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United States Imports of Merchandise for Consumption May 02 2020

Mineral Composition and Radioactivity of Edible Mushrooms Jul 16 2021 Mineral Composition and Radioactivity of Edible Mushrooms is the definitive reference guide that collects and collates all recent very dispersed data and information on mushroom mineral elements and radioactivity. The book deals with the overall outline of the major and trace mineral elements of many both wild growing and cultivated mushroom species, including chemistry, biochemistry and environmental context, losses of minerals during mushroom preservation and cooking, and nutritional and health implications. This monography also includes a chapter on natural and anthropogenic radionuclides, along with the lessons learned after the Chernobyl and Fukushima disasters concerning mushroom radioactivity. Thoroughly explores factors affecting accumulation and distribution of numerous major and trace mineral elements within fruiting bodies. Brings the overall information on sources and levels of natural and artificial radioactivity of mushrooms.

Organic Chemistry Apr 12 2021 Provides the background, tools, and models required to understand organic synthesis and plan chemical reactions more efficiently Knowledge of physical chemistry is essential for achieving successful chemical reactions in organic chemistry. Chemists must be competent in a range of areas to understand organic synthesis. Organic Chemistry provides the methods, models, and tools necessary to fully comprehend organic reactions. Written by two internationally recognized experts in the field, this much-needed textbook fills a gap in current literature on physical organic chemistry. Rigorous yet straightforward chapters first examine chemical equilibria, thermodynamics, reaction rates and mechanisms, and molecular orbital theory, providing readers with a strong foundation in physical organic chemistry. Subsequent chapters demonstrate various reactions involving organic, organometallic, and biochemical reactants and catalysts. Throughout the text, numerous questions and exercises, over 800 in total, help readers strengthen their comprehension of the subject and highlight key points of learning. The companion Organic Chemistry Workbook contains complete references and answers to every question in this text. A much-needed resource for students and working chemists alike, this text: -Presents models that establish if a reaction is possible, estimate how long it will take, and determine its properties -Describes reactions with broad practical value in synthesis and biology, such as C-C-coupling reactions, pericyclic reactions, and catalytic reactions -Enables readers to plan chemical reactions more efficiently -Features clear illustrations, figures, and tables -With a Foreword by Nobel Prize Laureate Robert H. Grubbs Organic Chemistry: Theory, Reactivity, and Mechanisms in Modern Synthesis is an ideal textbook for students and instructors of chemistry, and a valuable work of reference for organic chemists, physical chemists, and chemical engineers.

Ni- and Fe-Based Cross-Coupling Reactions Jul 28 2022 The series Topics in Current Chemistry Collections presents critical reviews from the journal Topics in Current Chemistry organized in topical volumes. The scope of coverage is all areas of chemical science including the interfaces with related disciplines such as biology, medicine and materials science. The goal of each thematic volume is to give the non-specialist reader, whether in academia or industry, a comprehensive insight into an area where new research is emerging which is of interest to a larger scientific audience. Each review within the volume critically surveys one aspect of that topic and places it within the context of the volume as a whole. The most significant developments of the last 5 to 10 years are presented using selected examples to illustrate the principles discussed. The coverage is not intended to be an exhaustive summary of the field or include large quantities of data, but should rather be conceptual, concentrating on the methodological thinking that will allow the non-specialist reader to understand the information presented. Contributions also offer an outlook on potential future developments in the field.

Consumers Digest Jan 28 2020

Layered 2D Materials and Their Allied Applications Oct 19 2021 Ever since the discovery of graphene, two-dimensional layered materials (2DLMs) have been the central tool of the materials research community. The reason behind their importance is their superlative and unique electronic, optical, physical, chemical and mechanical properties in layered form rather than in bulk form. The 2DLMs have been applied to electronics, catalysis, energy, environment, and biomedical applications. The following topics are discussed in the book's fifteen chapters: • The research status of the 2D metal-organic frameworks and the different techniques used to synthesize them. • 2D black phosphorus (BP) and its practical application in various fields. • Reviews the synthesis methods of MXenes and provides a detailed discussion of their structural characterization and physical, electrochemical and optical properties, as well as applications in catalysis, energy storage, environmental management, biomedicine, and gas sensing. • The carbon-based materials and their potential applications via the photocatalytic process using visible light irradiation. • 2D materials like graphene, TMDCs, few-layer phosphorene, MXene in layered form and their heterostructures. • The structure and applications of 2D perovskites. • The physical parameters of pristine layered materials, ZnO, transition metal dichalcogenides, and heterostructures of layered materials are discussed. • The coupling of graphitic carbon nitride with various metal sulfides and oxides to form efficient heterojunction for water purification. • The structural features, synthetic methods, properties, and different applications and properties of 2D zeolites. • The methods for synthesizing 2D hollow nanostructures are featured and their structural aspects and potential in medical and non-medical applications. • The characteristics and structural aspects of 2D layered double hydroxides (LDHs) and the various synthesis methods and role of LDH in non-medical applications as adsorbent, sensor, catalyst, etc. • The synthesis of graphene-based 2D layered materials synthesized by using top-down and bottom-up approaches where the main emphasis is on the hot-filament thermal chemical vapor deposition (HFTCVD) method. • The different properties of 2D h-BN and borophene and the various methods being used for the synthesis of 2D h-BN, along with their growth mechanism and transfer techniques. • The physical properties and current progress of various transition metal dichalcogenides (TMDC) based on photoelectrochemical (PEC) hydrogen evolution reaction. • The state-of-the-art of 2D layered materials and associated devices, such as electronic, biosensing, optoelectronic, and energy storage applications.

Introduction to Sol-Gel Processing May 14 2021 This book presents a broad, general introduction to the processing of Sol-Gel technologies. This updated volume serves as a general handbook for researchers and students entering the field. This new edition provides updates in fields that have undergone rapid developments, such as Ceramics, Catalysis, Chromatography, biomaterials, glass science, and optics. It provides a simple, compact resource that can also be used in graduate-level materials science courses.

Rhythms of Insect Evolution Dec 21 2021 Documents morphology, taxonomy, phylogeny, evolutionary changes, and interactions of 23 orders of insects from the Middle Jurassic and Early Cretaceous faunas in Northern China This book showcases 23 different orders of insect fossils from the Mid Mesozoic period (165 to 125 Ma) that were discovered in Northeastern China. It covers not only their taxonomy and morphology, but also their potential implications on natural sciences, such as phylogeny, function, interaction, evolution, and ecology. It covers fossil sites; paleogeology; co-existing animals and plants in well-balanced eco-systems; insects in the spotlight; morphological evolution and functional development; and interactions of insects with co-existing plants, vertebrates, and other insects. The book also includes many elegant and beautiful photographs, line drawings, and 3-D reconstructions of fossilized and extant insects. Rhythms of Insect Evolution: Evidence from the Jurassic and Cretaceous in Northern China features chapter coverage of such insects as the: Ephemeroptera; Odonata; Blattaria; Isoptera; Orthoptera; Notoptera; Dermaptera; Chresmodidae; Phasmatodea; Plecoptera; Psocoptera; Homoptera; Heteroptera; Megaloptera; Raphidioptera; Neuroptera; Coleoptera; Hymenoptera Diptera; Mecoptera; Siphonaptera; Trichoptera and Lepidoptera. Combines academic natural science, popular science, and artistic presentation to illustrate rhythms of evolution for fossil insects from the Mid Mesozoic of Northern China Documents morphology, taxonomy, phylogeny, and evolutionary changes of 23 orders of insects from the Middle Jurassic and Early Cretaceous faunas in Northern China Presents interactions of insects with plants, vertebrates, and other insects based on well-preserved fossil evidence Uses photos of extant insects and plants, fossil and amber specimens, line drawings, and 3-D computer-generated reconstruction artworks to give readers clear and enjoyable impressions of the scientific findings Introduces insect-related stories from western and Chinese culture in text or sidebars to give global readers broader exposures Rhythms of Insect Evolution: Evidence from the Jurassic and Cretaceous in Northern China will appeal to entomologists, evolutionists, paleontologists, paleoecologists, and natural scientists.

Mechanics and Mechanical Engineering Aug 29 2022 This proceedings consists of 162 selected papers presented at the 2nd Annual International Conference on Mechanics and Mechanical Engineering (MME2015), which was successfully held in Chengdu, China between December 25–27, 2015. MME2015 is one of the key international conferences in the fields of mechanics, mechanical engineering. It offers a great opportunity to bring together researchers and scholars around the globe to deliver the latest innovative research and the most recent developments in the field of Mechanics and Mechanical Engineering. MME2015 received over 400 submissions from about 600 laboratories, colleges and famous institutes. All the submissions have undergone double blind review to assure the quality, reliability and validity of the results presented. These papers are arranged into 6 main chapters according to their research fields. These are: 1) Applied Mechanics 2) Mechanical Engineering and Manufacturing Technology 3) Material Science and Material Engineering 4) Automation and Control Engineering 5) Electrical Engineering 6) System Modelling and Simulation. This proceedings will be invaluable to academics and professionals interested in Mechanics and Mechanical Engineering. Contents: Applied Mechanics Mechanical Engineering and Manufacturing Technology Material Science and Material Engineering Automation and Control Engineering Electrical Engineering System Modeling and Simulation Readership: Researchers and academic.

Biosynthesis of Amino Acids and their Derived Chemicals from Renewable Feedstock Nov 07 2020

Journal of the Assembly, Legislature of the State of California Sep 05 2020

U.S. Terminal Procedures Mar 12 2021

Proceedings of the American Society of Civil Engineers Aug 17 2021 Vols. for Jan. 1896-Sept. 1930 contain a separately page section of Papers and discussions which are published later in revised form in the society's Transactions. Beginning Oct. 1930, the Proceedings are limited to technical papers and discussions, while Civil engineering contains items relating to society activities, etc.

Advances in Organic Synthesis Nov 19 2021 Advances in Organic Synthesis is a book series devoted to the latest advances in synthetic approaches towards challenging structures. It presents comprehensive articles written by eminent authorities on different synthetic approaches to selected target molecules and new methods developed to achieve specific synthetic transformations. Contributions are written by eminent scientists and each volume is edited by an authority in the field. Advances in Organic Synthesis is essential for all organic chemists in the academia and industry who wish to keep abreast of rapid and important developments in the field.

Graphene Functionalization Strategies Mar 31 2020 This book discusses various aspects of graphene functionalization strategies from inorganic oxides and organic moieties including preparation, design, and characterization of functionalization material and its applications. Including illustrations and tables summarizing the latest research on manufacturing, design, characterization and applications of graphene functionalization, it describes graphene functionalization using different techniques and materials and highlights the latest technologies in the field of manufacturing and design. This book is a valuable reference resource for lecturers, students, researchers and industrialists working in the field of material science, especially polymer composites.

Buildings and Structures under Extreme Loads Feb 20 2022 Exceptional loads on buildings and structures may have different causes, including high-strain dynamic effects due to natural hazards, man-made attacks, and accidents, as well as extreme operational conditions (severe temperature variations, humidity, etc.). All of these aspects can be critical for specific structural typologies and/or materials that are particularly sensitive to external conditions. In this regard, dedicated and refined methods are required for their design, analysis, and maintenance under the expected lifetime. There are major challenges related to the structural typology and material properties with respect to the key features of the imposed design load. Further issues can be derived from the need for risk mitigation or retrofit of existing structures as well as from the optimal and safe design of innovative materials/systems. Finally, in some cases, no appropriate design recommendations are available and, thus, experimental investigations can have a key role within the overall process. In this Special Issue, original research studies, review papers, and experimental and/or numerical investigations are presented for the structural performance assessment of buildings and structures under various extreme conditions that are of interest for design.

Functional Food and Human Health Oct 26 2019 Global health and the increasing incidence of various diseases are a cause for concern, and doctors and scientists reason that the diet, food habits and lifestyle are contributing factors. Processed food has reduced the nutritional value of our diet, and although supplementing foods with various additives is considered an alternative, the long-term impact of this is not known. Many laboratories around the world are working to identify various nutritional components in our daily food and their effect on human health. These have been classified as Nutraceuticals or functional food, and they may have preventive and therapeutic effects in a number of pathologies associated with modern dietary habits and lifestyles. This book addresses various aspects of this issue, revitalizing the discussion and consolidating the latest research on nutritional and functional food and their effects in in-vitro, in-vivo and human clinical studies.

Electronics & Communication Engineering Vol.-2 Aug 24 2019 All India State PSC AE/PSU Electronics & Communication Engineering Vol.-2 Chapter-wise Solved Papers

Exploring Volcanic Paroxysmal Explosive Activity From Magma Source to Ground and Atmosphere Aug 05 2020 Paroxysmal explosive activity is one of the most spectacular natural phenomena, which is recognized as having strong impact not only at a local scale but whose effects can also reach far areas and, indeed, can significantly affect the atmosphere, and the environment in the overall. The most devastating and recent example occurred in 2010, when the Icelandic Eyjafjallajökull volcano erupted disrupting air traffic all over Europe and the North Atlantic for weeks. Between 2008 and 2013, the long-lasting eruption of Chaitén volcano in Chile produced plumes 14–20 km high reaching the coast of Argentina and causing ash fallout as far as 800 km from the vent, and the continuously erupting volcanoes of the Kamchatka Peninsula and of the Aeolian arc have caused often treats to air traffic. The eruption of Pinatubo (Philippines) in 1991 had a strong impact all over the globe, causing significant and measurable atmospheric perturbation and impacting the world temperature. More recently, Mount Etna in Italy displayed tens of paroxysmal explosive episodes affecting the air traffic, viability, settlements, environment, and economics. Over time, several studies have been devoted to understanding what drives paroxysmal explosive activity. Owing to the treating characteristics, so far great efforts have been made trying to detect precursory signals, parameterize the phenomena, apply conceptual and experimental models, and assess the associated hazards. Published papers have used (i) geophysical data aimed at constraining the source region (depth, size, and position), (ii) gas chemistry and mineral geochemistry and petrology to identify the driving force of explosions and characterize the nature of the involved magmas, (iii) volcanology data and observations as well as ground-based and satellite remote sensing to quantify the volumes of erupted products and track the eruptive process, and (iv) laboratory experiments and plume models to characterize the rheology of the erupted products and forecast the impact of the eruptive clouds on the environment, climate, and the whole planet. In this book, we present a collection of ten papers written by 67 authors spanning from seismology and ground deformation to geochemistry, volcanology and other geophysical techniques applied to the characterization of paroxysms at several active volcanoes.

The Hindu Kush Himalaya Assessment Dec 09 2020 This open access volume is the first comprehensive assessment of the Hindu Kush Himalaya (HKH) region. It comprises important scientific research on the social, economic, and environmental pillars of sustainable mountain development and will serve as a basis for evidence-based decision-making to safeguard the environment and advance people's well-being. The compiled content is based on the collective knowledge of over 300 leading researchers, experts and policymakers, brought together by the Hindu Kush Himalayan Monitoring and Assessment Programme (HIMAP) under the coordination of the International Centre for Inherited Mountain Development (ICIMOD). This assessment was conducted between 2013 and 2017 as the first of a series of monitoring and assessment reports, under the guidance of the HIMAP Steering Committee: Eklatyba Sharma (ICIMOD), Atiq Raman (Bangladesh), Yuba Raj Khatriwada (Nepal), Linxiu Zhang (China), Surendra Pratap Singh (India), Tandong Yao (China) and David Molden (ICIMOD and Chair of the HIMAP SC). This First HKH Assessment Report consists of 16 chapters, which comprehensively assess the current state of knowledge of the HKH region, increase the understanding of various drivers of change and their impacts, address critical data gaps and develop a set of evidence-based and actionable policy solutions and recommendations. These are linked to nine mountain priorities for the mountains and people of the HKH consistent with the Sustainable Development Goals. This book is a must-read for policy makers, academics and students interested in this important region and an essentially important resource for contributors to global assessments such as the IPCC reports.

Mechanisms of Neuroinflammation Jun 26 2022 "Mechanisms of Neuroinflammation" book explains how the neuronal cells become swollen at the moment of the blood-brain barrier disruption and how they lose their immunological isolation. A cascade of cytokines and immune cells from the bloodstream enters the nervous system, inflaming neurons and activating the glia. This produces a neuroinflammatory process that can generate different neurodegenerative diseases. Better understanding of mechanisms that are activated at the time when the damage to the brain occurs could lead to the development of suitable therapies that revert the neuronal inflammation and thus prevent further damage to the nervous system.

Current Developments in Biotechnology and Bioengineering Apr 24 2022 Current Developments in Biotechnology and Bioengineering: Advanced Membrane Separation Processes for Sustainable Water and Wastewater Management - Anaerobic Membrane Bioreactor Processes and Technologies gives an up-to-date review on research developments of AnMBR systems (including hybrid systems) in wastewater treatment in terms of pollutants removal, nutrients recovery and energy production, as well as the achievement of energy efficiency of the process itself. The current challenges that hinder the application and industrialization of AnMBR technology, knowledge gaps and future research perspectives are also explained and discussed with potential strategies for solving problems. The book is a potential resource for engineers, scientists, educators, students and general public to understand the current developments and future prospects in field of AnMBR research. Covers different aspects of AnMBR in wastewater treatment, such as fundamental knowledge, process design and evaluation, operation and optimization and applications Focuses on different AnMBR configurations and systems/hybrid systems in treating a large variety of wastewaters Provides state-of-the-art technology development of AnMBR technology, advantages and challenges, as well as the strategies to overcome the limitations Includes AnMBR technology in removing the priority substances (PSS) and emerging contaminants of environmental concern, as well as an evaluation of energy potentials in wastewater treatment

9 Years JEE Main Solved Papers (2021 to 2013) 2nd Edition Jun 02 2020 9 YEAR-WISE JEE Main Solved Papers (2021 - 2013) contains Past 9 Solved Papers of the JEE Main exam. The papers are provided Year-wise which can also be attempted as Mock Tests. The detailed solution to each paper is provided immediately after the Paper. The Answerkeys have been validated with NTA.

Climatological Data: National Summary Sep 29 2022

Criteria for Implementation of Optimum Integration Algorithm Into the WRECKER Program. Technical Final Report. Volume II. May 26 2022

Hydrogen Storage Alloys Sep 25 2019 The book presents current research progress on hydrogen storage alloys, with a special focus on their applications in batteries. Background, formation mechanisms, electrochemical characteristics, and effects of elemental substitution are covered. Provides an up-to-date overview of the theme for experienced researchers, while including enough fundamentals to serve as a handy, practical introduction for newcomers to the field.

Metabolomics for Biomedical Research Jun 22 2019 Metabolomics for Biomedical Research brings together recent progress on study design, analytics, biostatistics and bioinformatics for the success of metabolomics research. Metabolomics represents a very interdisciplinary research prominent in the functional analyses of living systems; hence, this book focuses on translation and medical aspects. The book discusses topics such as biomarkers and their requirements to be used in medical research, with the parameters and approaches on how to validate their quality; and animal models and other approaches, as stem cells and organoid culture. Additionally, it explains how metabolomics may be applied in prediction of individual response to drug or disease progression. This book is a valuable source for researchers on systems biology and other members of biomedical field interested in metabolism-oriented studies for medical research. Focuses on metabolomics in translational and medical research Provides basics for, and concepts of, contemporary translational personalized medicine research with metabolomics Brings the major recent progresses on design, analytics, biostatistics and bioinformatics relating to the success of metabolomics research

750+ Blockbuster Problems in Physics for JEE Main Jun 14 2021

1974 Census of Agriculture: State reports, 54 pts. in 59 v. Jan 10 2021

Amino Acids, Peptides and Proteins Nov 27 2019

TARGET NTA JEE Main 2022 Solved Papers & 10 Mock Tests on 90 Question Pattern 23rd Edition Jul 04 2020 The 23rd Edition of Bestseller 'TARGET JEE Main 2022' helps in understanding the Test, Exam Pattern, Solving Past Questions & Practicing Mock Test to Revise all important concepts necessary to crack the JEE Main exam. • The book provides 9 Past (2013-2021) & 10 Mock (on Latest 90 Question Pattern with optional Numeric Answer Questions) papers with their detailed solutions. • Each Mock Test provides 90 questions divided into 3 sections of 30 Questions each - Physics, Chemistry, & Mathematics. Each section has 2 Parts - Part I of 20 compulsory MCQs; Part II of 15 Numeric Answer Questions where only 5 needs to be attempted, along with detailed solutions. • Mastery over this book will definitely improve your Score by 15%.

Advances in Manufacturing and Characterization of Functional Polyesters Feb 29 2020 In recent years, we have assisted the remarkable growth in the use of functional polyesters. This book gathers novel research works dealing with the manufacturing and characterization of polyesters that have been functionalized by synthesis, copolymerization, additives (at micro- and nanoscale), surface modification, among other methodologies, to tailor desired properties in terms of mechanical, chemical, thermal, and barrier properties, biodegradation, and biocompatibility. Thus, Advances in Manufacturing and Characterization of Functional Polyesters will serve to guide a diverse audience of polymer scientists and engineers and provides an update of the "state-of-the-art" knowledge on functional polyesters.

Sustainable Development - Proceedings Of The 2015 International Conference (Icsd2015) Oct 31 2022 Since the emergence of climate and global warming onto the international agenda, research in sustainability has been underpinned by the development in energy and environmental science. Highlighted 30 years ago by the Brundtland Commission, 'sustainable development' was defined as: meeting the needs of the present without compromising the ability of future generations to meet their own needs. This has very much defined the scope and aims of this conference. This conference proceedings book contains the selected papers presented in the 2015 International Conference on Sustainable Development (ICSD2015) held in September 25-27, 2015, in Wuhan, Hubei, China. The conference positions itself as an international forum for researchers all over the world to come together to share and discuss their findings and contributions in all aspects of sustainability; including theory, methodology and applications covering a wide spectrum of topics and issues. The conference proceedings put together a total of 119 papers in sustainable development, covering issues in environmental, energy, and economical aspects of the subjects.

EPA 600/2 Dec 29 2019

Handbook on Marine Environment Protection Jul 24 2019 This handbook is the first of its kind to provide a clear, accessible, and comprehensive introduction to the most important scientific and management topics in marine environmental protection. Leading experts discuss the latest perspectives and best practices in the field with a particular focus on the functioning of marine ecosystems, natural processes, and anthropogenic pressures. The book familiarizes readers with the intricacies and challenges of managing coasts and oceans more sustainably, and guides them through the maze of concepts and strategies, laws and policies, and the various actors that define our ability to manage marine activities. Providing valuable thematic insights into marine management to inspire thoughtful application and further study, it is essential reading for marine environmental scientists, policy-makers, lawyers, practitioners and anyone interested in the field.

Metal-free Functionalized Carbons in Catalysis Oct 07 2020 Metal-free carbons have recently shown great efficiency in several catalytic processes, including oxidative dehydrogenation (ODH) of ethylbenzene and alkenes, hydrogen evolution, liquid Brønsted and Lewis acid catalysis and electrochemical reactions. The catalytic activities of carbon materials are intimately related to their defects, structures, and surface chemistry. In particular, nitrogen functionalized carbons present different surface functional groups, and they can be used as multifunctional catalysts, either through their electronic or nucleophilic properties, or their ability to form additional H bonds with substrates. This book provides an overview of the preparation, characterization and application of metal-free functionalized carbons, including carbon nanotubes, graphene, carbon nitride and covalent organic frameworks (COFs). It is ideal for researchers and industrialists working in catalysis, gas sensing and carbon dioxide storage.

American Motorcyclist Mar 24 2022 American Motorcyclist magazine, the official journal of the American Motorcyclist Association, tells the stories of the people who make motorcycling the sport that it is. It's available monthly to AMA members. Become a part of the largest, most diverse and most enthusiastic group of riders in the country by visiting our website or calling 800-AMA-JOIN.

Clean Energy and Fuel (Hydrogen) Storage Jan 22 2022 Clean energy and fuel storage are often required for both stationary and automotive applications. Some of these clean energy and fuel storage technologies currently under extensive research and development include hydrogen storage, direct electric storage, mechanical energy storage, solar-thermal energy storage, electrochemical (batteries and supercapacitors), and thermochemical storage. The gravimetric and volumetric storage capacity, energy storage density, power output, operating temperature and pressure, cycle life, recyclability, and cost of clean energy or fuel storage are some of the factors that govern efficient energy and fuel storage technologies for potential deployment in energy harvesting (solar and wind farms) stations and onboard vehicular transportation. This Special Issue thus serves the need for promoting exploratory research and development on clean energy and fuel storage technologies while addressing their challenges to practical and sustainable infrastructures.

Molecular Beam Epitaxy Sep 17 2021 Molecular Beam Epitaxy (MBE): From Research to Mass Production, Second Edition, provides a comprehensive overview of the latest MBE research and applications in epitaxial growth, along with a detailed discussion and 'how to' on processing molecular or atomic beams that occur on the surface of a heated crystalline substrate in a vacuum. The techniques addressed in the book can be deployed wherever precise thin-film devices with enhanced and unique properties for computing, optics or photonics are required. It includes new semiconductor materials, new device structures that are commercially available, and many that are at the advanced research stage. This second edition covers the advances made by MBE, both in research and in the mass production of electronic and optoelectronic devices. Enhancements include new chapters on MBE growth of 2D materials, Si-Ge materials, AlN and GaN materials, and hybrid ferromagnet and semiconductor structures. Condenses the fundamental science of MBE into a modern reference, speeding up literature review Discusses new materials, novel applications and new device structures, grounding current commercial applications with modern understanding in industry and research Includes coverage of MBE as mass production epitaxial technology and how it enhances processing efficiency and throughput for the semiconductor industry and nanostructured semiconductor materials research community

Advanced Circuits and Systems for Healthcare and Security Applications Feb 08 2021 VLSI devices downsizing is a very significant part of the design to improve the performance of VLSI industry outcomes, which results in high speed and low power of operation of integrated devices. The increasing use of VLSI circuits dealing with highly sensitive information, such as healthcare information, means adequate security measures are required to be taken for the secure storage and transmission. Advanced Circuits and Systems for Healthcare and Security Applications provides broader coverage of the basic aspects of advanced circuits and security and introduces the corresponding principles. By the end of this book, you will be familiarized with the theoretical frameworks, technical methodologies, and empirical research findings in the field to protect your computers and information from adversaries. Advanced circuits and the comprehensive material of this book will keep you interested and involved throughout. The book is an integrated source which aims at understanding the basic concepts associated with the security of the advanced circuits and the cyber world as a first step towards achieving high-end protection from adversaries and hackers. The content includes theoretical frameworks and recent empirical findings in the field to understand the associated principles, key challenges and recent real-time applications of the advanced circuits and cybersecurity. It illustrates the notions, models, and terminologies that are widely used in the area of circuits and security, identifies the existing security issues in the field, and evaluates the underlying factors that influence the security of the systems. It emphasizes the idea of understanding the motivation of the attackers to establish adequate security measures and to mitigate security attacks in a better way. This book also outlines the exciting areas of future research where the already-existing methodologies can be implemented. Moreover, this book is suitable for students, researchers, and professionals in the who are looking forward to carry out research in the field of advanced circuits and systems for healthcare and security applications; faculty members across universities; and software developers.