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KANE SLADE

Challenges and Prospects
John Wiley & Sons
In the past few decades there has been incredible growth in "bionano"-related research, which has been accompanied by numerous publications in this field. Although various compilations address topics related to deoxyribonucleic acid (DNA) and protein, there are few books that focus on determining the structure of ribonucleic acid (RNA) and using RNA as building blocks to construct nanoarchitectures for biomedical and healthcare applications. RNA Nanotechnology is a comprehensive volume that details both the traditional approaches and the latest developments in the field of RNA-related technology. This book targets a wide audience: a broad introduction provides a solid academic background for students, researchers, and scientists who are unfamiliar with the subject, while the in-depth descriptions and discussions are useful for advanced professionals. The book opens with reviews on the basic aspects of RNA biology, computational approaches for predicting RNA structures, and traditional and emerging experimental approaches for probing RNA structures. This section is followed by explorations of the latest research and discoveries in RNA nanotechnology, including the design and construction of RNA-based nanostructures. The final segment of the book includes descriptions and discussions of the potential biological and therapeutic applications of small RNA molecules, such as small/short interfering RNAs (siRNAs), microRNAs (miRNAs), RNA aptamers, and ribozymes.
Nanobiotechnology
Currency
In the last few years, several “bottom-up” and “top-down” synthesis routes have been developed to produce tailored hybrid nanoparticles (HNPs). This book provides a new insight into one of the most promising “bottom-up” techniques, based on a practical magnetron-sputtering inert-gas-condensation method. A modified magnetron-sputtering-based inert-gas-condensation (MS-IGC) system is presented, and its performances under different conditions are evaluated. Designed for graduate students, researchers in physics, materials science, biophysics and related fields, and process engineers, this new resource fills a critical need to understand the fundamentals behind the design and tailoring of the nanoparticles produced by the MS-IGC method. It shows that the morphology, the size and the properties of the nanoparticles can be modulated by tuning the deposition parameters such as the energy, the cooling rate, and the collision and coalescence processes experienced by the nanoparticles during their formation. The mechanisms of formation of different HNPs are suggested, combining the physico-chemical properties of the materials with the experimental conditions. This book illustrates the potential of MS-IGC method to synthesize multifunctional nanoparticles and nanocomposites with accurate control on their morphology and structure. However, for a better understanding of HNPs formation, further improvements in

characterization methods of aggregation zone conditions are needed. In addition, the optimization of the yield and harvesting process of HNPs is essential to make this method sufficiently attractive for large-scale production.

Modern Biooxidation CRC Press

Filling a gap in the literature, leading expert editors and top international authors present the field of biooxidation from an academic and industrial point of view, taking many examples from modern pharmaceutical research. Topics range from the application of different monooxygenases to applications in the pharmaceutical industry, making this volume of high interest not only for those working in biotechnology but also for organic synthetic chemists, among others.

Introduction To Nanoscience And Nenotechnology

Nanobiotechnology IIMore Concepts and Applications This book provides up-to-date knowledge of the promising field of Nanobiotechnology with emphasis on the mitigation approaches to combat plant abiotic stress factors, including drought, salinity, waterlog, temperature extremes, mineral nutrients, and heavy metals. These factors adversely affect the growth as well as yield of crop plants worldwide, especially under the global climate change. Nanobiotechnology is viewed to revolutionize crop productivity in future. The chapters discuss the status and prospects of this cutting-edge technology toward understanding tolerance mechanisms, including signaling molecules and enzymes regulation in addition to the applications of Nanobiotechnology to combat individual abiotic stress factors.

Self-Assembled Peptide Nanostructures Springer Nature

Presents nanobiotechnology in drug delivery and disease management Featuring contributions from noted experts in the field, this book highlights recent advances in the nano-based drug delivery systems. It also covers the diagnosis and role of various nanomaterials in the management of infectious diseases and non-infectious disorders, such as cancers and other malignancies and their role in future medicine. Nanobiotechnology in Diagnosis, Drug Delivery and Treatment starts by introducing how nanotechnology has revolutionized drug delivery, diagnosis, and treatments of diseases. It then focuses on the role of various nanocomposites in diagnosis, drug delivery, and treatment of diseases like cancer, Alzheimer's disease, diabetes, and many others. Next, it discusses the application of a variety of nanomaterials in the diagnosis and management of gastrointestinal tract disorders. The book explains the concept of nanotheranostics in detail and its role in effective monitoring of drug response, targeted drug delivery, enhanced drug accumulation in the target tissues, sustained as well as triggered release of drugs, and reduction in adverse effects. Other chapters cover aptamer-incorporated nanoparticle systems; magnetic nanoparticles; theranostics and vaccines; toxicological concerns of nanomaterials used in nanomedicine; and more. Provides a concise overview of state-of-the-art nanomaterials

and their application like drug delivery in infectious diseases and non-infectious disorders Highlights recent advances in the nano-based drug delivery systems and role of various nanomaterials Introduces nano-based sensors which detect various pathogens Covers the use of nanodevices in diagnostics and theranostics Nanobiotechnology in Diagnosis, Drug Delivery and Treatment is an ideal book for researchers and scientists working in various disciplines such as microbiology, biotechnology, nanotechnology, pharmaceutical biotechnology, pharmacology, pharmaceutics, and nanomedicine.

Handbook on Nanobiomaterials for Therapeutics and Diagnostic Applications Elsevier

NanoBiotechnology is a groundbreaking text investigating the recent advances and future direction of nanobiotechnology. It will assist scientists and students in learning the fundamentals and cutting-edge nature of this new and emerging science. Focusing on materials and building blocks for nanotechnology, leading scientists from around the world share their knowledge and expertise in this authoritative volume.

The Nanobiotechnology Handbook Morgan & Claypool Publishers

Nanobiotechnology IIMore Concepts and ApplicationsWiley-VCH

Bionanotechnology Elsevier

This second volume on a burgeoning field retains the proven concept of the spectacularly successful first one, extending and supplementing it. Individual sections are each dedicated to nanoparticles, nanostructures and patterns, nanodevices and machines, and nanoanalytics. Essential reading for an entire generation of scientists, this authoritative survey defines one of the most important new scientific fields to have emerged for many decades.

Nanobiotechnology CRC Press

Nanotechnology is considered the next big revolution in medicine and biology. For the past 20 years, research groups have been involved in the development of new applications of novel nanomaterials for biotechnological applications. Nanomaterials are also becoming increasingly important in medical applications, with new drugs and diagnostic tools based on nanotechnology. Every year, hundreds of new ideas using nanomaterials are applied in the development of biosensors. An increasing number of new enterprises are also searching for market opportunities using these technologies. Nanomaterials for biotechnological applications is a very complex field. Thousands of different nanoparticles could potentially be used for these purposes. Some of them are very different; their synthesis, characterization and potentiality are very diverse. This book aims to establish a route guide for non-erudite researchers in the field, showing the advantages and disadvantages of the different kind of nanomaterials. Particular attention is given to the differences, advantages and disadvantages of inorganic nanoparticles versus organic nanoparticles when used for biotechnological applications. A tutorial introduction provides the

basis for understanding the subsequent specialized chapters. Provides an overview of the main advantages and disadvantages of the use of organic and inorganic nanoparticles for use in biotechnology and nanomedicine Provides an excellent starting point for research groups looking for solutions in nanotechnology who do not know which kind of materials will best suit their needs Includes a tutorial introduction that provides a basis for understanding the subsequent specialized chapters

Nanobiotechnology in Diagnosis, Drug Delivery and Treatment Springer Nature

This new book, Nanobiotechnology: Concepts and Applications in Health, Agriculture, and Environment, presents a broad conceptual overview regarding the synthesis, applications, and toxicological aspects of nanobiotechnology. It focuses on the entrance into and interaction of nanomaterials in the human body, which has generated intense scientific curiosity, attracting much attention as well as increasing concern from the nanomaterial-based industries and academia across the world. This book looks at the scientific aspects of nanomaterials used in many applications of biosciences, taking an interdisciplinary approach that encompasses medicine, biology, pharmacy, physics, chemistry, engineering, nanotechnology, and materials science. The volume covers the basics of nanosciences and nanotechnology; different schemes and routes of synthesis; and various biological applications, including sensing, medicine, drug delivery systems, and remediation. Further, special chapters will be devoted to nanotoxicology and the developing risk factors associated with nanosized particles during use along with the ethical issues related to nanobiotechnology.

Lessons from Nature IGI Global

Over the past few decades, devices and technologies have been significantly miniaturized from one generation to the next, providing far more potential in a much smaller package. The smallest of these recently developed tools are miniscule enough to be invisible to the naked eye. Nanotechnology: Concepts, Methodologies, Tools, and Applications describes some of the latest advances in microscopic technologies in fields as diverse as biochemistry, materials science, medicine, and electronics. Through its investigation of theories, applications, and new developments in the nanotechnology field, this impressive reference source will serve as a valuable tool for researchers, engineers, academics, and students alike.

BioInspired Devices and Materials of the Future John Wiley & Sons

Connecting theory with real-life applications, this essential textbook equips students with a comprehensive knowledge of the key concepts in bionanotechnology.

Advances and Applications in Nanobiotechnology Springer Science & Business Media

This book combines the contributions from the experts of material science, molecular biology, toxicology bio-organic and bio-inorganic chemistry, toxicologists and environmental and food technology etc. to fathom the full scope of

current and future of developments in the area of Nanobiotechnology. This book can also be used as text book for graduate students as an essential reference material, and as an reading material for general readers having a curiosity in Nanobiotechnology.
Phage Nanobiotechnology
John Wiley & Sons
Nanotechnology: An Introduction, Second Edition, is ideal for the newcomer to nanotechnology, someone who also brings a strong background in one of the traditional disciplines, such as physics, mechanical or electrical engineering, or chemistry or biology, or someone who has experience working in microelectromechanical systems (MEMS) technology. This book brings together the principles, theory, and practice of nanotechnology, giving a broad, yet authoritative, introduction to the possibilities and limitations of this exciting and rapidly developing field. The book's author, Prof Ramsden, also discusses design, manufacture, and applications and their impact on a wide range of nanotechnology areas. Provides an overview of the rapidly growing and developing field of nanotechnology Focuses on key essentials, and structured around a robust anatomy of the subject Brings together the principles, theory, and practice of nanotechnology, giving a broad, yet authoritative, introduction to the possibilities and limitations of this exciting and rapidly developing field
Philosophy and Ethics
John Wiley & Sons
This book comprehensively reviews the considerations of nanotechnology elaborated in philosophy, ethics, and the social sciences and systematizes and develops them further. It focuses on the issues of ethical responsibility regarding chances and risks of nanotechnology and its possible applications in the fields of synthetic nanoparticles, synthetic biology, animal enhancement, and human enhancement. The book has been, thus, put in the context of the keywords "responsible innovation" and "reflective sciences," which have been central concepts in the debates about the relationship between science and society for the last few years.
How Nanotechnology Will Change the Future of Your Business William Andrew
Several books and many papers have been published during the last decade on the design and the use of new nanomaterials in medicine and technology, which describe major concepts of nanotechnology. Meanwhile, a new promising type of nanomaterials-bacteriophages-emerged recently as a result of the evolution of phage display technique. Bacteriophages have a unique feature - completely the opposite of other nanomaterials - their structure and function are encrypted in their genomic DNA, which can be intentionally modified or even rewritten using routine genetic engineering techniques. In particular, a paradigm of landscape phage with multivalently displayed foreign peptides evolved, which allows constructing phage with unique surface architectures and emerged properties. Recently, phage, as a new kind of nanomaterials attracted the attention of specialists working in

peripheral, and even very diverse areas from genetics and molecular biology, such as pharmaceutical science, material science, microelectronics, biosensors, detection, environmental sciences, etc. Penetration of the phage technology into these new disciplines required the development of a new instructive concept, which resulted in this publication. This comprehensive book, of value to researchers as well as scientists, introduces readers into this hot new area of phage nanobiotechnology. It summarises the existing data on the phage nanomaterials and discusses their use in different areas of medicine, science and technology. With contributions by top level experts and pioneers in phage display, the major goal of this book is to bring the phage display technique closer to specialists in these diverse areas of medicine, science and technology, where phage-derived nanomaterials can be most beneficial.

The New Frontiers of Organic and Composite Nanotechnology Elsevier Nanotechnology is often described as an emerging technology - one that not only holds promise for society, but also is capable of revolutionizing our approaches to common problems. Nanotechnology is not a completely new field; however, it is only recently that discoveries in this field have advanced so far as to warrant examination of their impact upon the world around us. Nanotechnology has direct beneficial applications for medicine and the environment, but like all technologies it may have unintended effects that can adversely impact the environment, both within the human body and within the natural ecosystem. How does the science move forward in a way that best protects the public and gets health and safety right the first time? Implications of Nanotechnology for Environmental Health Research identifies the areas in which additional research is needed and the processes by which changes can occur.

Nanobiotechnology in Bioformulations IGI Global The New Frontiers of Organic and Composite Nanotechnology is an attempt to illustrate current status of modern nanotechnology. The book is divided into 3 main sections, introduction and conclusion. The introduction describes general questions of the problem and main lines of the research activities. In the first section methods of the nanostructures construction are described. Second section is dedicated to the Structure-property relationship. Special attention is paid to the description of the most powerful experimental methods and tools used in nanotechnology, such as probe microscopies, spectroscopied, and scattering methods, including the utilization of synchrotron radiation facilities. The third section describes the applications of nanotechnology in electronics, biotechnology and diagnostics. Conclusion part presents a summary of the status of works in this area and gives some perspectives of the further development. Reference to practically all original works with essential results, that resulted in the development of nanotechnology Coherent group of well-known authors in the field of nanotechnology Book spans topics applicable for both the didactic and

research
The Nanotechnology Revolution CRC Press This book recalls the basics required for an understanding of the nanoworld (quantum physics, molecular biology, micro and nanoelectronics) and gives examples of applications in various fields: materials, energy, devices, data management and life sciences. It is clearly shown how the nanoworld is at the crossing point of knowledge and innovation. Written by an expert who spent a large part of his professional life in the field, the title also gives a general insight into the evolution of nanosciences and nanotechnologies. The reader is thus provided with an introduction to this complex area with different "tracks" for further personal comprehension and reflection. This guided and illustrated tour also reveals the importance of the nanoworld in everyday life.
Nanotechnology National Academies Press This book discusses the fundamental concepts of the green synthesis of nanoparticles and presents the latest advances in this emerging field. Providing a comprehensive overview of developments related to nanoparticle synthesis using fungi, algae, bryophytes, pteridophytes, gymnosperms, monocotyledons, dicotyledonous (angiosperms) and animal systems, it also explores techniques for the characterization of these nanoparticles. Lastly, it reviews the applications and toxicity of biologically synthesized green nanoparticles. Given its scope, it is a valuable resource for students, researchers and policymakers working in the field of nanobiotechnology and nanoscience.