics Research Developments
Case: 978-1-61470-576-5. $185.00.
This book presents current material in the study of areas of complex systems research. Relevant topics include research on artificial life; cellular automata; chaos theory; cognition; complexity theory; synchronization; fractals; genetic algorithms; information systems; metaphors; neural networks; non-linear dynamics; parallel computation and synergetics. Topics discussed in this particular volume include Mind Force Theory; fractal geometry in artificial worlds; cognitive factors and changes in individual decision making; case-based reasoning; fractals in architecture and alpha rhythms and memory processes.

Ozone and Ozone Depletion: Sources, Environmental Impact and Health
Rajat Sethi, Shubham Manchanda, Vishal Sethi (Texas A&M Health Science Center-College of Nursing, Bryan College Station, Texas, US)
In series: Environmental Research Advances
In series: Environmental Health - Physical, Chemical and Biological Factors
2012.
Case: 978-1-62100-039-6. $150.00.
e-book: 978-1-62257-613-5. $150.00.
In recent years, several new concepts have emerged in the field of ozone science, creating a need for an in-depth publication covering the various ozone related issues. This book fills that void in the literature by providing a unique collection of our understanding of the “good” and “bad” of ozone gas. The one-of-a-kind compilation of chapters written by leading experts in the field from all over the world will serve world scientists, teachers, students, and regulators as a single reference to a global perspective on: What are the various sources for Ozone? What is happening to the good Ozone layer? How does the depletion of good Ozone affect human health and the environment? What is being done about the depletion of good Ozone? What causes bad Ozone? How does bad Ozone affect human health and the environment? There is an enormous amount of information coming out of the scientific and political arenas concerning Ozone. This book’s objective is to try and give the ‘overall picture’ to the readers on different topics in the field of Ozone.

Pacific Journal of Applied Mathematics Yearbook. Volume 1
Zhijun Qiao (University of Texas, Edinburg, TX, USA)
In series: Pacific Journal of Applied Mathematics Yearbook
Case: 978-1-61470-737-0. $215.00.
This book presents current research in the field of applied mathematics. Topics discussed include noninvariant cubic nonlinear schrodinger equations; geometric aspects of sturm-liouville problems; soliton perturbation theory for the generalized equal width equation; general nonlinear variational-like inequality in reflexive banach spaces; traveling wave solitons of the generalized BBM equation and quarter-plane problems for the Kawahara equation.

Robust Controllability of Linear Systems
Valery Y. Glizer (Ort Braude College, Karmiel, Israel) Vladimir Turetsky (Technion-Israel Institute of Technology, Haifa, Israel)
In series: Mathematics Research Developments
Case: 978-1-62100-160-7. $140.00.
Controllability, i.e. the ability of a dynamic system to be transferred from a given set of initial positions to a given target set by a proper choice of the control function, is one of the basic system properties. Controllability has been well studied for systems without uncertainties by using an open-loop control. Unfortunately, this elegant theory is not applicable to real-life systems which are affected by unmeasurable components. For such systems, the controllability should be augmented by a robustness property with respect to any admissible uncertainty realization. As a rule, the robust controllability is realized by a feedback control. This book presents current research in the study of robust controllability of linear systems.

Several Problems of Applied Mathematics and Mechanics
Ivane Gorgidze and Tamar Lominadze (Georgian Technical University, Tbilisi, Georgia)
In series: Mathematics Research Developments
2012.
Case: 978-1-62081-603-5. $85.00.
e-book: 978-1-62081-627-1. $85.00.
This book aims to present the newest research in the fields of mathematics and mechanics done by outstanding Georgian scientists. Mathematics and mechanics are fundamental sciences. Theories of mathematics and mechanics are the basis of modern technological improvements and, therefore, interest towards them are increasingly important. This book presents the latest works of outstanding Georgian scientist and mathematician, academician Nikoloz Muskhetishvili. Together with the works of N. Muskhetishvili, his book includes the recent works of a number of modern Georgian scientists who work in the fields of mathematics and mechanics.

**Tensor Operators and their Applications**

**Arif Salimov (Ataturk University, Faculty of Science, Dep. of Mathematics, Erzurum, Turkey)**

Case: 978-1-62257-021-8. $110.00.

The notion of derivation of tensor fields is one of the central concepts and tools of mathematics. The author believes that differential geometric applications of tensor operators is a very fruitful research domain and provides many new problems in the study of modern differential geometry. This book is intended to provide a systematic introduction to the theory of tensor operators. This book is suitable for researchers, and will complement the Mathematics Research Developments Series, which will focus on research-level monographs. This book will also serve as a useful classroom resource for graduate students as well as final year undergraduate students on geometry, algebra, topology and physics.

**Wavelets: Classification, Theory and Applications**

**Manel del Valle (Universitat Autònoma de Barcelona, Bellaterra, Spain), Roberto Muñoz Guerrero and Juan Manuel Gutierrez Salgado (CINVESTAV, Mexico City, Mexico)**

Case: 978-1-62100-252-9. $165.00.

This book presents an integrated view of the current use of wavelets in science and engineering. This tool has been used substantially in many different application fields, especially for identification or classification purposes. Various authors from around the world have collaborated in this edited collection. The book opens with an introduction of the involved theoretical concepts, starting with the applications related to image processing. Applications in the fields of biology, food, agriculture and environment are included, as well as the medical and chemical uses of wavelets.

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**MEDIA AND COMMUNICATIONS**

**Broadband in Developed Countries: Measurements and Analyses**

**Johnathan Thompson and Mickey Cooper**

Case: 978-1-61942-750-1. $110.00.

Increasingly, broadband Internet service is seen as critical to a nation’s physical infrastructure and economic growth. Universal access to, and increased use and adoption of, broadband service are policy goals stated in the National Broadband Plan. Some recent studies indicate that despite achieving nearly 95 percent broadband deployment and globally competitive adoption rates, the United States has moved from the top to the middle of the international rankings. Other developed countries, which have made universal access and increased adoption priorities, rank higher than the United States in these areas, and their experiences may be of interest to U.S. policymakers. This book explores the status of broadband deployment in developed countries and the actions that select countries have taken to increase its adoption.

**Communication Technologies: Societal Perspectives, Strategic Management and Impact on Business**

**Alonsa J. Salazar and Cedro Jimenez**

Soft: 978-1-62257-768-2. $69.00.

Information and Communications Technology (ICT) stresses the role of unified communications and the integration of telecommunications (telephone lines and wireless signals), computers as well as necessary enterprise software, middleware, storage, and audio-visual systems, which enable users to create, access, store, transmit, and manipulate information. In this book, the authors examine the societal perspectives, strategic management and impact on business of communications technology. Topics include information and communication technologies in world class universities; ICT used by businesses on purchasing orientation; ICT and their impact on customer patronizing behavior; the using of and attitudes toward ICT in different age groups; optoelectronic switch arrays for communication networks; and factors affecting eco-driving through a web-based information provision system.

**Critical Communications: Resilience of Emergency Networks and Threats to Satellites**

**Miles F. Wilder and Heath O. McKay**

Case: 978-1-61942-474-6. $110.00.

This book examines national security telecommunications resilience and threats. Natural disasters, terrorist attacks, or other large-scale incidents can have devastating impacts on the Nation’s public and private communications networks and the critical functions they support. The potential for local and national security consequences resulting from a cyber attack or system corruption can be equally devastating to critical infrastructure and key resources. The Federal Government manages or participates in a number of initiatives focused on approving the interoperability and resilience of present-day communications. While it would be near impossible to develop and maintain networks that are invulnerable to disruption, ensuring long-term communications resilience requires that the Government understand future systems and the future technology landscape when investing in and planning for durable, survivable communications.

**Research of New Trends in Informational Technologies**

**Tamar Lominadze and Ivane Gorgidze (Georgian Technical University, Tbilisi, Georgia)**

Small-Market Television: Challenges and Policy Considerations

Herbert M. Wilson and Benedict Jackson
In series: Media and Communications - Technologies, Policies and Challenges
2012. 103 pp.
Soft: 978-1-61942-731-0. $47.00.
e-book: 978-1-61942-734-1. $47.00.

The environment for public, educational, and governmental (PEG) cable channels is being roiled by public policy and budgetary changes at the federal, state, and local levels and by technological changes in cable networks. More than 100 PEG access centers - which provide community groups and individuals free access to video production facilities and equipment, training, and programming time - have closed since 2005, and many more may close when provisions in recently enacted state laws that eliminate requirements for cable companies to provide funding support take effect. This book examines the challenges and policy considerations facing small-market television.

Telecommunication Policies and Issues in the U.S
Charles B. Harold
In series: Media and Communications - Technologies, Policies and Challenges
Case: 978-1-61122-353-8. $95.00.

Telecommunications involves the transmission of audio, video, or digital information over significant distances, for a variety of purposes. This book presents and discusses topical programs and issues in telecommunications, including an overview of the FCC; broadband grants and loans; access to broadband networks; internet domain names; the FCC's authority to regulate net neutrality and automated political telephone calls in federal campaigns.

Telework in the Federal Government
Emile McClure and Keith York
In series: Government Procedures and Operations
Case: 978-1-61942-593-4. $95.00.
e-book: 978-1-61942-594-1. $95.00.

President Obama, Congress, and the United States Office of Personnel Management have all encouraged Federal agencies to expand their use of telework to ensure continuity of operations; find targeted productivity improvements and reduce overhead, real estate, environmental, and transit costs; and improve employees’ ability to manage their work and life obligations. Telework’s benefits are realized by Federal agencies only to the extent that employees are permitted to actively participate in these programs. This book summarizes the provisions of P.L. 111-292 and identifies several possible issues for congressional oversight of telework.

MILITARY

GPS Modernization: Challenges and Military Implications
Robert J. Samuelson and Marlin Mata
In series: Defense, Security and Strategies
Case: 978-1-61942-589-7. $95.00.
The Global Positioning System (GPS) provides positioning, navigation, and timing (PNT) data to users worldwide. The U.S. Air Force, which is responsible for GPS acquisition, is in the process of modernizing the system. This book discusses the Department of Defense's plans to develop and purchase new satellites and also the challenges in sustaining and upgrading the GPS.

Technology Horizons in the U.S. Military: Unmanned Systems and Air Force Science and Technical Endeavors
Ethian J. Johnson and Gabrielle L. Rodriguez
In series: Defense, Security and Strategies
Case: 978-1-62081-364-5. $195.00.
Air Force warfighting capabilities have a proud heritage of being born from the very best science and technology our Nation can create; indeed, the very history of the United States Air Force is closely intertwined with the development of advances in science and technology. Yet today, "flattening" of the world is making it increasingly challenging for the U.S. to maintain technology superiority over potential adversaries. A growing number of nations soon will have the ability to transform science and technology advances into militarily significant capabilities. Over the next decades, we will increasingly face potential adversaries having peer or near-peer capabilities. This book examines the key areas of science and technology that the Air Force must focus on over the next two decades to enable technologically achievable capabilities that can provide it with the greatest U.S. Joint force effectiveness by 2030.

Unmanned Aerial Systems and Military Airships: The Rise of U.S. Drones and Blimps
Evan Jones and Frank R. Thomas
In series: Defense, Security and Strategies
In series: American Political, Economic, and Security Issues
2012. 201 pp.
Case: 978-1-62081-119-1. $125.00.
e-book: 978-1-62081-132-0. $125.00.
Unmanned aerial systems (UAS) comprise a rapidly growing portion of the military budget, and have been a long-term interest of Congress. The use of UAS in conflicts such as Kosovo, Iraq and Afghanistan, and humanitarian relief operations such as Haiti, revealed the advantages and disadvantages provided by unmanned aircraft. Long considered experimental in military operations, UAS are now making national headlines as they are used in ways normally reserved for manned aircraft. Conventional wisdom states that UAS offer two main advantages over manned aircraft: they are considered more cost-effective, and they minimize the risk to a pilot's life. This book
examines Congressional considerations of the proper pace, scope and management of DOD UAS procurement; investment priorities for UAS versus manned aircraft; UAS future roles and applications; legal, personnel and industrial base issues; and technology proliferation.

**NANOTECHNOLOGY**

A First Course on Basic Elements of Heat Flow in Nanoporous Fabrics

* A. K. Haghi (University of Guilan, Iran)


Soft: 978-1-61942-938-3. $47.00.

The textile industry views fibers as natural or synthetic filament, such as cotton or nylon, capable of being spun into yarn, or simply as material made of such filaments. The discovery and rapid evolution of nanofibers have led to a vastly improved understanding of nanotechnology. For heat flow analysis of wet porous nanostructure fabrics, the liquid is water and the gas is air. This book is intended to be essentially a practical guide; a detailed discussion of the theoretical side of the subject should be outside its scope. A considerable literature exists and the reader who wishes to make a further study of this aspect of the subject is referred to the bibliography at the end of this book. However, for a proper appreciation of what is involved to heat flow in porous nanostructure fabrics, certain basic theories and concepts should be understood.

Advanced Nanotube and Nanofiber Materials

* A.K. Haghi (University of Guilan, Iran) G.E. Zaikov (N.M. Emanuel Institute of Biochemical Physics, Russian Academy of Sciences, Moscow, Russia)


Soft: 978-1-62081-170-2. $52.00.
e-book: 978-1-62081-201-3. $52.00.

This book presents the tools of nanotechnology that can build, image, and manipulate nanostructures to build materials and devices. It bridges the gap between detailed technical publications that are beyond the grasp of non-specialists and popular science books, which may be more science fiction than fact. It provides a fascinating, scientifically sound treatment, accessible to engineers and scientists outside the field and even to students at the undergraduate level. This book concludes with a look at some cutting-edge applications and prophecies for the future. It builds a solid background in characterization and fabrication methods while integrating the physics, chemistry, and biology facets. It focuses on applications and examining engineering aspects of nanotube and nanofiber materials.

Advances in Nanotechnology. Volume 10

* Zacharie Bartul and Jéréme Trenor


Case: 978-1-62100-150-8. $140.00.
e-book: 978-1-62100-203-1. $140.00.

Nanotechnology is the study of the controlling of matter on an atomic and molecular scale and is also very diverse, ranging from extensions of conventional device physics to completely new approaches based upon molecular self-assembly. This book gathers and presents data on nanotechnology, including fine structure characterization of nanorod materials using neutron scattering and synchrotron radiation techniques; nanomedicine advancements in burn therapy; nanowire meshes; manganese oxide nanorods; superhydrophobic inorganic nanostructures and low-temperature fabrication of 1-dimensional metal nanostructure arrays by ion irradiation.

**Carbon Nanotubes: Properties, Performance and Applications**

* A.K. Haghi (University of Guilan, Iran)

In series: Nanotechnology Science and Technology 2012. 149 pp.

Soft: 978-1-62081-881-7. $52.00.
e-book: 978-1-62081-966-1. $52.00.

Carbon nanotubes (CNTs) have attracted particular interest because they are predicted, and indeed observed, to have remarkable mechanical and other physical properties. The combination of these properties with very low densities suggests that CNTs are ideal candidates for high performance polymer composites. This book builds a solid background in characterization and fabrication methods while integrating the physics, chemistry, and biology facets. This book focuses on applications and examining engineering aspects.

**Carbon Nanotubes: Synthesis and Properties**

* Ajay Kumar Mishra (Department of Chemical Technology, University of Johannesburg, Doornfontein, Johannesburg, South Africa)

In series: Nanotechnology Science and Technology 2012.

Case: 978-1-62081-914-2. $195.00.

Carbon nanotubes possess unusual fascinating properties which have attracted the scientific world. This book covers a very wide domain of research and development where the synthesis and properties of carbon nanotubes are discussed. This book describes the carbon nanotube general introduction, various synthesis procedures and properties. This book is going to be beneficial to the researchers who are working for their postgraduate degree in nanomaterials and nanotechnology. This book also provides a platform for all the academics and researchers as it covers a vast background for the recent literature, abbreviations, and summaries. This book will be worth reading for the researchers who are more interested in the general overview of carbon nanotubes, fundamentals concepts and various synthetic procedures in the multidisciplinary areas. This book contains the fundamental knowledge with the recent advancements for the research and development in the field of nanomaterials and nanotechnology.

**Development of Nanotechnology in Textiles**

* A.K. Haghi (University of Guilan, Iran), G.E. Zaikov (Institute of Biochemical Physics, Russian Academy of Sciences, Moscow, Russia)

In series: Nanotechnology Science and Technology 2012.

Case: 978-1-62081-030-9. $47.00.
e-book: 978-1-62081-052-1. $47.00.

The subject of nanotechnology in textiles is as vast as the universe so to restrict its description to a few words is merely impossible. Nanotechnology is, broadly speaking, the science of manipulating and rearranging individual atoms and molecules to create useful materials. “Nano” textiles are those designed and engineered on the nanoscale to create specific functions. These nano functions are very diverse and range from UV protection and antibacterial functions to moisture management. This book summarizes the recent development of nanotechnology in textile areas.
Handbook of Research on Nanomaterials, Nanotechnology and Smart Materials
A. K. Haghi (University of Guilan, Iran, Quebec, Canada) and G. E. Zaikov (N. M. Emmanuel Institute of Biochemical Physics, Russian Academy of Sciences, Moscow, Russia)
In series: Biochemistry Research Trends
In series: Nanotechnology Science and Technology
2013. 405 pp.
Case: 978-1-61942-525-5. $165.00.
The collection of topics in this book aims to reflect the diversity of recent advances in nanomaterials, nanotechnology and smart materials with a broad perspective which may be useful for scientists as well as for graduate students and engineers. The book offers scope for academics, researchers, and engineering professionals to present their research and development works that have potential for applications in several disciplines of engineering and science. Contributions range from new methods to novel applications of existing methods to gain understanding of the material and/or structural behavior of new and advanced systems. This book presents leading-edge research from around the world in these dynamic fields.

Introduction to nanocomposite science of layered and tubular materials
Grażyna Sinha Martynková and Karla Cech Barabaszová (VŠB-Technical University of Ostrava, Nanotechnology Centre, Ostrava - Puruba, Czech Republic)
In series: Nanotechnology Science and Technology
Soft: 978-1-60741-739-2. $52.00.
The field of nanocomposites involving organic or inorganic materials is a rapidly rising area of research and application development. In general nanocomposites can be broadly defined as a mix of dissimilar components that can be zero-dimensional, one dimensional, two dimensional or three dimensional that are mixed at the nanoscale. The promise driving nano-composites over more traditional composites lies in taking advantage of the new and often exciting properties afforded by nano-structures. Moreover, these properties are often tunable and so significant effort is being focused on our ability to control the properties of the nanostructures and their merging into composites. Thus a significant amount of research is being targeted to understanding the properties both for the individual nano-materials as well as the composite itself, e.g. interfacial interactions. This is an ideal book for new entrants in the field whether they are master’s students, post graduate students or postdoctoral fellows entering the field for the first time.

Magnetic Nanoparticles: Properties, Synthesis and Applications
Beate Acklin and Edon Lautens
In series: Nanotechnology Science and Technology
In series: Physics Research and Technology
Case: 978-1-61942-424-1. $140.00.
Magnetic nanoparticles have been attracting much interest in the fields of advanced biological and medical applications such as drug delivery, magnetic resonance imaging, and array-based assaying as well as in the fields of separation science. This book presents current research in the study of the properties, synthesis and applications of magnetic nanoparticles. Topics include the synthesis of organic based magnetic nanoparticles-polymers and calixarene based magnetic nanoparticles; ferromagnetism in carbon and boron nitride nanostructures, and computer simulations, chemical syntheses and biomedical diagnosis using magnetic nanoparticles.

Nanofibers: Synthesis, Properties, and Applications
Wei Dong Li and Xue Ping Wang
In series: Nanotechnology Science and Technology
In series: Materials Science and Technology
Case: 978-1-62257-085-4. $150.00.
Due to their one-dimensional structures and novel physical properties, nanofibrous materials have been extensively investigated and hold promising applications in various fields, including electronic, optical, semiconductors, sensors, polymer fillers and nonwoven porous membranes. This book presents current research in the study of the synthesis, properties and application of nanofibers. Topics include the functionalization and activation of carbon nanofibers; fabrication of aligned polymer and metal oxide nanofibers by electrospinning; inorganic nanofibers for novel separation membranes; the physics behind the vapor-liquid-solid route and carbon nanofiber formation; preparation and modification of chitin nanofibers; and the synthesis of composite carbon nanofibers with macroscopic shaping.

Nanotechnology: Select Assessments of the National Nanotechnology Initiative
Steven M. Goldfarb and Hugh Morgan
In series: Nanotechnology Science and Technology
2012.
Case: 978-1-62257-596-1. $110.00.
This book provides an overview of the National Nanotechnology Initiative (NNI) which was launched in 2001, with an initial budget of $500 million. The NNI is a crosscutting Federal program designed to coordinate U.S. investment in research and development (R&D) activities in nanoscale science, engineering, technology, and related efforts. The NNI has four broad objectives: (1) to advance world-class nanotechnology research and development; (2) to foster the transfer of new technologies into products for commercial and public benefit; (3) to develop and sustain educational resources, a skilled workforce, and the supporting infrastructure and tools to advance nanotechnology; and (4) to support the responsible development of nanotechnology. The NNI has had a “catalytic and substantial impact” on the growth of the U.S. nanotechnology industry and as a result, the United States is today, the global leader in this exciting and economically promising field of research and technological development.

Quantum-Chemical Calculations of Molecular Systems as the Basis of Nanotechnologies in Applied Quantum Chemistry, Volume 5
V.A. Babkin (State Architect-Build University, Sebrykov Department, Michaelovka, Volgograd region; Russia) G.E. Zaikov (N.E. Emanuel Institute of Biochemical Physics, Russian Academy of Sciences, Moscow, Russia)
In series: Nanotechnology Science and Technology
Case: 978-1-61470-882-7. $165.00.
This book is one of many volumes which presents current research in the study of quantum-chemical calculations of various molecular systems. The research results presented suggest that the development of nanotechnologies will offer new and more effective advancements for the improvement of penicillins, vitamins and catalysts. The results
of quantum-chemical calculations of various molecular systems presented here are the first step toward the development of new nanotechnologies.

Quantum-Chemical Calculations of Molecular Systems as the Basis of Nanotechnologies in Applied Quantum Chemistry. Volume 6
G.E. Zaikov (N.M. Emanuel Institute of Biochemical Physics, Russian Academy of Sciences, Moscow, Russia) V.A. Babkin (Volgograd State Architect-Build University, Michailovka, Volgograd region; Russia)
Case: 978-1-61470-885-8. $165.00.
e-book: 978-1-61470-922-0. $165.00.
This book is one of many volumes which presents current research in the study of quantum-chemical calculations of various molecular systems. The research results presented suggest that the development of nanotechnologies will offer new and more effective advancements for the improvement of penicillins, vitamins and catalysts. The results of quantum-chemical calculations of various molecular systems presented here are the first step toward the development of new nanotechnologies.

Quantum-Chemical Calculations of Molecular Systems as the Basis of Nanotechnologies in Applied Quantum Chemistry. Volume 7
G.E. Zaikov (N.M. Emanuel Institute of Biochemical Physics, Russian Academy of Sciences, Moscow, Russia) V.A. Babkin (Volgograd State Architect-Build University, Michailovka, Volgograd region; Russia)
Case: 978-1-61470-891-9. $165.00.
This book is one of many volumes which presents current research in the study of quantum-chemical calculations of various molecular systems. The research results presented suggest that the development of nanotechnologies will offer new and more effective advancements for the improvement of penicillins, vitamins and catalysts. The results of quantum-chemical calculations of various molecular systems presented here are the first step toward the development of new nanotechnologies.

Research Progress in Nanoscience and Nanotechnology
A.K. Haghi (University of Guilan, Iran)
Soft: 978-1-62081-904-3. $52.00.
This book will provide innovative chapters on the growth of educational, scientific, and industrial research activities among engineers and provides a medium for mutual communication between international academia and the industry. This book publishes significant research reporting new methodologies and important applications in the different fields of nano as well as includes the latest coverage of chemical databases and the development of new experimental methods.

Smart Nanocomposites Research Compendium. Volume 1
Kirill Levine
In series: Nanotechnology Science and Technology 2012.
Case: 978-1-62257-336-3. $150.00.
e-book: 978-1-62257-337-0. $150.00.
This book compiles articles from the Smart Nanocomposites Journal. Topics discussed include two- and chemical route to obtain graphene or few-later graphite; gas sensors based on multwall carbon nanotubes decorated with different metal oxides nanoparticles; mechanism of multi-wall nanotube nucleation based on Mullins-Sekerka instability; self assembly of silicon nanoislands on crystalline silicon under a photoactive layer; and synthesis of light emitting SiOx Layers with calculable optical properties.

TiO2 Nanoparticles by Flame CVD Method: Synthesis, Characterization, Simulation and Application
Hongyong Xie (Shanghai Second Polytechnic University, Shanghai), Shi Chen (Dalian University of Technology, Dalian)
Case: 978-1-61470-262-7. $150.00.
The scientific and technological issues of nanostructured particles and materials are currently attracting considerable attention. The reason for this is that nanostructured particles and materials, and the physical or chemical combination of substances at the nanometer or subnanometer scale, can lead to innovative materials with improved or even unexpected properties. Applications which could have a great impact can be anticipated in fields like catalysis, technical ceramics, membrane technology, optoelectronics and solid-state ionics with emphasis on systems for clean energy conversion and storage. However, progress in these fields will largely depend on the pace of advance of the fundamental research on nanostructured particles and materials in solid-state chemistry, solid-state physics and materials science. This book presents current research in the study of TiO2 nanoparticles by flame CVD method.

NATURAL DISASTERS

Chilean Earthquake of 2010: Response and Lessons
James T. Markou and Sean A. Durkin
Case: 978-1-62100-184-3. $95.00.
On February 27th, 2010, an earthquake of magnitude 8.8 struck off the coast of central Chile. Centered 70 miles northeast of Chile’s second-largest city, Concepcion, at a depth of 22 miles, the earthquake was the second largest ever recorded in Chile and the fifth largest recorded worldwide since 1900. Over 100 aftershocks of magnitude 5.0 or greater were recorded following the initial earthquake. The earthquake and subsequent tsunami, which struck Chile’s coast roughly 20 minutes after the earthquake and moved 2,000 feet onto shore in some places, devastated parts of the country. This book analyzes the response to the Chilean earthquake and the lessons learned.
Earthquake in Haiti: Aftermath Conditions and Crisis Response
Irene M. Falchin (Editor)
In series: Natural Disaster Research, Prediction and Mitigation
Case: 978-1-61470-447-8. $95.00.
e-book: 978-1-61470-544-4. $95.00.
This book presents current research in the study of the devastating earthquake which occurred in Haiti in 2010. Topics discussed include the crisis and response as a result of the Haiti earthquake; charitable contributions for Haiti’s earthquake victims; the Haitian economy and HOPE Act; FY2010 supplemental for disaster assistance and Haitian relief and the U.S. immigration policy on Haitian migrants.

Earthquakes: Triggers, Environmental Impact and Potential Hazards
Kostas Konstantinou (Dept of Earth Sciences, National Central University, Taoyuan County, Taiwan)
In series: Natural Disaster Research, Prediction and Mitigation
Case: 978-1-62081-883-1. $175.00.
Earthquakes represent a natural phenomenon that throughout human history has caused destruction of man-made structures and dramatic loss of life. The study of earthquake phenomena has seen a rapid growth over the past few decades and has contributed significantly towards mitigating the effects of large earthquakes. This edited volume consists of a collection of ten chapters that address three topical areas related to earthquake research. The contributed chapters in this volume will be of use to a range of professionals such as Earth scientists, engineers and civil protection officers.

Natural Disasters: Prevention, Risk Factors and Management
Biljana Raskovic and Svetomir Mrdja
In series: Natural Disaster Research, Prediction and Mitigation
2013.
Case: 978-1-62257-676-0. $150.00.
In this book, the authors present current research in the study of the prevention, risk factors and management of natural disasters. Topics discussed include typhoon and hurricane prediction; point-of-care testing in complex emergency and disaster resilience; management strategies for children during natural disasters; torrential floods prevention; information technology and simulation in disaster management; quantile approach application to seismic risk assessment; the increase of natural disasters as a result of global climate change; coping with disaster trauma; paleo-landslides in central Serbia; how the elderly cope during disasters and crises; and government involvement in Connecticut during Tropical Storm Irene.

Tsunami Hazard Assessment at U.S. Nuclear Power Plants
Roger F. Goldman
In series: Natural Disaster Research, Prediction and Mitigation
Case: 978-1-61470-865-0. $95.00.
This book examines the tsunami phenomenon with the focus on its relevance for hazard assessment at nuclear power plant sites. Three tsunamigenic mechanisms (earthquakes, landslides, and volcanoes) are considered. Also discussed are offshore and onshore modeling of tsunami waves and their effects on nuclear power plant structures, systems, and components. Identification of the repository of historic tsunami data and ways to approach site safety assessment for tsunamis by a Nuclear Regulatory Commission is also reviewed.

NUCLEAR MATERIALS & DISASTER RESEARCH

Nuclear Oversight, Planning and Safety Efforts: Select Assessments
Lance Oliver and Mathew T. Weber
In series: Nuclear Materials and Disaster Research
2012.
Case: 978-1-62257-428-5. $110.00.
This book examines nuclear oversight, planning and safety efforts at U.S. nuclear power reactors across the United States. The U.S. Nuclear Regulatory Commission (NRC), an independent federal agency headed by five commissioners, licenses commercial nuclear power reactors and regulates and oversees their safe operation and security. An NRC task force has reviewed the Fukushima Daiichi disaster in Japan and determined that the continued operation of existing U.S. nuclear power reactors and the licensing of new reactors do not pose an imminent risk to public health and safety. The disaster in Japan, caused by a tsunami, was more severe than the plant was designed to withstand, and has raised questions about whether a similar event could happen here. These questions were further highlighted by natural hazards that affected the sites of several U.S. commercial nuclear power plants and their reactors in 2011, including flooding near two power plants in Nebraska, severe storms at a plant in Alabama, and an earthquake at a plant in Virginia.

NUTRITION

Apples: Nutrition, Consumption and Health
Sancho J. Cordoba and Fernando A. Delgado
In series: Food Science and Technology
In series: Nutrition and Diet Research Progress
2012. 228 pp.
Case: 978-1-61942-709-9. $140.00.
In this book, the authors present current research in the study of the nutrition, consumption and health effects of apples. Topics discussed in this compilation include the microbiology of apples and apple products and related health hazards; apple pomace as a substrate for industrial and biotechnological applications; non-destructive measurements of the quality parameters of fresh apples; apple polyphenols are their effect of cardiovascular disease, obesity, metabolic syndrome and diabetes; and apple contamination risks.

Honey: Production, Consumption and Health Benefits
Gilles Bondurand and Hernan Bosch
In series: Food and Beverage Consumption and Health
In both ancient and modern civilizations, honey represents a natural product of great importance with many functional applications. Honey is used simply as a sweetener and is known as a food with significant nutritional properties and as a natural product with valuable therapeutic applications, due to its biological effects, such as an antibacterial, antioxidant, anti-tumor, anti-inflammatory and antiviral. This book focuses on the production, consumption and health benefits of honey and discusses the impact of different honey types on the content of trace materials, composition of phenolic and flavonoid antioxidant activity contributing to human health; high performance liquid chromatography determination of antibiotics in honey; phenolic compounds in honey as health promoters; quality control of honey using spectroscopic methods and medicalisation of honey.

**OPTICS & LASERS**

**Advances in Laser and Optics Research. Volume 10**

*William T. Arkin*

In series: **Advances in Laser and Optics Research**

2013. 399 pp.

Case: 978-1-62257-795-8. $150.00.
e-book: 978-1-62257-796-5. $150.00.

This book gathers the latest research from around the globe on the subject of lasers and optics research. Topics discussed include polarization dependent effects in optical waveguides containing bragg grating structures; bacterial cell interactions with optical fiber surfaces; passively mode-locked fiber lasers with nonlinear optical loop mirrors; optical breakdown in gases induced by high-power ir co2 laser pulses and towards shaping of pulsed plane waves in the time domain via chiral sculptured thin films.

**Advances in Laser and Optics Research. Volume 9**

*William T. Arkin*

In series: **Lasers and Electro-Optics Research and Technology**


Case: 978-1-61470-940-4. $140.00.
e-book: 978-1-62100-018-1. $140.00.

This book gathers the latest research from around the globe on the subject of lasers and optics research. Topics discussed include advanced CO2 laser-induced plasma processing; excimer laser annealing of dielectrics with ion-synthesized metal nanoparticles; ultra-short pulse laser on hole drilling; laser-induced breakdown spectroscopy and its applications in mineral and pollution analyses; high power optical coatings; lasers in implant dentistry; Q-switched laser applications and electromagnetically induced transparency in optical frequency metrology.

**New Developments in Optics Research**

*Matthew P. Germanno*

In series: **Lasers and Electro-Optics Research and Technology**


Case: 978-1-61324-505-7. $95.00.

This book presents current research in the study of optics, with a particular focus on sensors and fibers. Topics discussed include optical current sensors; evanescent field tapered fiber optic biosensors; new challenges in raman amplification for fiber communication systems; fiber bragg gratings in high birefringence optical fibers and optics research applied to the turin shroud.

**Optical Imaging: Technology, Methods and Applications**

*Akira Tanaka and Botan Nakamura*

In series: **Lasers and Electro-Optics Research and Technology**

In series: **Biomedical Devices and their Applications**


Case: 978-1-62081-800-8. $150.00.
e-book: 978-1-62081-835-0. $150.00.

Optical imaging describes the behavior of visible, ultraviolet, and infrared radiation used in imaging techniques based on optical principles. Reflection, refraction, interference, scattering, transmission, polarization and/or luminescence/fluorescence processes are involved in the optical study of different materials, organic, inorganic, natural or synthetic. In this book, the authors discuss optical image analysis and determination of dispersed multi-phase flow for simulation and control; optical imaging applications for the study of cultural heritage artifacts; atomic and magnetic force microscopy of semiconductor and semimagnetic nanocrystals; imaging, spectroscopy and sensing with single and coupled metallic nanoparticles; methods for suppressing random and nonrandom noise in fluorescence imaging; and optical coherence tomography.

**PHARMACOLOGY**

**Encyclopedia of Pharmacology Research (2 Volume Set)**

*Derek Cheng and George Liu (Editor)*

In series: **Pharmacology - Research, Safety Testing and Regulation**


This book presents current research in the study of pharmacology. Topics discussed include antidepressants therapy; monitoring antidepressant therapy by using heart rate variability; tianeptine and sertraline; gender differences in response to antidepressants; organotin polyethers as anticancer drugs; geldanamycin derivatives as promising anticancer drugs; design of novel anticancer drugs utilizing busulfan for optimizing pharmacological properties; advances in drug discovery to assess cholinergic neurotransmission; models of intestinal drug permeability and pharmacopeial quality of antimicrobial and antiviral formations.

**PHILOSOPHY**

**Mind in Nature: from Science to Philosophy**

*Olga Markić, Marko Uršić, Andrej Ule (Department of Philosophy Faculty of Arts, University of Ljubljana Aškerceva, Ljubljana, Slovenia)*

In series: **World Philosophy Series**


Case: 978-1-62081-267-9. $175.00.
e-book: 978-1-62081-343-0. $175.00.

The main purpose of this book is to investigate, from the philosophical point of view, the concept of mind in some quickly developing fields of contemporary science, from physics and cosmology to biology and cognitive science. New scientific investigations have brought many empirical results that help to explain natural phenomena from quantum states to human thinking, yet the question of the nature of the mind
itself is still open. In this book, the authors discuss several philosophical problems raised or reformed by recent scientific discoveries. The authors use an interdisciplinary and holistic approach that bridges the gap between scientific and humanistic pictures of the mind.

**Philosophy of Science**

*Samuel Pintuck and Colin Reynolds*

In series: *World Philosophy Series*  
Case: 978-1-62100-276-5. $95.00.  
e-book: 978-1-62100-397-7. $95.00.

The philosophy of science is concerned with the assumptions, foundations, methods and implications of science. It is also concerned with the use and merit of science and sometimes overlaps metaphysics and epistemology by exploring whether scientific results are actually a study of truth. In this book, the authors present current research in the study of the philosophy of science including explaining global interactions; Poincare's enigmatic relationship with logic and the infinite; providing analogous insight regarding ontological issues and a conceptual parallel between Heisenberg's and Bohm's interpretation of quantum mechanics.

**Scepticism: Hero and Villian**

*Sir Roy Calne (University of Cambridge, National University of Singapore, Cambridge, UK) and William O'Reilly (University Lecturer, Cambridge, UK)*

In series: *World Philosophy Series*  
2012.  
Case: 978-1-62081-886-2. $230.00.  

Scepticism was a central topic in the culture of ancient Greece, the source of Western civilization. Over some three thousand years scepticism remains an important tool with which to hone new ideas. With the advent of science and the opportunity for independent verification of concepts, scepticism has assumed a more central role in contemporary culture, requiring constant modification and updating. This volume has attempted to discuss scepticism in the context of both science and the humanities with 33 chapters covering a wide range of subjects without any attempt at being comprehensive. The authors come from different disciplines, though all have focused on the role of scepticism in their subjects. The editors have contributed short introductory and linking texts in an attempt to provide a smooth transition between sections.

**PHYSICAL SCIENCE**

**Decomposition Methods in Multiphysics and Multiscale Problems: Models and Simulation**

*Juergen Ernst Geiser (Humboldt University of Berlin, Berlin, Germany)*

In series: *Physics Research and Technology*  
Case: 978-1-61728-611-7. $150.00.  

This book models chemical vapor deposition (CVD) for metallic bipolar plates and simulates the deposit of a homogeneous layer. Also discussed herein are mesoscopic models, which reflect the transport and reaction of the gaseous species through a homogeneous media in the chamber. The models include the conservation of mass and the porous media in accordance with Darcy’s law. The transport through the stationary and nonionized plasma field is treated as a diffusion-dominated flow, where the metallic deposit and the gas chamber look like porous media. This book examines the theoretical results of decomposition methods, as well as presents the application to the CVD apparatus.

**Physics**

**Advances in Application of Quantum Mechanics in Neuroscience and Psychology: A Clifford Algebraic Approach**

*Elio Conte (University of Bari, Italy)*

In series: *Physics Research and Technology*  
Case: 978-1-61470-325-9. $140.00.  

The first psychological studies and physics were once both considered together in the realm of psychology. Today, neuroscience, psychology and physics are seen together very infrequently. When physics is seen linked to mathematics as it is in the case of the present book, both these disciplines are considered so abstract and distant from neurologists and psychologists that reading the matter creates difficulties, some prejudice, and considered unable have some advantages. One of the interesting results of this book is that quantum mechanics relates directly to cognitive entities. Consequently, there is evidence that, in order to recover such a gap, an adequate role of quantum physics must be acknowledged and appropriate explanation offered.

**Basis of Nonsymmetrical Hydromechanics**

*Andrey Nikolaevich Volobuev (Samara State Medical University, Samara, Russia)*

In series: *Physics Research and Technology*  
Case: 978-1-61942-696-2. $150.00.  

On the basis of N.E. Zhukovsky’s ideas, it is shown that stress tensor and speeds of deformation tensor only approximately describe a force’s condition in a liquid. This book presents the new vector form of the Newton’s law for a viscous liquid and considers the method of calculation of a flow of bodies by a viscous liquid on the basis of “a hypothesis of replacement”. This book can be useful to scientists and engineers working in areas connected with hydrodynamics.

**Crystal Growth: Theory, Mechanisms and Morphology**

*Nicole A. Mancuso and James P. Isaac (Editor)*

In series: *Physics Research and Technology*  
In series: *Materials Science and Technologies*  
Case: 978-1-61324-529-3. $140.00.

In this book, the authors present topical research from across the globe in the study of the theory, mechanisms and morphology of crystal growth. Topics discussed include the theory of kinetic experiment at crystal growth from solutions in melts; self-assembly of epitaxial III-V-compound semiconductor quantum dots; supersaturation formation and measurement; the growth mechanisms of electrodedeposited nanowires and the growth and morphology evolution of ZnO nanowires synthesized by chemical vapors.
Crystallography: Research, Technology and Applications
Misao Hokkaido and Eiko Nagano
In series: Materials Science and Technologies
In series: Physics Research and Technology
Case: 978-1-62081-574-8. $150.00.
The science of the arrangement of atoms in solids is known as crystallography. In single crystals, the effects of the crystalline arrangement of atoms is often easy to see macroscopically, because the natural shapes of crystals reflect the atomic structure. In addition, physical properties are often controlled by crystalline defects. The understanding of crystal structures is an important prerequisite for understanding crystallographic defects. Topics discussed in this new book include in situ protein crystal diffraction screening; structures and properties of 3D-4P and 3D chiral Schifff base complexes; crystal dehydration techniques; case studies on crystal structure determination involving H atoms; and cleavage fracture crystallography.

Einstein and Hilbert: Dark Matter
Valeriy V. Dvoeglazov (Universidad de Zacatecas, Mexico)
In series: Contemporary Fundamental Physics
Edited by: Valeriy V. Dvoeglazov (Univ. de Zacatecas, Zacatecas, Mexico)
Case: 978-1-61324-840-9. $150.00.
This book presents interesting mathematical questions of relativity theory and relations to modern astrophysics, as well as various conceptual foundations. Topics discussed include the generalized Lorentz transformations and the velocity transformation; fundamental physics; non-Newtonian gravity effect; dark matter and dark energy concepts; pseudo-complex variables and antisymmetric tensor fields. This book will be useful for academic professors, professional researchers in physics and mathematics, postgraduate students and all remaining people interested in theoretical physics and astrophysics.

Encyclopedia of Physics Research (3 Volume Set)
Nancy B. Devins and Jillian P. Ramos (Editor)
In series: Physics Research and Technology
2012. 1042 pp.
Case: 978-1-61470-119-4. $345.00.
This book presents current research in the field of physics, with a particular focus on atomic molecular and optical physics, as well as cryogenics and photonic crystals. Topics discussed include pulse structuring in laser-light dynamics; excitation of atoms and ions by electron impact; Fiber Bragg Gratings and their applications as temperature and humidity sensors; liquid oxygen magnetohydrodynamics; cryogenic treatment and fatigue resistance; cryogenic grinding; fabrication and applications of polymer photonic crystals; physics of photonic crystal couplers and their applications and a photonic band gap for quasicrystal-related structures.

Focus on Quantum Mechanics
David E. Hathaway and Elisabeth M. Randolph
In series: Physics Research and Technology
Case: 978-1-62100-680-0. $195.00.
This book presents current research in the field of quantum mechanics. Topics discussed include geometric modification of quantum mechanics; deformed quantum field theory; translocal shape and universal intelligence; theoretical aspects of quasiparticle excitations for Bose-Einstein condensates in lattice potentials; in situ exact solutions of quantum dynamical systems and a realistic interpretation of quantum mechanics.

Gamma Rays: Technology, Applications and Health Implications
Istvan Bikit (Department of Physics, University of Novi Sad, Novi Sad, Serbia)
In series: Physics Research and Technology
2013.
Case: 978-1-62257-697-5. $195.00.
Gamma-rays originate from the decay of excited states of the atomic nuclei in a similar manner as the visible light originates from the decay of the atom itself. Gamma rays belong to the class of ionizing radiation, together with alpha rays (doubly ionized atoms of helium) and beta rays (electrons). The spectroscopy of gamma rays, having the unique feature that by photoeffect transform their total energy to the energy of electrons in the detection material, contributed decisively to the establishing of the decay schemes of atomic nuclei. Strong sources of gamma radiation are widely used in contemporary technologies for cancer treatment, material modification, medical imaging, and food sterilization. The main goal of this book is to present to the non-specialist reader the contemporary applications of gamma rays by selected chapters on that issue. This book has 16 selected chapters from basic application of gamma rays to applied issues like food sterilization and polymer modification.

General Relativity and the Pioneers Anomaly
Marcelo Samuel Berman (Instituto Albert Einstein/Latinamerica, Curitiba, Brazil)
In series: Physics Research and Technology
In series: Mathematics Research Developments
Case: 978-1-62100-003-7. $150.00.
This book is an introduction to the General Relativity Theory (GRT) and to the solution of the Pioneers Anomaly by means of relativistic cosmology, a study that is designed to be understood by undergraduate and graduate students alike in the fields of theoretical physics, applied mathematics and space engineering. In fact, this book is the first elementary account of GRT and cosmology to address the NASA problem, which consists of a specific deceleration suffered by two space-probes launched to outer space more than thirty years ago.

Horizons in World Physics. Volume 274
Albert Reimer
In series: Horizons in World Physics
Case: 978-1-61324-014-4. $140.00.
e-book: 978-1-62257-695-1. $140.00.
This book presents original research results on the leading edge of physics. Each article has been carefully selected in an attempt to present substantial research results across a broad spectrum. Topics presented in this compilation include the production of isomers by spallation and the consequences for nuclear science; solar flare numerical magnetohydrodynamic simulation and solar flare models; X and Gamma ray interactions with soft contact lenses; visible light therapy research and the structure and development of barrier discharges at atmospheric pressure.
Horizons in World Physics. Volume 276
Albert Reimer
In series: Horizons in World Physics
Case: 978-1-61324-654-2. $140.00.
This book presents original research results on the leading edge of physics. Each article has been carefully selected in an attempt to present substantial research results across a broad spectrum. Topics included in this compilation include radiative transfer and its impact on thermal diffusivity in remote sensing; ferromagnetism in oxide based diluted magnetic semiconductors; the microstructure properties and critical damage of metals and the relativistic spin-polarization in quark matter.

Horizons in World Physics. Volume 277
Albert Reimer
In series: Horizons in World Physics
Case: 978-1-62100-587-2. $185.00.
This book presents original research results on the leading edge of physics. Each article has been carefully selected in an attempt to present substantial research results across a broad spectrum. Topics included in this compilation include spectroscopic analysis and temporal evolution of laser-induced plasma; structural heterogeneity of the physical vacuum; elastoplastic response of TCOSi coated systems to local loading; experimental methods for the determination of super light velocities in gravitation; recreation of the ground state by the repulsive mean-field nonlinearity in three and two-dimensional quantum gases and the singularity problem in gravitational physics and music.

Horizons in World Physics. Volume 278
Albert Reimer
In series: Horizons in World Physics
Case: 978-1-61942-537-8. $140.00.
This book presents original research results on the leading edge of physics. Each article has been carefully selected in an attempt to present substantial research results across a broad spectrum. Topics included in this compilation include complex radio zebra patterns escaping from the solar corona; an accurate value of the supernova Ia rate for the local (z<0.1) universe; the quantum cloning process; geometry-based finite element modeling in biomechanics; galactic and extragalactic supernovae occurrences and standard model fermions as excitations of an ether.

Horizons in World Physics. Volume 279
Albert Reimer
In series: Horizons in World Physics
Case: 978-1-62257-134-5. $150.00.
This book presents original research results on the leading edge of physics. Each article has been carefully selected in an attempt to present substantial research across a broad spectrum. Topics included in this compilation include hydrodynamic modeling of the dielectric barrier discharges in Xe and Xe-C12 mixtures; plasma and ion beam sputtering processes; fractional field theory and high-energy physics; lie groups and Cantorian space-time theory in connection with high-energy physics; quarks and fractionally quantized vortices in superconductors; supersymmetry and 3-algebra model of M-theory; new alternative methods to determine distances to celestial bodies; and the general dynamics of the bulk tilted cosmological model.

Interstellar Medium: New Research
Brian M. Cancellieri and Vladimir G. Mamedov
In series: Physics Research and Technology
Case: 978-1-61470-807-0. $150.00.
The interstellar medium (or ISM) is the matter that exists in the space between the star systems in a galaxy. This matter includes gas in ionic, atomic, and molecular form, dust, and cosmic rays. It fills interstellar space and blends smoothly into the surrounding intergalactic space. This book presents topical research in the study of interstellar medium, including explosive processes in the interstellar medium as sources of ultrahigh-energy cosmic rays; heteronuclear diatomics in diffuse and translucent clouds; far ultraviolet observations of the Large Magellanic Cloud; MDH simulations of Parker instability undergoing cosmic-ray diffusion; deuterium in the interstellar medium and interaction of planetary nebulae, Eta-Carinae and supernova remnants with the interstellar medium.

Magnetic Mechanism of Superconductivity in Copper-Oxide
Tanmoy Das (Northeastern University, Boston, MA, USA)
In series: Superconductivity Research and Applications
Case: 978-1-61324-696-2. $150.00.
This book provides an up-to-date report on the recent advances in theory and experiment of the unconventional copper-oxide (known as cuprate) and iron-arsenic (called pnictide) superconductors. This book includes some experimental results which lead to the observation of spin-fluctuation spectrum in cuprates and pnictides.

Molecular Dynamics: Theory, Kinetics and Implementation
Daniel E. Garcia and Paige J. Green
In series: Chemical Engineering Methods and Technology
In series: Computer Science, Technology and Applications
Soft: 978-1-62081-545-8. $69.00.
Molecular dynamics (MD) is a computer simulation of physical movements of atoms and molecules. The atoms and molecules are allowed to interact for a period of time, giving a view of the motion of the atoms. This book presents current research on the theory, kinetics and implementation of molecular dynamics. Topics discussed in this compilation include the molecular dynamics of proteins; molecular dynamics simulations on the extraction of fluid transport properties at the nanoscale; investigation of structural properties of drug-metabolizing enzymes using molecular dynamics simulation; double-pulse laser control of ultrafast optical Kerr effect in liquid; ZnO nanostructures for biosensing; and molecular dynamics simulations of liquid and ionic solvation of carbon tetrachloride.

Neutron Stars: The Aspect of High Density Matter, Equations of State and Observable
Hirosi Uechi (Osaka Gakuin University, Osaka, Japan)Schun T. Uechi (Osaka University, Osaka, Japan)Brian D. Serot (Indiana University, Bloomington, Indiana, USA)
In series: Space Science, Exploration and Policies
In series: Physics Research and Technology
2012.

Case: 978-1-62081-123-8. $165.00.

This book illustrates observed values and properties of neutron stars, field theoretical approaches of hadrons to high density matter, such as nuclear and hyperonic matter, signals of dynamical phenomena, hadronic and hadron-quark neutron stars, radiations from high density matter and supernova phenomena. However, it is not intended to report facts and results at front-line research fields, because numerous conference reports suffice the objectives. The purpose of editing the book is to review related areas of nuclear physics and astrophysics in terms of equations of state of high density matter so as to promote mutual understandings and their consistent progresses. It is focused on theoretical relations between equations of state (EOS) and observables. These topics of high density matter, which extend across many fields of physics, should be frequently reviewed for researchers and people in general.

New Developments in Hydrodynamics Research
Maximiano J. Ibragimov and Miroslava A. Anisimov
In series: Physics Research and Technology
In series: Engineering Tools, Techniques and Tables
Case: 978-1-62081-223-5. $150.00.

The concept of fluid is a highly successful model, used to describe the dynamics of many-particle systems. In this book, the authors present new developments in hydrodynamics research. Topics discussed include numerical methods for multi-physical magnetohydrodynamics; hydrodynamic flows versus geodesic motions in contemporary astrophysics and cosmology; fractal hydrodynamics model and its implications; laws of bubble coalescence and modeling; nuclear hydrodynamics in heavy-ion collisions; and fluid flow in nanotubes.

New Developments in Low-Energy Physics Research
Tao Zoeng and Meng Ngai
In series: Physics Research and Technology
2013.
Case: 978-1-62257-668-5. $150.00.

In this book, the authors present current research in the study of low-energy physics. Topics discussed in this compilation include nanostructured reflectors for slow neutrons; the low-energy Yang-Mills Gravitational Gauge Theory and its application to astrophysics and cosmology; quantum hall fluids in the presence of topological defects; analytic formulas for small systems of electrons at odd denominator filling factors of the lowest Landau level; application of sapphire in low-energy neutron physics; and a low-energy phenomenological theory of Yang-Mills formulation of gravitation.

New Developments in the Standard Model
Ryan J. Larsen
In series: Physics Research and Technology
Case: 978-1-61209-989-7. $150.00.
e-book: 978-1-62257-880-1. $150.00.

The Standard Model of particle physics is one of the most important successful results of the work of the last century physicists. In this new book, the authors present topical research in the study of new developments in the Standard Model. Topics discussed include non-equilibrium theory, fractional dynamics and the physics of the terascale sector; unexplored regions in QFT and the conceptual foundations of the Standard Model; supersymmetric Standard Model, Branes and Del Pezzo surfaces; fermion condensate as Higgs substitute and Lepton flavor violation shedding light on CP-violation.

New Steps in Physical Chemistry, Chemical Physics and Biochemical Physics
Gennady E. Zaikov, (N.M. Emanuel Institute of Biochemical Physics, Russian Academy of Sciences, Moscow, Russia) Eli M. Pearce, Gerald Kirshenbaum (Brooklyn Polytechnic University, New York, NY)
In series: Physics Research and Technology
In series: Nanotechnology Science and Technology
2012.

This book includes information about the modern experimental and theoretical analysis methods of particulate-filled nanocomposites structure, fiber reinforced antibacterial laminated nanostructured material for filtration of toxic particles, prediction of nanofiber diameter for optimization of laminated nanostructured material for filtration of toxic particles, intensification desalting of the gas distillate in turbulent flows, theoretical analysis of macromolecular coil connectivity degree influence on autohesion strength, carbon nanotubes geometry and reinforcement degree of polymer nanocomposites, the structure of butadiene–nitrite rubbers; paramagnetic-probe study, the temperature dependence of autohesional holding strength for miscible polymer pairs, nanostructured energy characteristics of hydrocarbon hydrogen containing fuels.

Photoluminescence: Applications, Types and Efficacy
Merle A. Case and Bradford C. Stout
In series: Physics Research and Technology
In series: Chemical Engineering Methods and Technology
Case: 978-1-61942-426-5. $140.00.

In this book, the authors present topical research in the study of the applications, types and efficacy of photoluminescence. Topics discussed include internal quantum efficiency of photoluminescence in wide-bandgap semiconductors; the structural ferroelectric and photoluminescent properties in perovskites; photoluminescence emission in ZnO single crystals and the photoluminescence properties of anodic alumina.

Physics and Logic of Life
Abir Iqamberdiev (Department of Biology, Memorial University of Newfoundland, Canada)
In series: Physics Research and Technology
Case: 978-1-61942-664-1. $140.00.

This book discusses the basic foundations of theoretical biology. Contrary to the objects of theoretical physics, the biological object contains a kind of ontological duality and refers to a fundamental wholeness of a living system. The rational interpretation of wholeness is considered by the author as a true basis for fundamental principles of development of theoretical biology and for understanding its link to physics, to psychology, and to semiotics. The rational holistic approach in application to theoretical biology can be substantiated through the clarification of internal logic of organization and description of biological systems. This logic will provide an understanding of the place of life in the Universe. The main goal of this book is to introduce the view that in the potentially infinite system of human knowledge, a proper clarification of the place of Man in the Universe is possible only via understanding of the phenomenon of life.
Physics of the Zero Point Field and its Applications to Advanced Technology
Takaaki Musha (Technical Research and Development Institute, Advanced Science-Technology Research Organization, Yokohama, Japan)
In series: Physics Research and Technology
2012.
Case: 978-1-62257-278-6. $85.00.
e-book: 978-1-62257-283-0. $85.00.
Space-time in a vacuum has generally been viewed as a transparent and ubiquitous empty continuum within which physical events take place. However, quantum field theory and quantum electrodynamics views the vacuum as the sum total of all zero-point fluctuations of the vacuum electromagnetic field, arising from the continuous creation and annihilation of virtual particle pairs. It is this latter more contemporary view that is, for the first time, more fully explored in text form with Physics of the Zero Point Field. The scope of applications in this book range from the Casimir effect, the variation in zero-point energy at the boundaries of a region observable in nano-scale devices, to ideas for a proposed inertial drive as first described by Pathoff.

Physics Research Biographical Sketches
Zachariah L. Ratcliff and Owen D. McKay
In series: Physics Research and Technology
2012.
Case: 978-1-61942-635-1. $230.00.
This new book compiles biographical sketches of top professionals in the field of physics research, as well as research summaries from a number of different focuses in this important field.

Physics Research Summaries
Zachariah L. Ratcliff and Owen D. McKay
In series: Physics Research and Technology
2013.
Case: 978-1-62257-719-4. $195.00.
e-book: 978-1-62257-720-0. $195.00.
This book is a continuation of the book Physics Researcher Biographical Sketches and Research Summaries which compiles biographical sketches of top professionals in the field of physics research, as well as research summaries from a number of different focuses in this important field.

Plasmons: Structure, Properties and Applications
Anton E. Turunen and Johannes O. Niemi
In series: Physics Research and Technology
Case: 978-1-62100-060-0. $150.00.
In physics, a plasmon is a quantum of plasma oscillation. The plasmon is a quasiparticle resulting from the quantization of plasma oscillations just as photons and phonons are quantizations of light and mechanical vibrations, respectively. In this book, the authors present current research in the study of the structure, properties and applications of plasmons. Topics discussed include plasmonic biosensors for sensitive measurements in complex biological matrices; generation of surface plasmon resonance for sub-wavelength nano-photolithography; applications of gold nanorods based on localized surface plasmon resonance; the study of living cells by infrared surface plasmon spectroscopy and interface plasmon polaritons in uniaxial bianisotropic structures.

Progress in Relativity, Gravitation, Cosmology
In series: Contemporary Fundamental Physics
Edited by: Valeriy V. Dvoeglazov (Univ. de Zacatecas, Zacatecas, Mexico)
This book examines themes ranging from space time symmetries and Lorentz invariance, to cosmology and quantum gravity, and includes such varied mathematical tools as non-commutativity, superconformal symmetries, gauge theories, higher-order terms and spinor equations to name a few. In particular, this book deals with the problem of form-invariance of the non-commutative parameters arising in the context of field theories in non-commutative space times.

Quantum Dots: Applications, Synthesis and Characterization
Orion Ciftja (Department of Physics, Prairie View A&M University, Prairie View, TX, USA)
In series: Nanotechnology Science and Technology
Case: 978-1-61942-968-0. $140.00.
This new book compiles biographical sketches of top professionals in the field of quantum dots over the past two decades. They specifically focus on discussing the cutting-edge applications in the fields of information technology, electronics, biotechnology, energy, medicine, cellular imaging and diagnostic biosensing.

Quantum Mechanics in Spaces of Constant Curvature
V. M. Redkov, E. M. Ovsiyuk (National Academy of Sciences of Belarus, Minsk, Republic of Belarus)
In series: Contemporary Fundamental Physics
Edited by: Valeriy V. Dvoeglazov (Univ. de Zacatecas, Zacatecas, Mexico)
Quantum mechanics had been started with the theory of the hydrogen atom, so when considering the quantum mechanics in Riemannian spaces it is natural to turn first to just this simplest system. A common quantum-mechanical hydrogen atom description is based materially on the assumption of the Euclidean character of the physical 3-space geometry. In this context, natural questions arise: what in the description is determined by this special assumption, and which changes will be entailed by allowing for other spatial geometries. The questions are of fundamental significance, even beyond their possible experimental testing. In the present book, detailed analytical treatment and exact solutions are given to a number of problems of quantum mechanics and field theory in simplest non-Euclidean spacetime models. The main attention is focused on new themes created by non-vanishing curvature in classical physical topics and concepts.
Radionuclides: Sources, Properties and Hazards
Javier Guillén Gerada (Faculty of Veterinary Science, University of Extremadura Avda, Cáceres, Spain)

We live in a radioactive world. This fact poses some questions: where does it come from?; how much radioactivity is there?; how can it affect human health? The radioactive content surrounding us has different source terms depending on which radionuclides are considered.

According to this, they can be classified into anthropogenic (or man-made) radionuclides and naturally occurring ones. In this book, the authors discuss the health hazards, medicinal benefit and uses of radionuclides.

Recent Research in Quantum Gravity
Arundhati Dasgupta (Department of Mathematics and Statistics, University of New Brunswick, Fredericton, Canada)

The book is a collection of excellent articles representing recent research in Quantum Gravity. Aspects of path-integral quantization, black hole physics, causal set theory, asymptotic safety program are discussed in depth making this collection an asset to reference books in Quantum Gravity. Beginning researchers, graduate students and established researchers will find this book useful.

Revised Quantum Electrodynamics
Bo Lehnert (Plasma Physics and Fusion Research, Royal Institute of Technology, Stockholm, Sweden)

The underlying ideas of the present treatise originate from some speculations by the author in the late 1960s on the possible existence of a nonzero electric field divergence in the electromagnetic equations of the vacuum state. From these speculations an extended electromagnetic theory with fundamental applications was gradually developed, and finally debouching into the present updated and revised quantum electrodynamical approach. This book collects the various and separately published parts of the theory into one systematic entity.

Riemann Surface Approach to Natural Modes. Exotic Resonant States
Nicolaie Grama, Cornelia Grama, Ioan Zamfirescu (Horia Hulubei National Institute, Physics and Nuclear Engineering, Magurele, Romania)

The purpose of this book is to provide a reference for researchers and postgraduates. The problems are taken from quantum physics, but the method has important applications in any field of science involving the natural modes. The reader is assumed to be familiar with the elements of the quantum theory of scattering and the elements of the analytic functions theory. The described method can be applied in electromagnetism, atomic and molecular physics, nuclear physics, particle physics, solid state physics with application in nanoscience and electronic devices, chemical physics, and optics.

Selected Topics of an Infinite-Dimensional Classical Analysis
Gogi Pantsulaia (Georgian Technical University, Tbilisi, Georgia)

This book explores a new concept of T-shy sets in Radon metric groups which is an extension of the concepts of null sets introduced by J.R. Christensen, J. Mycielski and B. R. Hunt, T. Sauer and J. A. Yorke for Polish groups. This book considers various interesting applications of the theory of infinite-dimensional cellular matrices for a solution of various initial condition problems. It also includes several direct generalizations of well-known classical results (Lebesgue theorem, Weyl theorem, Rademacher theorem, etc) in terms of infinite-dimensional “Lebesgue measures”.

Skyrmions: A Great Finishing Touch to Classical Newtonian Philosophy
Marcel Agop and Nicolea Mazilu (“Gheorghe Asachi” Technical University, Romania)

This book continues the classical Newtonian theory in both its initial spirit and the spirit of general relativity. It throws a bridge between classical Newtonian theory of forces and some contemporary concepts of the atomic, nuclear and particle theories. This book takes the Skyrmie theory of nuclear matter mainly from the point of view that it allows the initial analogy between the atomic edifice and the solar system in all details. Especially important is the detail that the atomic nucleus works exactly like the Sun, and they can be described in the same way. Based on this unitary description, the authors go further on, in showing that the Skyrmie theory is the only theory naturally suited for the explanation of structure of nuclear matter. Thus it should be actually a classical theory, inasmuch as it simply carries over into microcosmos the very Newtonian theory of forces extracted from the planetary Keplerian synthesis of celestial motions. By this the problem of structure of the nucleus becomes actually a problem of classical physics.

Solar Wind: Emission, Technologies and Impacts
Carlos Daniel Escaropa Borrega and Angela Fernanda Beirãs Cruz

The continuous stream of particles flowing outward from the Sun is called the solar wind. It mostly consists of electrons and protons with energies usually between 1.5 and 10 keV. The stream of particles varies in temperature and speed over time. These particles can escape the Sun's gravity because of their high kinetic energy and the high temperature of the corona. In this book, the authors present current research in the study of the emission, technologies and impact of solar...
wind. Topics include the possible impact of the astronomical aspects of the violent cyclonic motions in the Earth's atmosphere; planetary heat, solar wind and terrestrial climate; historical background on Eugene Parker and his conception and formulation of solar wind; solar wind influences on atmospheric processes in winter Antarctica; and experimental and modeling evidences of solar wind energy on the Earth's atmosphere.

**Theoretical Physics: Gravity, Magnetic Fields and Wave Functions**  
*Julie P. Chan and Matthew E. Weir*  
In series: *Physics Research and Technology*  
Case: 978-1-61209-785-5. $129.00.  
This new book presents and discusses current research in the field of theoretical physics with a particular focus on gravitation, magnetic fields and wave function. Topics discussed include magnetic components of gravitational waves; the spin-connection gauge field theory of gravitation; novel exact solution methodologies in wave function analysis; Yang-Mills formulation of gravitation; the role of interaction with the local and nonlocal modes of electromagnetic fields and the application of the magnetic field integral equation.

**Superconductivity and Condensed Matter Research**  
*Collin J. Eckles*  
In series: *Superconductivity Research and Applications*  
Case: 978-1-61209-785-5. $129.00.  
This new book compiles biographical sketches of top professionals in the fields of superconductivity and condensed matter, as well as research summaries from a number of different focuses in this important field.

**Surface Plasmon Polariton Nanooptics**  
*Andrey L. Stepanov (Laser Zentrum Hannover, Hannover, Germany)*  
In series: *Nanotechnology Science and Technology*  
Soft: 978-1-61942-352-7. $47.00.  
In recent years intensive investigations of surface plasmon polaritons have been made in the promising context of nanophotonics. This book discusses the experimental realization of key high efficiency two-dimensional optical elements, built up from metal nanostructures, such as nanoparticles and nanowires to manipulate plasmon polaritons propagating on metal surface. This book also presents several examples of two-dimensional nanooptical devices fabricated and studied in recent years.

**Synchrotron: Design, Properties and Applications**  
*Dao Ming Chua and Huang Fu Toh*  
In series: *Engineering Tools, Techniques and Tables*  
Case: 978-1-62081-202-0. $150.00.  
A synchrotron is a particular type of cyclic particle accelerator in which the magnetic field and the electric field are carefully synchronized with the traveling particle beam. In this book, the authors discuss the design, properties and applications of synchrotrons. Topics include synchrotron radiation as a tool to study fragmentation of chlorine containing molecules; undulator radiation in multiple magnetic fields; molecular clustering and molecular imaging to study biomolecules and biopolymers in heterogeneous biological tissues; nanoscale diffusion and solid state reaction in layered structures; in-situ real-time synchrotron x-ray scattering; and synchrotron-based Fourier transform infrared spectroscopy.

**The Big Challenge of Gravitational Waves: A New Window in the Universe**  
*Christan Corda and Herman J. Mosquera Cuesta (Centre di Scienze Naturali de Prato, Italy)*  
In series: *Physics Research and Technology*  
Case: 978-1-61470-373-0. $75.00.  
e-book: 978-1-61470-399-0. $75.00.  
The aim of this Collection Book is to obtain a tapestry of various important issues of theory and experiments concerning GWs.

**PLASMA PHYSICS**

**Inductively Coupled Plasma Atomic Emission Spectrometry: A model multi-elemental technique for modern analytical laboratory**  
*George Zachariadis (Aristotle University of Thessaloniki, Greece)*  
In series: *Chemistry Research and Applications*  
Case: 978-1-61942-693-1. $140.00.  
The principle of the use of Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES) in current analytical chemistry is the effective atomization and excitation of sample analytes in the powerful plasma conditions and the subsequent determination of them by monitoring their emitted characteristic atomic spectra. This book presents the principles and the operational aspects of the techniques and capabilities of ICP-AES in the analysis of a variety of sample matrices by a selection of applications. This book is useful for institutional researchers, academics and post-graduate students, analysts working in routine analysis in industrial, state or private analytical laboratories, and to anyone interested in the atomic spectrometry field.

**POLYMERS**

**Advances in Polymer Research**  
*Losif Sidorov and Fedor Nikitin*  
In series: *Polymer Science and Technology*  
2012. 312 pp.
In this book the authors present recent advances in polymer research. Topics discussed include polymer composite materials with photosensitive bis-crown-ether dye; organometallic polyamines as physical materials and biomaterials; a quick test for the assessment of weatherability of polyethylene and grafting of poly(lauryl methacrylate) from the surface of layered silicates using oligomeric azo-initiators.

Hydrogels: Synthesis, Characterization and Applications
Fabricio Vitor Câmara and Leandro J. Ferreira
In series: Biochemistry Research Trends
Case: 978-1-61942-842-3. $185.00.
Hydrogels are polymeric networks with three-dimensional configurations capable of imbuing high amounts of water or biological fluids. The application of hydrogels technology is being widely used in the pharmaceutical industry as drug delivery systems. In this book, the authors present current research in the study of the synthesis, characterization and applications of hydrogels. Topics include the synthesis of protein-based hydrogels for biomedical applications; the role of hydrogels in the development of artificial bone substitutes; protein-based hydrogels from fish industrialization wastes; silk fibroin hydrogels; PVP-Based hydrogels; and the tribological properties of polyvinyl alcohol hydrogels as artificial articular cartilage.

New Developments in Polymers Research
Evan O. Bradley and Michelle I. Lane
In series: Polymer Science and Technology
Soft: 978-1-61942-915-4. $47.00.
e-book: 978-1-61942-916-1. $47.00.
This new book presents and discusses current research in the study of polymer research. Topics discussed include a raman study of the pressure and temperature induced transformations in crystalline polymers of C60; eco-friendly (co)polymers containing 1,4-cyclohexylene units and thermo-and pH-sensitivity of poly(N-vinylpyrrolidone) in water media.

Principles of Polymers - An Advanced Book
Dibyendu Sekhar Bag (Director of Polymer Materials, Indian Institute of Technology (IIT), India)
In series: Polymer Science and Technology
Case: 978-1-62081-408-6. $230.00.
This book has been written in a concise manner to include all fundamental aspects of polymer science including recent inventions in polymerizations and polymers. It covers atom transfer radical polymerization (ATRP), reversible addition-fragmentation chain transfer (RAFT), nitroxide-mediated polymerization (NMP), click chemistry as well as stereopolymerization, ring opening metathesis polymerization (ROMP), group transfer polymerization (GTP), plasma polymerization etc. in addition to the usual polymerization mechanisms such as radical, ionic and step polymerizations. It also includes new developments of polymer science which are considered as hot topics of functional polymers like smart or intelligent polymers, light emitting polymers, conducting polymers, magnetic polymers, optically active and/or chiral polymers, liquid crystalline polymers, self-healing polymers, polymers for biomedical applications, dendrimers and/or dendritic polymers and polymer nanocomposites etc.

Psychology and Psychiatry

Advances in Psychology Research. Volume 88
Alexandra M. Columbus
In series: Advances in Psychology Research
Case: 978-1-62100-591-9. $140.00.
This continuing series presents original research results on the leading edge of psychology. This book reviews research on new perspectives in the treatment of mania; social aspects of mood disorders; the role of parental discipline and family environments during childhood and in cluster B personality symptoms in adulthood; behavior therapy in Tourette Syndrome; depression and its impact on osteoarthritis outcomes; gender differences in bipolar disorder; the relation between premenstrual dysphoric disorder, panic attacks, and panic disorder; the psychology of cravings to predict relapse in substance abuse patients and family relationships and ADHD.

Handbook of Technology in Psychology, Psychiatry and Neurology: Theory, Research, and Practice
Luciano L’Abate (Georgia State University, Atlanta, GA), David A. Kaiser (Churchville, NY)
In series: Psychology Research Progress
In series: Psychiatry: Theory, Applications and Treatments
Case: 978-1-62100-004-4. $215.00.
Our world is changing and changing quickly. One can be certain that the impact of technology will only become more pervasive in the decades to come and we cannot ignore how it will impact our profession. The juggernaut of technological development has and will continue to dramatically alter how we as health professionals in the neurosciences pursue our efforts in research, training and treatment. This book provides a rare and needed analysis of the history of technology in our field, the current state-of-the-art as well as a vision for the future. The contributors of this book critically examine how recent technological developments can contribute to advances in a range of topics including educational technology, assessment and treatment. These advances include a wide range of new approaches to communication and extend to advances in clinical care such as Diffusion Tensor Imaging and Transcranial Magnetic and Deep-brain stimulation.

Psychology of Rewards
Michela Balconi (Department of Psychology, Catholic University of Milan, Milan, Italy)
In series: Psychology of Emotions, Motivations and Actions
In series: Neuroscience Research Progress
2012. 177 pp.
Case: 978-1-62257-479-7. $120.00.
e-book: 978-1-62257-520-6. $120.00.
Reward mechanisms are recently debated and explored by different perspectives. Psychology, neuroscience and clinical domain pointed out the main relevance of reward behavior for subjective and social contexts. The present book highlights the role that reward plays in our...
life, taking into account the more recent contributions in the research field. Summarizing the most relevant and intriguing scientific contributions on the topic of reward and punishment dichotomy, this book offers an ample overview of the psychological and neurobiological keys to comprehend the complex human mind and its behavior, correlated in response to opposite reward-punishment situations. Topics discussed include the contribution of reward mechanisms in facial expression processing as in the case of supraliminal/subliminal stimulation; new measures of generalized expectancies about reward and punishment; addictive behavior is analyzed taking into account the intervention of dysfunctional mechanisms; the emotional stimulus processing (aversive vs. appetitive) in relationship with BIS/BAS behavioral systems and ERP (electrophysiological) measures; and the feedback elaboration (mismatching feedback) as a function of reward-punishment contribution.

The Psychology of Problem Solving: An Interdisciplinary Approach
Sebastien Helie (Department of Psychological and Brain Sciences, University of California, Santa Barbara, CA)
In series: Psychology Research Progress
In series: Neuroscience Research Progress
2012.
Case: 978-1-62257-589-3. $150.00.
This book compiles a series of chapters on theoretical, methodological, and practical advances in problem solving research that aim at identifying how participants build problem representations and search problem spaces. Each chapter has been carefully selected to represent the state-of-the-art in problem solving research, with a focus on applications through the analysis of verbal and graphical protocols of naive and expert solvers working on well- and ill-defined problems. The work presented in this book suggests that building and searching the problem space are highly interactive activities that cannot be decoupled and studied in isolation. As a result, a highly interdisciplinary approach was adopted, including research from fields as diverse as linguistics, psychology, ethology, design, and cognitive science. Hence, this book should be of interest to the problem solving community in general.

Video Game Play and Consciousness
Jayne Gackenbach (Department of Psychology Grant MacEwan University, Edmonton, Alberta, Canada)
In series: Perspectives on Cognitive Psychology
In series: Computer Science, Technology and Applications
The most widely-used, interactive and fully-immersive experience of virtual worlds is in video game play. Needless to say, video game play has left the sofa in the basement where a teen boy sat, and is now front and center in the family living room. Gaming has crossed all demographics; indeed, the most rapidly growing market is the casual gaming genre, played by middle-aged women. This engagement in interactive virtual worlds is not only limited to video game play, as life online takes various forms. But common to all these are increasing, and at times problematic, play patterns. The idea that such pervasive and ever-growing immersion in virtual play affects consciousness seems obvious and is the focus of this book.

RUSSIA

Russian Military: Ground Force Modernization and Georgia War Lessons
Alessandra R. Guardano
In series: Defense, Security and Strategies
In series: Russian Political, Economic, and Security Issues
2012. 95 pp.
Case: 978-1-62100-347-2. $125.00.
Russia launched the war against Georgia in August 2008 for highly valued strategic and geopolitical objectives, which included de facto annexation of Abkhazia, weakening or toppling the Mikheil Saakashvili regime, and preventing the North Atlantic Treaty Organization (NATO) enlargement. This book examines the Georgian war along with the recent process of organizational change in the Russian ground forces.

SCIENCE AND TECHNOLOGY

Federal Support for Research Frontiers
Christopher E. Raybin
In series: Scientific Revolutions
Edited by: Vladimir N. Uversky (University of South Florida, USA)
2012. 133 pp.
Case: 978-1-62100-706-7. $95.00.
e-book: 978-1-62100-709-8. $95.00.
From the time of Vannevar Bush and World War II, academic research has played a role in the nation's economy. Vannevar Bush, national science advisor to both Presidents Franklin Roosevelt and Harry Truman, stated that major investments in research should be made to the nation's universities. His position was that the research capacity of colleges and universities was significantly important to long-term national interests. Currently, some Members of Congress have expressed concern about the health and competitiveness of U.S. colleges and universities, specifically research institutions. The nation's current economic situation, debt, and budget deficit are placing increased focus on cutting discretionary spending, the source of funding for U.S. academic research. This book examines federal support for academic research with a focus on funding physical sciences and engineering research; and the U.S. National Science Foundation.

Landsat and Its Valuable Role in Satellite Imagery of Earth
Ryan K. McHale
In series: Environmental Science, Engineering and Technology
In series: Earth Sciences in the 21st Century
Case: 978-1-62100-186-7. $95.00.
The U.S. Landsat Mission has collected remotely sensed imagery of the Earth's surface for more than 35 years. At present two satellites, Landsat5 and Landsat-7, are in orbit and continuing to supply images and data for the many users of the information, but they are operating beyond their designed life and may fail at any time. Landsat has been used in a wide variety of applications, including climate research, natural resources management, commercial and municipal land...
development, public safety, homeland security and natural disaster management. This book presents information on Landsat and its valuable role in satellite imagery of Earth.

**Neutron Detectors and Helium-3: Alternative Technologies and Sources**
*Edward J. Baxter and Julianna Trevino*

In series: *Environmental Science, Engineering and Technology*

2012. 103 pp.

Soft: 978-1-61942-591-0. $47.00.

The world is experiencing a shortage of helium-3, a rare isotope of helium with applications in homeland security, national security, medicine, industry, and science. This book discusses the nature of the shortage; federal actions undertaken so far to address it; current and potential sources of helium-3 and options for increasing the supply; current and projected uses of helium-3 and options for reducing the demand; and options for allocating the supply if it continues to fall short of the demand.

**New Developments in Anthropology Research**
*Oberto J. Schulz and Bega E. Koch*

In series: *Anthropology Research and Developments*


Case: 978-1-62081-898-5. $95.00.
e-book: 978-1-62081-949-4. $95.00.

In this book, the authors present current research in anthropology research. Topics discussed in this compilation include the recent developments in Christian theological anthropology; dental age as a biological indicator to estimate chronological age; the role of design ethnography in the development of corporate anthropology; mind-group identity and social alchemy; the evidence for sociality in fossil primates; and mountain studies in anthropology.

**Realization of Einstein’s Machian Program**
*Marcelo Samuel Berman (Instituto Albert Einstein, Bairro Batel Curitiba, PR, Brazil)*

In series: *Distinguished Men and Women of Science, Medicine and the Arts*


Case: 978-1-61942-164-6. $150.00.

This book is a solution of the so-called Einstein’s Machian Program, that left Einstein very angry and frustrated, for he was unable to reconcile Relativity Theories with Ernst Mach ideas, that by looking into the Cosmos as a whole, absolute motion could be found. About one hundred years ago, the discussion led to no conclusions among physicists, so that now Berman found that the existence of a Universal rotation, was compatible with General Relativity, and that this rotation is “absolute”. Berman thus solved the problem.

**Restoring American Competitiveness and Innovation**
*Amber J. Thomas and Nelson R. Ramirez*

In series: *Business Issues, Competition and Entrepreneurship*

In series: *Economic Issues, Problems and Perspectives*


Case: 978-1-62081-509-0. $110.00.

The U.S. economy reigned supreme in the 20th century, becoming the largest most productive, and most competitive in the world; amazing new technologies were invented and commercialized; the workforce became the most educated in the world; and incomes soared while a large middle class emerged and thrived. As the 21st century approached, however, alarms began to sound about the U.S. economy’s ability to remain in this preeminent position. Incomes stagnated and job growth slowed. Other countries became better educated and our manufacturing sector lost ground to foreign competitors. Observers have expressed concern that the scientific and technological building blocks critical to our economic leadership have been eroding at a time when many other nations are actively laying strong foundations in these same areas. This book provides an overview of the restoration of American innovation which is the key driver of competitiveness, wage and job growth, and long-term economic growth.

**Satellite Communications: Services Industry Competition and Commercial Reliance on the GPS**
*Bret G. Osborn and Emil T. Rowland*

In series: *Media and Communications - Technologies, Policies and Challenges*

2012. 93 pp.

Soft: 978-1-61942-464-7. $47.00.
e-book: 978-1-61942-468-5. $47.00.

Commercial satellites are used to provide a variety of fixed satellite services, ranging from consumer satellite television and broadband to military communications in remote regions. This book examines the changes that have occurred in the fixed satellite services industry since 2000 and the effects these changes could have on the relationship between satellite operators and service providers. Also discussed is the commercial communications industry’s use of and reliance on the GPS, in accordance with White House direction to tailor the effort to enable a quick response. The National Security Telecommunications Advisory Committee (NSTAC) notes that reliance on GPS signals in military, maritime, aviation, and other civil environments varies widely depending on the specific use and application.

**Systems Design: Developments, Analysis and Applications**
*Jane E. Lynch and Wilbert I. Mitchell*

In series: *Engineering Tools, Techniques and Tables*

In series: *Mechanical Engineering Theory and Applications*

2012. 192 pp.

Case: 978-1-62081-770-4. $150.00.

The process of defining the architecture, components, modules, interfaces, and data for a system to satisfy specified requirements is known as systems design. In this book, the authors present topical research examining the development, analysis and applications of systems design. Topics include the application of mathematical tools to screen, model and control variability in laboratory systems; the optimization of haulage systems in an underground small scale mine using fuzzy sets; a new face recognition method using QR decomposition; development of wireless automatic checking systems for emergency lights via the internet; design and modeling of a series hybrid propulsion system for light urban vehicles; and lubrication systems for spacecraft applications.

**The America Invents and Bayh-Dole Acts: Patent Progress**
*Horace Everett and Geoffrey Dodson*

In series: *Scientific Revolutions*

Edited by: Vladimir N. Uversky (University of South Florida, USA)

In series: *Intellectual Property in the 21st Century*

2012. 90 pp.

Soft: 978-1-61942-403-6. $47.00.
This book examines the innovation and patent policy issues in the Leahy-Smith America Invents Act and the Bayh-Dole Acts and what these acts mean for American innovation, American jobs, and American leadership. As we bear witness to the awe-inspiring progress of technology, at a pace never before seen in any previous single generation, protecting those technologies with clear, consistent and dependable patent rights is fundamental to disseminating that scientific know-how, affording society the opportunity to build upon and advance those underlying breakthroughs.

U.S. Manufacturing: Perspectives and Prospects
Vance Murphy and Jillian E. Walker
In series: Manufacturing Technology Research
In series: Economic Issues, Problems and Perspectives
The health of the U.S. manufacturing sector has long been of great concern to Congress. The decline in manufacturing employment since the start of the 21st century has stimulated particular congressional interest. Members have introduced hundreds of bills intended to support domestic manufacturing activity in various ways. The proponents of such measures frequently contend that the United States is by various measure falling behind other countries in manufacturing, and they argue that this relative decline can be mitigated or reversed by government policy. This book informs the debate over the health of U.S. manufacturing through a series of charts and tables that depict the position of the United States relative to other countries according to various metrics. Understanding which trends in manufacturing reflect factors that may be unique to the United States and which are related to broader changes in technology or consumer preferences may be helpful in formulating policies intended to aid firms or workers engaged in manufacturing activity.

U.S. National Science Foundation: Functions, Funding, and Programs
James O. Thompson and Madison I. Smith
In series: Education in a Competitive and Globalizing World
In series: Grants and Funding
Case: 978-1-62257-007-2. $110.00.
e-book: 978-1-62257-043-0. $110.00.
The National Science Foundation’s (NSF’s) primary responsibility is to maintain the health and vitality of the U.S. academic science and engineering enterprise. In addition to ensuring the nation’s supply of scientific and engineering personnel, the NSF promotes academic basic research and science and engineering education across many disciplines. The NSF provides support for investigator-initiated, merit-reviewed, competitively selected awards, state-of-the-art tools, instrumentation, and facilities. NSF receives approximately 45,000 proposals for research, graduate, and postdoctoral fellowships, and science, mathematics, and engineering projects annually, and makes about 11,500 new funding awards. Support is provided to academic institutions, industrial laboratories, private research firms, and major research facilities and centers. This book provides an overview of the funding issues, functions and programs relating to the U.S. National Science Foundation, with a focus on STEM education funding; EPSCoR; performance and financial highlights.

SCIENCE, EVOLUTION AND CREATIONISM
Natural Selection: Biological Processes, Theory and Role in Evolution
Jay R. Lynch and Derek T. Williamson
In series: Science, Evolution and Creationism
2012.
Case: 978-1-62257-467-4. $150.00.
In evolution, natural selection is the gradual, non-random, process by which biological traits become either more or less common in a population as a function of differential reproduction of their bearers. In this book, the authors present current research in the biological processes, theory and role in evolution of natural selection. Topics include evolutionary transitions in mathematical modeling complexity using evolutionary systemic modeling; natural selection applications for algorithmic computation; allozymes, and DNA and natural selection in the mollusk population.

SOCIAL SCIENCE
Internet Policies And Issues. Volume 5
Kutais, B.G. (Editor)
In series: Internet Policies and Issues
2012.
Case: 978-1-59033-640-3. $69.00.
In the ever-changing realm of the Internet, lawmakers face a steady stream of new areas potentially requiring regulation and oversight. This book is part of a series exploring the dynamic universe of the 21st century. Collected here are papers discussing the wide range of topics impacting tax collection, internet access, internet privacy and copyright. Such a selection makes this volume important to developing an overview of the key issues in the dynamic and wired world.

SPACE ASTRO
Black Holes: Evolution, Theory and Thermodynamics
Alois J. Bauer and Diethelm G. Eiffel
In series: Space Science, Exploration and Policies
In series: Physics Research and Technology
Case: 978-1-61942-929-1. $150.00.
In this book, the authors present current research in the study of the evolution, theory and thermodynamics of black holes. Topics discussed include the effective theory of a matter field near the event horizon of a black hole; dilatonic black holes in 4D Gauss-Bonnet gravity; the relationship between the tunneling rate of a rotating black hole and the first law of black hole thermodynamics; alternative theories of gravity without black holes; exotic smoothness structures for the application of standard Einstein equations to black hole structures; and lower dimensional quantum black holes.

Commercial Space Industry: Manufacturing, Suborbitals and Transportation
Steve O. Freeman and Kimberly I. Butler
In series: Space Science, Exploration and Policies
In series: *Transportation Issues, Policies and R&D* 2012.
Case: 978-1-62257-303-5. $135.00.
The space industry refers to economic activities related to the manufacture and delivery of components that go into Earth's orbit or beyond. The space industry is a subset of the U.S. aerospace industry and U.S. strength in aerospace has helped to provide U.S. strength in space. Bolstered by a large research and development establishment, the commercial space industry has a manufacturing component and a services component. This book focuses on the global commercial space manufacturing sector (launch vehicles, spacecraft, satellites, and parts and equipment). The space industry also builds space ports, ground stations, and ground equipment. Together, the space and ground infrastructure enables a much larger space services sector that includes satellite telecommunications and broadcasting services and satellite remote sensing. The space industry, broadly defined, is an important part of the U.S. industrial and technology base.

Commercial Spaceflight: Assessments, Challenges and Trends
*Nathaniel J. Clements and Edison G. Hahn*
Case: 978-1-61942-667-2. $125.00.
e-book: 978-1-61209-173-0. $125.00.
Historically, the commercial space launch industry focused primarily on putting payloads, such as satellites, into orbit, using launch vehicles that did not return to earth. Such launches have dropped off, and the industry is increasing its focus on space tourism. Additionally, in 2010, the Administration announced significant changes to NASA’s human space-flight program, including its intention to cancel NASA’s Constellation Program, and instead put the agency on the path of relying on commercial launch companies to ferry astronauts to and from the International Space Station. This book examines the commercial spaceflight industry with a focus on space tourism and commercial space transportation of NASA crews and cargo.

Cosmic Ray: Climate, Weather and Applications
*Ho-Ming Mok* (Radiation Health Unit, Saiwanho Health Centre, Sai Wan Ho, Hong Kong)
In series: *Physics Research and Technology* 2012.
Case: 978-1-62257-300-4. $150.00.
Cosmic rays are energetic particles originated from sources outside the Earth. Recently, there is a growing interest in studying the relationship between cosmic rays and climate, particularly under the context of global warming. This book provides a concise introduction on the topics at a level appropriate to graduate students and researchers. In this book, plasma physics, solar physics, cosmic rays physics as well as atmospheric physics are introduced. The historical relationship between the solar activity and climate as well as the recently observed relationship between cosmic rays and cloud formation are presented. The meteorological effects on cosmic rays and the measurements of atmospheric temperature profile by cosmic rays with its potential application to weather forecasting are discussed.

Dark Energy: Theory, Implications and Roles in Cosmology
*Carmelo A. Del Valle and Diego F. Longoria*
Case: 978-1-62257-077-5. $150.00.
At the end of the 20th century, it was discovered that the expansion of the Universe is speeding up. This acceleration is attributed to dark energy, which seems to be distributed uniformly almost everywhere and thus essentially influences the Hubble parameter $H = H(t)$ characterizing this expansion. In this book, the authors present current research in the study of the theory, implications and roles in cosmology of dark energy. Topics include gravitational aberration and the origin of dark energy; the role of dark energy in the evolution of the universe; the importance of supernova observations for exploring the nature of dark energy; and deformed quantum field theory, thermodynamics at low and high energies, and the dark energy problem.

Encyclopedia of Space Science Research (3 Volume Set)
*Raúl Lajara and Javier Barón* (Editor)
Case: 978-1-61470-386-0. $450.00.
This book presents current research in the field of space science. Topics discussed in this compilation include supernovae as probes for dark energy; structure and transport of the Martian surface material; the study for black hole in m-theory; origin of the Saturn rings; space science applications of aerogels; dynamics and disruption mechanisms of asteroids; primordial black holes, formation and evolution; black holes in higher order curvature gravity; scalar potential model of galaxies; the dark energy scale in superconductors and constraints on dark energy and dark matter from supernovae and gamma ray burst data.

Environmental Satellites: Features and Acquisition Plans
*James E. Davis and Gregory F. Thompson*
In series: *Environmental Science, Engineering and Technology* 2012. 90 pp.
Soft: 978-1-62081-111-5. $47.00.
e-book: 978-1-62081-134-4. $47.00.
Operational geostationary environmental satellites play a critical role in our nation’s weather forecasting. These satellites - which are managed by the Department of Commerce’s National Oceanic and Atmospheric Administration (NOAA) - provide critical information on atmospheric, oceanic, climatic, and solar conditions that help meteorologists observe and predict global and local weather events. They also provide a means to identify severe storm conditions, such as hurricanes and tornadoes, and to track the movement and intensity of these storms once they develop. This book examines the status of the Geostationary Operational Environmental Satellite-R (GOES-R) acquisition; with a focus on the improvements needed in continuity planning and involvement of key users.

Galaxies: Evolution, Morphology and Dynamics
*Abran Guerrera Sanchez and Rutilio E. Delgado Marquez*
Case: 978-1-62081-185-6. $150.00.
e-book: 978-1-62081-335-5. $150.00.
In this book, the authors present current research in galactic study including its evolution, morphology and dynamics. Topics included in this compilation include the nature of motion in quiet and active galaxies with a satellite companion; empirical age-metallicity relation and empirical metallicity distribution of long-lived stars of different
populations; radio quiet AGN properties vs. spin paradigm; and turbulent formation of protogalaxies at the end of the plasma epoch.

Meteorites and Asteroids: Classification, Geology and Exploration
Akitina Dementieva and Danilo Ostrogorsky
In series: Space Science, Exploration and Policies
Case: 978-1-61942-115-8. $95.00.
In this book, the authors present current research in the study of the classification, geology and exploration of asteroids and meteorites. Topics discussed include meteorites and their asteroidal parent bodies; the diversion and exploitation of ice-rich NEOs using the solar collector; radar characteristics of asteroid 33342 (1998 WT24); asteroid dimensions and the truncated parareto distribution; Hilda asteroids in the Jupiter neighborhood; and asteroid Apophasis and 1950 DA.

Neutron Star Crust
Carlos Bertulani (Texas A&M University Commerce Commerce, TX), Jorge Piekarewicz (Florida State University, FL)
In series: Space Science, Exploration and Policies
2012.
Case: 978-1-62081-902-9. $175.00.
Neutron stars are gold mines for the study of nuclear systems under extreme conditions of density and isospin asymmetry. Spanning many orders of magnitude in density and pressure, neutron stars display exotic phases that cannot be realized under normal laboratory conditions. Whereas the most common perception of a neutron star is that of a uniform system of neutrons packed to densities that may exceed that of normal nuclei, the reality is far more complex and much more interesting. To illustrate this more exciting reality, the editors of this book contacted leaders in the field of neutron-star physics with expertise ranging from nuclear structure to stellar dynamics. They asked each expert to communicate the successes of the past and the challenges of the future in a way that will continue to foster dialogue and promote collaborations between the astrophysics and the nuclear physics communities.

Precious Gift of Meteorites and Meteorite Impact Processes, The
Aly A. Barakat (Director of the Egyptian Geological Museum, Geological Survey fo Egypt, Greater Cairo, Egypt)
In series: Space Science, Exploration and Policies
Case: 978-1-62100-939-9. $150.00.
This book intends to provide readers an open invitation to liberate themselves and leave aside caution from meteorites threat, which is widely spread over media to survey one of the brightness sides of meteorites; their offering to humans from the economic point of view.

Primordial Space – Pointfree Space and Logic Cas
Bernd Schmeikal (University of Vienna, R&D., Vienna, Austria)
In series: Space Science, Exploration and Policies
In series: Physics Research and Technology
2012.
Case: 978-1-62257-186-4. $150.00.
In this volume of Primordial Space it is explained how unpredictable quanta of the strong and electroweak force can bring forth both a macro-space-time as we perceive it and a pattern of material phenomena with which we have been familiarized by the standard model of particle physics. However, there is a price we have to pay for this. The Heisenberg uncertainty relation discloses itself in the fancy dress of a set of irregular locations: the deadlock singularity for particle fields at rest and the topological defect structure of the boson field where the zero norm signifies a turnover of the time-like base unit into a nilpotent isotropic direction field. Time does not go without saying. But where the time-arrow is created within the strong force, there emerge anti-reflexive neighbourhoods in the multivector fields of space-time. Hyperbolic neighbourhood systems of primordial phenomena carry those waves that decompose time and energy. Primordial space helps you to look at events with a fresh mind without entirely destroying traditional physics.

Solar System: Structure, Formation and Exploration
Matteo de Rossi
In series: Space Science, Exploration and Policies
Case: 978-1-62100-057-0. $95.00.
e-book: 978-1-62100-081-5. $95.00.
In this book, the authors present topical research in the study of the structure, formation and exploration of the solar system. Topics discussed in this compilation include a quantum-like model to search the origin of the solar system structure; close binaries, eccentric exojupiters, and the solar system; harnessing energy from the sun by splitting water using Mn-oxo or Co-based catalytic systems to mimic photosynthesis; a relativistic positioning system exploiting pulsating sources for navigation across the solar system and the role of solar wind dynamics on interstellar dust in the solar system.

Thermonuclear Processes of the Universe
Sergey Borisovich Dubovichenko
In series: Space Science, Exploration and Policies
2012. 194 pp.
Case: 978-1-61942-552-1. $150.00.
In this book, the authors consider briefly and simply all the major thermonuclear reactions which may take place in the stars at different stages of their formation and evolution. The authors provide an overview of possible reactions in three major thermonuclear cycles for stable stars of the Main Sequence and then indicate which processes will be considered and which ones will be analyzed in the nearest future.

TERRORISM

Chemical, Biological, Radiological, and Nuclear Threats: Countermeasure Preparation
Anna J. Clemens and Marcel P. Nielsen
In series: Terrorism, Hot Spots and Conflict-Related Issues
In series: Defense, Security and Strategies
Case: 978-1-61942-519-4. $125.00.
e-book: 978-1-61942-533-0. $125.00.
The United States remains vulnerable to terrorist and other threats posed by chemical, biological, radiological, and nuclear (CBRN) agents. Medical countermeasures such as drugs, vaccines, and diagnostic devices, can prevent or treat the effects of exposure, but few are currently available. This book examines the federal efforts needed
to develop and acquire countermeasures to threats from terrorists and other sources, primarily through the Public Health Emergency Medical Countermeasures Enterprise (PHEMCE).

**TRANSPORTATION**

**Aviation and Weather: Meteorological Services and Winter Safety**
*William F. Ottone and Olivia A. Roberts*

In series: *Transportation Issues, Policies and R&D*
2012.
Soft: 978-1-62081-892-3. $52.00.
e-book: 978-1-62081-981-4. $52.00.

The National Weather Service (NWS) plays a significant role in providing weather services to the aviation community. NWS's weather products and data are vital components of the Federal Aviation Administration's (FAA) air traffic control system, providing weather information to local, regional, and national air traffic management, navigation, and surveillance systems. NWS aviation weather products include forecasts and warnings of meteorological conditions that could affect air traffic, including thunderstorms, air turbulence, and icing. This book examines options for enhancing the efficiency of aviation weather services provided at en route centers, with a focus on meteorological services and winter safety.

**Bridge Vibration and Controls: New Research**
*H. Xia (Beijing Jiaotong University, Beijing, China)*
*G. De Roeck (Catholic University of Leuven, Belgium)*
*Jose M. Goicolea (Technical University of Madrid, Spain)*

In series: *Transportation Infrastructure - Roads, Highways, Bridges, Airports and Mass Transit*
Case: 978-1-62100-868-2. $165.00.

With the continuous raise of train speed and vehicle load, the extensive application of high performance materials, and the ever increasing span length of bridges, the problem of bridge vibrations becomes more prominent. This book contains the fundamental theory as well as numerical calculations and field experiments of many practical engineering projects. It contains many case studies concerning various types of real bridges such as long-span suspension bridges, cable-stayed bridges, truss bridges, multi-span simply supported bridges and continuous bridges. This book is intended to be a reference for solving vehicle-structure dynamic interaction problems that have to be considered in the design of railway bridges and other transport structures. Moreover, results of recent scientific research are presented which are of interest for researchers active in studying bridge vibration and control.

**Freight Transportation Array: Global Highlights and U.S. Gateways, The**
*Marcus R. Wright and William B. Millsberry*

In series: *Transportation Infrastructure - Roads, Highways, Bridges, Airports and Mass Transit*
In series: *Transportation Issues, Policies and R&D*
Case: 978-1-62100-619-0. $125.00.

To move large quantities of goods across the country and around the world, Americans depend on the Nation's freight transportation system - a vast network of roads, bridges, rail tracks, airports, seaports, navigable waterways, pipelines, and equipment. Because economic activities worldwide have become more integrated and globalized, more goods produced by U.S. factories and farms are bound for export, and imports originate from more than 200 countries. This pace of trade Americans have become accustomed to is made possible by the complex intermodal transportation network that blankets the country and links the United States with world markets. This book provides a snapshot of freight transportation activity from a global perspective, highlighting physical characteristics and industry output for the U.S. and other leading world economies.

**General Motors and Chrysler: Assistance and Exit from the Troubled Asset Relief Program**
*James S. Kousakis and John Peter Leonard*

In series: *Transportation Issues, Policies and Perspectives*
Case: 978-1-61942-072-4. $95.00.
e-book: 978-1-61942-074-8. $95.00.

Substantial federal assistance allowed GM and Chrysler to restructure their costs and improve their financial condition. Through federally-funded restructuring, GM and Chrysler reported lowering production costs and capacities by closing or idling factories, laying off employees, and reducing their debt and number of vehicle brands and models. These changes enabled both companies to report operating profits and reduce costs enough to be profitable at much lower sales levels than ever before. Nevertheless, to remain profitable, both companies must manage challenges affecting both their costs, including debt levels, and vehicle demand, such as launching products that are attractive to consumers amid rising fuel prices. This book examines the role of TARP assistance in the restructuring of the U.S. motor vehicle industry with a focus on unwinding the government stake in GMAC and Chrysler.

**The Highway Trust Fund and Donor-Donee Debate over Distributions**
*Dave P. Wolff and Greg B. Eisman*

In series: *Transportation Issues, Policies and R&D*
2012. 81 pp.
Soft: 978-1-62100-857-6. $47.00.
e-book: 978-1-62100-878-1. $95.00.

This book examines the donor-donee issue in the context of the effort to reauthorize federal surface transportation programs with a focus on the question of how can the donor-donee controversy be resolved amid efforts to reduce the federal deficit.

**U.S. Marine Transportation: Container Ports, Inland Waterways and Harbor Maintenance**
*James McCaffrey and Stephen R. Jones*

In series: *Transportation Infrastructure - Roads, Highways, Bridges, Airports and Mass Transit*
2012. 149 pp.
Soft: 978-1-62100-620-6. $47.00.
e-book: 978-1-62100-638-1. $47.00.

The U.S. marine transportation system handles large volumes of domestic and international freight in support of the Nation's economic activities. As a vital part of that system, the Nation's container ports handle cargo and are sources of employment, revenue, and taxes for businesses or communities where they are located. This book provides an overview of the movement of maritime freight handled by the Nation's container ports. It summarizes trends in maritime freight movement since 1995, and covers the impact of the recent U.S. and global economic downturn on container traffic; trends in container throughput; concentration of containerized cargo at the top U.S. ports; regional shifts in cargo handled, vessel calls, and port capacity and the
rankings of U.S. ports among the world's top ports. Also discussed are summaries of landside access to container ports and maritime security initiatives.
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* Quoted prices include the cost of standard shipping and handling to destinations worldwide. Prepayment is required. Currency is U.S. dollars.

### 2013 E-package Information

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