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Elegant flowers dressed in simple white and green, snowdrops look far too fragile to deal with wintry weather. But that's just what they do, and they have become treasured by horticulturalists for their ability to flower in the earliest parts of the year. In this book, Gail Harland explores the role snowdrops have played in gardens and popular culture alike, as a treasured genus for enthusiast growers and an important symbol of hope and consolation. Harland explores a variety of cultural meanings for the deceptively petit flower. In Victorian England snowdrop bands encouraged chastity among young women. They have been favorite subjects in paintings in many different eras, and today they are the iconic symbols of several hope-giving charities. Poets and writers have written extensively about them, as have pharmacists, who have used their chemical, galantamine, in the treatment of Alzheimer's disease. Today some of their rarer bulbs can fetch record-breaking sums, and annual festivals that celebrate them draw people from all over the world. Walking among their brilliant white beds, Harland offers an ideal companion for any plant-lover who has ever eagerly awaited this treasured sign of spring.

Since mathematical models express our understanding of how nature behaves, we use them to validate our understanding of the fundamentals about systems (which could be processes, equipment, procedures, devices, or products). Also, when validated, the model is useful for engineering applications related to diagnosis, design, and optimization. First, we postulate a mechanism, then derive a model grounded in that mechanistic understanding. If the model does not fit the data, our understanding of the mechanism was wrong or incomplete. Patterns in the residuals can guide model improvement. Alternately, when the model fits the data, our understanding is sufficient and confidently functional for engineering applications. This book details methods of nonlinear regression, computational algorithms, model validation, interpretation of residuals, and useful experimental design. The focus is on practical applications, with relevant methods supported by fundamental analysis. This book will assist either the academic or industrial practitioner to properly classify the system, choose between the various available modeling options and regression objectives, design experiments to obtain data capturing critical system behaviors, fit the model parameters based on that data, and statistically characterize the resulting model. The author has used the material in the undergraduate unit operations lab course and in advanced control applications.

This Brief defines reliable correlations between the food packaging design and its chemical features in terms of an 'integrated food product' (the synergistic union composed of the edible content and its container). A good design, as described in this Brief, implies the best choices from a series of possibilities, taking into account economical and commercial influences or limitations in the production and processing chain and the chemical interactions that can arise between the food containers and the contained edible material. This Brief highlights how the different requirements can be combined, while avoiding dangerous food risks originating from the chemical interaction between the container and the product. Different designs are critically analysed with relation to the effect on contained foods. The influences and resulting consequences of different possible food packaging designs are highlighted and discussed in selected case studies for some every-day products (like potato chips).

Concerned with production decline, shortages of new oil reserves, and increasing world energy demand, the oil sector continues to search for economic and efficient techniques to enhance their oil recovery from the existing oil field using several enhanced oil recovery techniques (EOR) methods. Despite its high efficiency, widely acclaimed potentials, and limitations, the Low Salinity Water Flooding (LSWF), hybrid, and nanotechnology applications have gained vast interest with promising future to increase ultimate oil recovery, tackle operational challenges, reduce environmental damage, and allow the highest feasible recoveries with lower production costs. This synergistic combination has opened new routes for novel materials with fascinating properties. This book aims to provide an overview of EOR technology such as LSWF, hybrid, and nanotechnology applications in EOR processes.

Summary: "This book brings together case study examples in the fields of sustainability, sustainable development, and education for sustainable development"--

The book provides the most up-to-date information available on various biotechnological processes useful in the pulp and paper industry. The first edition was published in 2011, covering a specific biotechnological process or technique, discussing the advantages, limitations, and prospects of the most important and popular processes used in the industry. Many new developments have taken place in the last five years, warranting a second edition on this topic. The new edition contains about 35% new material covering topics in Laccase application in fibreboard; biotechnology in forestry; pectinases in papermaking; stickies control with pectinase; products from hemicelluloses; value added products from biorefinery lignin; use of enzymes in mechanical pulping.

The life and chemical sciences are in the midst of a period of rapid and revolutionary transformation that will undoubtedly bring societal benefits but also have potentially malign applications, notably in the development of chemical weapons. Such concerns are exacerbated by the unstable international security environment and the changing nature of armed conflict, which could fuel a desire by certain States to retain and use existing chemical weapons, as well as increase State interest in creating new weapons; whilst a broader range of actors may seek to employ diverse toxic chemicals as improvised weapons. Stark indications of the multi-faceted dangers we face can be seen in the chemical weapons attacks against civilians and combatants in Iraq and Syria, and also in more targeted chemical assassination operations in Malaysia and the UK. Using a multi-disciplinary approach, and drawing upon an international group of experts, this book analyses current and likely near-future advances in relevant science and technology, assessing the risks of their misuse. The book examines the current capabilities, limitations and failures of the existing international arms control and disarmament architecture – notably the Chemical Weapons Convention – in preventing the development and use of

chemical weapons. Through the employment of a novel Holistic Arms Control methodology, the authors also look beyond the bounds of such treaties, to explore the full range of international law, international agreements and regulatory mechanisms potentially applicable to weapons employing toxic chemical agents, in order to develop recommendations for more effective routes to combat their proliferation and misuse. A particular emphasis is given to the roles that chemical and life scientists, health professionals and wider informed activist civil society can play in protecting the prohibition against poison and chemical weapons; and in working with States to build effective and responsive measures to ensure that the rapid scientific and technological advances are safeguarded from hostile use and are instead employed for the benefit of us all.

The book includes seventeen excellent researched and documented papers that reflect the diversity of thought, ideas and experiences related to IWRM. They draw from an extensive, inclusive and geographically representative range of theoretical propositions and practical examples. These include the implementation status of the IWRM concept at local, basin, regional and national levels; its appropriateness for the twenty-first century; main implementation gaps from the institutional, legal, policy, governance, management and technical viewpoints; the likelihood that IWRM's entrenchment in laws, regulations and policies has led to smoother implementation and the reasons why that has been the case; reflexions on whether the attention given to IWRM is pushing other alternatives to the policy periphery; and the new conceptual constructions that can be put forward for discussion in the international arena. For the development and water communities it is imperative to debate and reach towards more illustrative conclusions regarding whether the promotion of the IWRM concept and its actual implementation status have been beneficial for development and how the notion could evolve to achieve this end. In-depth objective and constructive discussions, arguments, proposals and ideas are put forward for analysis by all interested parties. The book has the objective of fostering scholarly exchange, encouraging intellectual debate and promoting the advancement of knowledge and understanding of IWRM as a concept, as a goal per se and as a strategy towards development goals. This book was published as a special issue of the International Journal of Water Resources Development.

The Encyclopedia of Food and Health provides users with a solid bridge of current and accurate information spanning food production and processing, from distribution and consumption to health effects. The Encyclopedia comprises five volumes, each containing comprehensive, thorough coverage, and a writing style that is succinct and straightforward. Users will find this to be a meticulously organized resource of the best available summary and conclusions on each topic. Written from a truly international perspective, and covering of all areas of food science and health in over 550 articles, with extensive cross-referencing and further reading at the end of each chapter, this updated encyclopedia is an invaluable resource for both research and educational needs. Identifies the essential nutrients and how to avoid their deficiencies Explores the use of diet to reduce disease risk and optimize health Compiles methods for detection and quantitation of food constituents, food additives and nutrients, and contaminants Contains coverage of all areas of food science and health in nearly 700 articles, with extensive cross-referencing and further reading at the end of each chapter

The papers in the "Hydrothermal Vent" e-book cover a range of microbiological research in deep and shallow hydrothermal environments, from high temperature "black smokers," to diffuse flow habitats and episodically discharging subsurface fluids, to the hydrothermal plumes. Together they provide a snapshot of current research interests in a field that has evolved rapidly since the discovery of hydrothermal vents in 1977. Hydrothermally influenced microbial habitats and communities represent a wide spectrum of geological setting, chemical in-situ regimes, and biotic communities; the classical examples of basalt-hosted black smoker chimneys at active mid-ocean spreading centers have been augmented by hydrothermally heated and chemically altered sediments, microbiota fueled by serpentinization reactions, and low-temperature vents with unusual menus of electron donors. Environmental gradients and niches provide habitats for unusual or unprecedented microorganisms and microbial ecosystems. The discovery of novel extremophiles underscores untapped microbial diversity in hydrothermal vent microbial communities. Different stages of hydrothermal activity, from early onset to peak activity, gradual decline, and persistence of cold and fossil vent sites, correspond to different colonization waves by microorganisms as well as megafauna. Perhaps no other field in microbiology is so intertwined with the geological and geochemical evolution of the oceans, and promises so many biochemical and physiological discoveries still to be made within the unexhausted richness of extreme microbial life.

Treating Digestive Disorders from an Endobiogenic Perspective introduces and explains with clarity the concepts, philosophy and practical applications of endobiogenic medicine - a patient-centred diagnostic approach to treatment that originated in France and is now taught across the globe. It explores how a variety of digestive disorders including IBS, Crohn's disease, ulcerative colitis, GERD and dysbiosis, can be resolved with this ground-breaking system. Using in-depth case studies, Paul Michael gives us detailed treatment plans including specific diets, manual therapy and the use of targeted plants and supplements. He also offers new insights into the mechanism behind the autoimmune process seen in Crohn's disease and ulcerative colitis from the endobiogenic perspective.

The book deals with the complicated relationships between national security and human rights, and between public health and human rights. Its premise is the fact that national security and public health are both included in human rights instruments as 'exceptions' to the human rights therein sanctioned, yet they can arguably be considered as human rights themselves and be equally valuable. The book therefore asks to what extent the protection of the individual could – or should – be overridden to enable the protection of the national security or public health of the general public. Both practice and case law have shown that human rights risk being set aside when they clash with the protection of national security or public health. Through theoretical analysis and practical examples, the book addresses the conflicts that arise when the concepts of national security and public health are used – and abused – and other rights, including freedom of speech, procedural freedoms, individual health, are violated as a consequence. It provides many interesting findings on the values that states are ready to protect – and forego – to ensure their safety, which can contribute to the ongoing debate on the protection of human rights. This book was originally published as a special issue of The International Journal of Human Rights.

Theoretical and Applied Aspects of Biomass Torrefaction: For Biofuels and Value-Added Products presents a firm foundation of torrefaction technologies and their economic and sustainability aspects. It offers a theoretical background in the underlying principles of torrefaction reactions, including thermodynamics, chemical reactions, process modeling, end-products, and value-added products such as biochar and torr-gas. It also provides an overview of best practices in torrefaction systems, reactor design and scale-up, and compares torrefaction with other thermochemical processing technologies. The authors discuss feedstock availability for a variety of biomass types, such as agricultural residues, woody residues, energy crops and municipal solid waste. They also examine logistics and markets for torrefied products, which includes their use in co-firing and combined heat and power generation, as well as emissions and other environmental aspects. This balanced and thorough approach to the subject matter makes this an excellent resource for engineers, researchers, and graduate students in the field of biomass conversion, especially with background in energy engineering, mechanical engineering, chemical engineering,

environmental engineering, biological engineering, and agriculture. Offers a comprehensive overview of torrefaction, balancing theoretical and applied perspectives of torrefaction technologies from a holistic perspective Examines economic and sustainability aspects, including logistics, markets, feedstock, and emissions Presents a variety of relevant, real-world examples that underscore the production and utilization of torrefied material Offers a balanced and thorough approach to the subject, making it an excellent resource for engineers, researchers, and graduate students in the field of biomass conversion

While the great scientists of the past recognized a need for a multidisciplinary approach, today's schools often treat math and science as subjects separate from the rest. This not only creates a disinterest among students, but also a potential learning gap once students reach college and then graduate into the workforce. Cases on Research-Based Teaching Methods in Science Education addresses the problems currently facing science education in the USA and the UK, and suggests a new hands-on approach to learning. This book is an essential reference source for policymakers, academicians, researchers, educators, curricula developers, and teachers as they strive to improve education at the elementary, secondary, and collegiate levels.

Advances in Membrane Technologies for Water Treatment: Materials, Processes and Applications provides a detailed overview of advanced water treatment methods involving membranes, which are increasingly seen as effective replacements for a range of conventional water treatment methods. The text begins with reviews of novel membrane materials and advances in membrane operations, then examines the processes involved with improving membrane performance. Final chapters cover the application of membrane technologies for use in water treatment, with detailed discussions on municipal wastewater and reuse in the textile and paper industries. Provides a detailed overview of advanced water treatment methods involving membranes Coverage includes advancements in membrane materials, improvement in membrane performance, and their applications in water treatment Discusses the use of membrane technologies in the production of drinking water, desalination, wastewater treatment, and recovery

Learn how to fill forests with food by viewing agriculture from a remarkably different perspective: that a healthy forest can be maintained while growing a wide range of food, medicinal, and other nontimber products. The practices of forestry and farming are often seen as mutually exclusive, because in the modern world, agriculture involves open fields, straight rows, and machinery to grow crops, while forests are reserved primarily for timber and firewood harvesting. In Farming the Woods, authors Ken Mudge and Steve Gabriel demonstrate that it doesn't have to be an either-or scenario, but a complementary one; forest farms can be most productive in places where the plow is not: on steep slopes and in shallow soils. Forest farming is an invaluable practice to integrate into any farm or homestead, especially as the need for unique value-added products and supplemental income becomes increasingly important for farmers. Many of the daily indulgences we take for granted, such as coffee, chocolate, and many tropical fruits, all originate in forest ecosystems. But few know that such abundance is also available in the cool temperate forests of North America. Farming the Woods covers in detail how to cultivate, harvest, and market high-value nontimber forest crops such as American ginseng, shiitake mushrooms, ramps (wild leeks), maple syrup, fruit and nut trees, ornamentals, and more. Along with profiles of forest farmers from around the country, readers are also provided comprehensive information on: • historical perspectives of forest farming; • mimicking the forest in a changing climate; • cultivation of medicinal crops; • cultivation of food crops; • creating a forest nursery; • harvesting and utilizing wood products; • the role of animals in the forest farm; and, • how to design your forest farm and manage it once it's established. Farming the Woods is an essential book for farmers and gardeners who have access to an established woodland, are looking for productive ways to manage it, and are interested in incorporating aspects of agroforestry, permaculture, forest gardening, and sustainable woodlot management into the concept of a whole-farm organism.

The idea for this book came from discussions among participants in a symposium on biotechnical applications at the "Pacifichem 89" meeting in Honolulu. It was the majority opinion of this group that a volume dedicated to biotechnical and biomedical applications of PEG chemistry would enhance research and development in this area. Though the book was conceived at the Honolulu meeting, it is not a proceedings of this symposium. Several groups who did not participate in this meeting are represented in the book, and the book incorporates much work done after the meeting. The book does not include contributions in all related areas to which PEG chemistry has been applied. Several invited researchers declined to participate, and there is not enough space in this single volume to properly cover all submissions. Chapter I- an overview of the topic-discusses in brief applications not given detailed coverage in specifically devoted chapters. The following topics are covered: introduction to and fundamental properties of PEG and derivatives in Chapters 1-3; separations using aqueous polymer two-phase partitioning in Chapters 4-6; PEG-proteins as catalysts in biotechnical applications in Chapters 7 and 8; biomedical applications of PEG-proteins in Chapters 9-13; PEG modified surfaces for a variety of biomedical and biotechnical applications in Chapters 14-20; and synthesis of new PEG derivatives in Chapters 21 and 22.

This undergraduate textbook on the key subject of geology closely follows the core curriculum adopted by most universities throughout the world and is a must for every geology student. It covers all aspects of petrology, including not only the principles of petrology but also applications to the origin, composition, and field relationships of rocks. Although petrology is commonly taught in the junior year, this book is a useful resource for graduate students as well.

The Handbook of Membrane Separations: Chemical, Pharmaceutical, Food, and Biotechnological Applications, Second Edition provides detailed information on membrane separation technologies from an international team of experts. The handbook fills an important gap in the current literature by providing a comprehensive discussion of membrane application

This book explores a wide range of energy storage devices, such as a lithium ion battery, sodium ion battery, magnesium ion battery and supercapacitors. Providing a comprehensive review of the current field, it also discusses the history of these technologies and introduces next-generation rechargeable batteries and supercapacitors. This book will serve as a valuable reference for researchers working with energy storage technologies across the fields of physics, chemistry, and engineering. Features: • Edited by established authorities in the field, with chapter contributions from subject area specialists • Provides a comprehensive review of field • Up to date with the latest developments and research

Endorsed by Cambridge International Examinations Covers the entire syllabus for Cambridge International Examinations' International AS and A Level Chemistry (9701). It is divided into separate sections for AS and A Level making it ideal for students studying both the AS and the A Level and also those taking the AS examinations at the end of their first year. - Explains difficult concepts using language that is appropriate for students around the world - Provides practice throughout the course with carefully selected past paper questions at the end of each chapter

Nothing provided

Humankind's use of zinc stretches back to antiquity, and it was a component in some of the earliest known alloy systems. Even though metallic zinc was not "discovered" in Europe until 1746 (by Marggral), zinc ores were used for making brass in biblical times, and an 87% zinc alloy was found in prehistoric ruins in Transylvania. Also, zinc (the metal) was produced in quantity in India as far back as the thirteenth century, well before it was recognized as being a separate element. The uses of zinc are manifold, ranging from galvanizing to die castings to electronics. It is a preferred anode material in high-energy-density batteries (e.g., Ni/Zn, Ag/Zn, Zn/Jair), so that its electrochemistry, particularly in alkaline media, has been extensively explored. In the passive state, zinc is photoelectrochemically active, with the passive film displaying n-type characteristics. For the same reason that zinc is considered to be an excellent battery anode, it has found extensive use as a sacrificial anode for the protection of ships and pipelines from corrosion. Indeed, aside from zinc's well-known attributes as an alloying element, its widespread use is principally due to its electrochemical properties, which include a well-placed position in the galvanic series for protecting iron and steel in natural aqueous environments and its reversible dissolution behavior in alkaline solutions.

A university campus is a place with special resonance: conjuring images of cloistered quadrangles and wood-panelled libraries, often echoing centuries of scholarly tradition. And yet it is also a place of cutting-edge science, interactive learning, youth, vibrancy, and energy. It is this dual nature which makes the physical environment of a university so dynamic as well as a highly challenging landscape to design and manage successfully. Today, the scale of the pressures and the rate of change facing higher education institutions are greater than ever. Squeezed public spending, rising tuition fees and the growing education ambitions of developing nations are set against a backdrop of rapid technological progress and changing pedagogies. What are the repercussions for the physical realities of university planning and architecture? And how are university campuses adapting to contend with these pressures? University Trends introduces the most significant, widespread and thought-provoking trends in campus design today. Part 1 identifies current trends such as starchitecture, large-scale campus extensions, adaptive re-use, and international branch campuses. Part 2 profiles each trend via highly-illustrated, global case studies of well-publicised as well as lesser-known projects. The essential guide to current and future trends in campus design.

The growing presence of biomass and waste has caused significant changes to the environment. With the ubiquity of these materials, there is an increasing need for proper disposal and reuse of these resources. Applied Environmental Materials Science for Sustainability is a key resource on the latest advancements in environmental materials, including the utilization of biomass and waste for advanced materials. Highlighting innovative studies on renewable resources, green technology, and chemical modification, this book is an ideal reference source for academics, researchers, professionals, and graduate students in the field of environmental and materials sciences and technologies. Molten salts and fused media provide the key properties and the theory of molten salts, as well as aspects of fused salts chemistry, helping you generate new ideas and applications for fused salts. Molten Salts Chemistry: From Lab to Applications examines how the electrical and thermal properties of molten salts, and generally low vapour pressure are well adapted to high temperature chemistry, enabling fast reaction rates. It also explains how their ability to dissolve many inorganic compounds such as oxides, nitrides, carbides and other salts make molten salts ideal as solvents in electrometallurgy, metal coating, treatment of by-products and energy conversion. This book also reviews newer applications of molten salts including materials for energy storage such as carbon nano-particles for efficient super capacitors, high capacity molten salt batteries and for heat transport and storage in solar plants. In addition, owing to their high thermal stability, they are considered as ideal candidates for the development of safer nuclear reactors and for the treatment of nuclear waste, especially to separate actinides from lanthanides by electrorefining. Explains the theory and properties of molten salts to help scientists understand these unique liquids Provides an ideal introduction to this expanding field Illustrated text with key real-life applications of molten salts in synthesis, energy, nuclear, and metal extraction

"Everybody who has ever read a book will benefit from the way Keith Houston explores the most powerful object of our time. And everybody who has read it will agree that reports of the book's death have been greatly exaggerated."—Erik Spiekermann, typographer We may love books, but do we know what lies behind them? In *The Book*, Keith Houston reveals that the paper, ink, thread, glue, and board from which a book is made tell as rich a story as the words on its pages—of civilizations, empires, human ingenuity, and madness. In an invitingly tactile history of this 2,000-year-old medium, Houston follows the development of writing, printing, the art of illustrations, and binding to show how we have moved from cuneiform tablets and papyrus scrolls to the hardcovers and paperbacks of today. Sure to delight book lovers of all stripes with its lush, full-color illustrations, *The Book* gives us the momentous and surprising history behind humanity's most important—and universal—information technology.

Winner of the CHOICE Outstanding Academic Title 2017 Award This comprehensive collection of top-level contributions provides a thorough review of the vibrant field of chemistry education. Highly-experienced chemistry professors and education experts cover the latest developments in chemistry learning and teaching, as well as the pivotal role of chemistry for shaping a more sustainable future. Adopting a practice-oriented approach, the current challenges and opportunities posed by chemistry education are critically discussed, highlighting the pitfalls that can occur in teaching chemistry and how to circumvent them. The main topics discussed include best practices, project-based education, blended learning and the role of technology, including e-learning, and science visualization. Hands-on recommendations on how to optimally implement innovative strategies of teaching chemistry at university and high-school levels make this book an essential resource for anybody interested in either teaching or learning chemistry more effectively, from experience chemistry professors to secondary school teachers, from educators with no formal training in didactics to frustrated chemistry students.

Interest in cereals and other healthy grains has increased considerably in recent years, driving the cereal processing industry to develop new processing technologies that meet consumer demands for sustainable and nutritious cereal products. *Innovative Processing Technologies for Healthy Grains* is the first dedicated reference to focus on advances in cereal processing and bio-refinery of cereals and pseudocereals, presenting a broad overview of all aspects of both conventional and novel processing techniques and methods. Featuring contributions from leading researchers and academics, this unique volume examines the selection and characteristics of raw ingredients, new and emerging processing technologies, novel cereal-based products, and global trends in cereal and pseudocereal use, processing and consumption. The text offers balanced coverage of advances in both the development and processing of cereal and pseudocereal products, exploring topics including gluten-free products, cereal-based animal feed, health and wellness trends in healthy grain consumption, bioaccessibility and bioavailability of nutritional compounds, gluten-free products, and the environmental impact of processed healthy grains. This timely and comprehensive volume: Focuses on innovative cereal processing and bio-refinery of cereals and pseudocereals Provides informed perspectives on the current global trends in cereal and pseudocereal use, processing and consumption Describes the characteristics of healthy grains and their production, nutritional value, and utilization Explains the origin, production, processing, and functional ingredients of

pseudocereals Reviews healthy grain products such as cereal-based beverages, fortified grain-based products, and cereal-based products with bioactive benefits Part of Wiley's IFST Advances in Food Science series Innovative Processing Technologies for Healthy Grains is an essential resource for food scientists, technologists, researchers, and other professionals working in the grain industry

Transport in Shale Reservoirs fills the need for a necessary, integrative approach on shale reservoirs. It delivers both the fundamental theories of transport in shale reservoirs and the most recent advancements in the recovery of shale oil and gas in one convenient reference. Shale reservoirs have distinctive features dissimilar to those of conventional reservoirs, thus an accurate evaluation on the behavior of shale gas reservoirs requires an integrated understanding on their characteristics and the transport of reservoir and fluids. Updates on the various transport mechanisms in shale, such as molecular diffusion and phase behavior in nano-pores Applies theory to practice through simulation in both shale oil and gas Presents an up-to-date reference on remaining challenges, such as organic material in the shale simulation and multicomponent transport in CO₂ injection processes

Wood is an advantageous building material in many respects, but it is biodegradable and therefore requires protection when used in highly hazardous applications. This Special Issue comprises 19 papers by authors from 14 countries in Asia, North America and Europe. They represent a wide range of aspects related to wood protection and wood preservation, and give timely examples of research activities that can be observed around the globe. Several authors reported on the processes of thermal modification and different chemical wood modification techniques, which are among the latest alternative wood protection methods without the use of biocides. New preservatives and assessment methods of preservative-treated wood products are presented, as well as studies on the natural durability of wood, fire-retardant treated wood, the effect of concrete on wood durability and different novel surface modification techniques using plasma. In addition to biological durability, the mechanical properties, moisture performance, bonding properties, weathering stability and the corrosiveness of differently treated wood are investigated and reported within this Special Issue. Examples of research on fungal biology, service life planning with wood and test methodology are also included and complete the Special Issue.

This book provides technological perspective and comprehensive overview on the research efforts related to II-VI group cadmium based semiconducting nanomaterials. It describes state-of-the-art information on different synthesis methods for preparation of these materials using a variety of experimental strategies. The effects of synthesis routes on structural, thermal, mechanical, lattice vibronic, electronic, optical and carrier transport characteristics of these nano-structures are systematically analyzed. A wide target readership comprising of students, researchers, scholars, scientists, technicians, academicians, industrialists can benefit from this book, as cadmium based semiconductors possess significant research and industrial interest thanks to their innovative properties.

The essential guide by one of America's leading doctors to how digital technology enables all of us to take charge of our health A trip to the doctor is almost a guarantee of misery. You'll make an appointment months in advance. You'll probably wait for several hours until you hear "the doctor will see you now"-but only for fifteen minutes! Then you'll wait even longer for lab tests, the results of which you'll likely never see, unless they indicate further (and more invasive) tests, most of which will probably prove unnecessary (much like physicals themselves). And your bill will be astronomical. In *The Patient Will See You Now*, Eric Topol, one of the nation's top physicians, shows why medicine does not have to be that way. Instead, you could use your smartphone to get rapid test results from one drop of blood, monitor your vital signs both day and night, and use an artificially intelligent algorithm to receive a diagnosis without having to see a doctor, all at a small fraction of the cost imposed by our modern healthcare system. The change is powered by what Topol calls medicine's "Gutenberg moment." Much as the printing press took learning out of the hands of a priestly class, the mobile internet is doing the same for medicine, giving us unprecedented control over our healthcare. With smartphones in hand, we are no longer beholden to an impersonal and paternalistic system in which "doctor knows best." Medicine has been digitized, Topol argues; now it will be democratized. Computers will replace physicians for many diagnostic tasks, citizen science will give rise to citizen medicine, and enormous data sets will give us new means to attack conditions that have long been incurable. Massive, open, online medicine, where diagnostics are done by Facebook-like comparisons of medical profiles, will enable real-time, real-world research on massive populations. There's no doubt the path forward will be complicated: the medical establishment will resist these changes, and digitized medicine inevitably raises serious issues surrounding privacy. Nevertheless, the result-better, cheaper, and more human health care-will be worth it. Provocative and engrossing, *The Patient Will See You Now* is essential reading for anyone who thinks they deserve better health care. That is, for all of us.

Providing guidelines for implementing sustainable practices for traditional petroleum based plastics, biobased plastics, and recycled plastics, *Sustainable Plastics and the Environment* explains what sustainable plastics are, why sustainable plastics are needed, which sustainable plastics to use, and how manufacturing companies can integrate them into their manufacturing operations. A vital resource for practitioners, scientists, researchers, and students, the text includes impacts of plastics including Life Cycle Assessments (LCA) and sustainability strategies related to biobased plastics and petroleum based plastics as well as end-of-life options for petroleum and biobased plastics.

1. Success Master Study Guides focus in the preparation of CTET teaching Exam 2. This book deals with CTET Mathematics and Science Paper – I (Classes 1-5) 3. Divided into 5 main Sections completely prepared on the latest exam pattern. 4. Provides Previous years' Solved Papers, 2 Practice Sets and more than 3000 MCQs are given for thorough practice. CTET provides you with an opportunity to make a mark as an educator while teaching in Central Government School. Prepared as per National Curriculum Framework, here's representing the updated edition of "Success Master CTET Paper I (Class I-V)" that serves as a study guide for the candidates who are willing to appear for the exam this year. The book provides focused study material dividing the entire syllabus into 5 majors providing the complete coverage. With more than 3000 MCQs are provided for the quick revision of the concepts. Chapterwise coverage of the previous Years questions along with the Trend Analysis help aspirants for better preparation. Lastly, Solved Paper 2021 & 2 Practice Sets are given leaving no stones untouched. Preparation done from this book proves to be highly useful for CTET Paper 1 in achieving good rank in the exam. TOC Solved Paper 2021 (January), Solved Paper 2019 (December), Solved Paper 2019 (July), Solved Paper 2018 (December), Solved Paper 2016 (September), Child Development and Pedagogy, English Language and Pedagogy, Hindi Bhasha evm Shiksha-shastra, Mathematics and Pedagogy, Environmental Studies and Pedagogy, Practice Sets (1-2).

The integrity of knowledge that emerges from research is based on individual and collective adherence to core values of objectivity, honesty, openness, fairness, accountability, and stewardship. Integrity in science means that the organizations in which research is conducted encourage those involved to exemplify these values in every step of the research process. Understanding the dynamics that support "or distort" practices that uphold the integrity of research by all participants ensures that the research enterprise advances knowledge. The 1992 report *Responsible Science: Ensuring the Integrity of the Research Process* evaluated issues related to scientific responsibility and the conduct of research. It provided a valuable service in describing and analyzing a very complicated set of issues, and has served as a crucial basis for thinking about research integrity for more than

two decades. However, as experience has accumulated with various forms of research misconduct, detrimental research practices, and other forms of misconduct, as subsequent empirical research has revealed more about the nature of scientific misconduct, and because technological and social changes have altered the environment in which science is conducted, it is clear that the framework established more than two decades ago needs to be updated. Responsible Science served as a valuable benchmark to set the context for this most recent analysis and to help guide the committee's thought process. *Fostering Integrity in Research* identifies best practices in research and recommends practical options for discouraging and addressing research misconduct and detrimental research practices.

Does the Earth contain enough oil to provide energy for the human race indefinitely? If not, how long will the oil last? What about renewable energy technologies like wind and solar? Will they be able to supply an indefinite supply of energy for the human race? If not, how long will it last? And what role does overpopulation play in our world's energy supply? Even with multiple forms of energy available, how long will it last as long as more and more humans, and therefore more industries and energy consumption, are added? Taking a long-held theory called "Peak Oil Theory" the authors of this groundbreaking new text examine the theory of "Peak Energy" to examine all of these questions. Crude oil and natural gas are the major sources of fuel used to supply energy for various needs. Users of crude oil and natural gas must take into account that these energy sources are, without doubt, non-renewable depleting resources, and the cost of extraction depends not only on the current rate of production but also on the amount of cumulative production. In fact, many pundits believe projections that the world is rapidly approaching a precipice, after which crude oil and natural gas will no longer be in ready supply. This phenomenon has given rise to the peak oil theory – peak oil is the point in time when the maximum rate of petroleum recovery from the reservoir is reached, after which the rate of petroleum production enters terminal decline. From this concept has emerged the wider concept of the peak energy theory which, as it is related to the availability of all fossil fuels, is also subject to decline with fossil fuel use. This text, written by two of the world's most well-known, respected, and prolific writers in the energy industry, is a fascinating study of our world's energy needs and the future of the multi-source energy supply on this planet. Whether oil and gas, wind, solar, geothermal, or even nuclear, all sources of energy have their limits, and we, as scientists, engineers, and consumers of energy need to be knowledgeable on these topics. This book is a must-have for any engineer, student, scientist, or even layperson interested in energy and the idea of energy sustainability on planet Earth.

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