Charged Diphenylalanine Nanotubes And Controlled

BEATRICE VILLEGAS

Handbook of Research on Nano-Strategies for Combatting Antimicrobial Resistance and Cancer CRC Press
This book provides an introduction to nanogenerators, which are the newest technological advancement in the field of energy conversion. Chapters discuss the physics behind energy conversion using detailed research results and experimental techniques for fabricating triboelectric and piezoelectric devices, as well as nanogenerators in the field of biomedicine and the construction of stretchable electrodes for wearable devices.
Emerging Nanotechnologies in Dentistry Elsevier
The self-organization of bionanostructures into well-defined functional machineries found in nature has been a priceless source of ideas for researchers. The molecules of life, proteins, DNA, RNA, etc., as well as the structures and forms that these molecules assume serve as rich sources of ideas for scientists or engineers who are interested in developing bio-inspired materials for innovations in biomedical fields. In nature, molecular self-assembly is a process by which complex three-dimensional structures with well-defined functions are constructed, starting from simple building blocks such as proteins and peptides. This book introduces readers to the theory and mechanisms of peptide self-assembly processes. The authors present the more common peptide self-assembled building blocks and discuss how researchers from different fields can apply self-assembling principles to bionanotechnology applications. The advantages and challenges are mentioned together with examples that reflect the state of the art of the use of self-assembled peptide building blocks in nanotechnology.
Peptide Bionanomaterials Springer Science & Business Media
This 21st Century Nanoscience Handbook will be the most comprehensive, up-to-date large reference work for the field of nanoscience. Handbook of Nanophysics by the same editor published in the fall of 2010 and was embraced as the first comprehensive reference to consider both fundamental and applied aspects of nanophysics. This follow-up project has been conceived as a necessary expansion and full update that considers the significant advances made in the field since 2010. It goes well beyond the physics as warranted by recent developments in the field. This seventh volume in a ten-volume set covers bioinspired systems and methods. Key Features: Provides the most comprehensive, up-to-date large reference work for the field. Chapters written by international experts in the field. Emphasises presentation and real results and applications. This handbook distinguishes itself from other works by its breadth of coverage, readability and timely topics. The intended readership is very broad, from students and instructors to engineers, physicists, chemists, biologists, biomedical researchers, industry professionals, governmental scientists, and others whose work is impacted by nanotechnology. It will be an indispensable resource in academic, government, and industry libraries worldwide. The fields impacted by nanophysics extend from materials science and engineering to biotechnology, biomedical engineering, medicine, electrical engineering, pharmaceutical science, computer technology, aerospace engineering, mechanical engineering, food science, and beyond.
Chiral Nanomaterials Springer Science & Business Media

Electrospun Nanofibers covers advances in the electrospinning process including characterization, testing and modeling of electrospun nanofibers, and electrospinning for particular fiber types and applications. Electrospun Nanofibers offers systematic and comprehensive coverage for academic researchers, industry professionals, and postgraduate students working in the field of fiber science. Electrospinning is the most commercially successful process for the production of nanofibers and rising demand is driving research and development in this field. Rapid progress is being made both in terms of the electrospinning process and in the production of nanofibers with superior chemical and physical properties. Electrospinning is becoming more efficient and more specialized in order to produce particular fiber types such as bicomponent and composite fibers, patterned and 3D nanofibers, carbon nanofibers and nanotubes, and nanofibers derived from chitosan. - Provides systematic and comprehensive coverage of the manufacture, properties, and applications of nanofibers - Covers recent developments in nanofibers materials including electrospinning of bicomponent, chitosan, carbon, and conductive fibers - Brings together expertise from academia and industry to provide comprehensive, up-to-date information on nanofiber research and development - Offers systematic and comprehensive coverage for academic researchers, industry professionals, and postgraduate students working in the field of fiber science

Supramolecular Nanotechnology IGI Global

Materials Nanoarchitectonics: From Integrated Molecular Systems to Advanced Devices provides the latest information on the design and molecular manipulation of self-organized hierarchically structured systems using tailor-made nanoscale materials as structural and functional units. The book is organized into three main sections that focus on molecular design of building blocks and hybrid materials, formation of nanostructures, and applications and devices. Bringing together emerging materials, synthetic aspects, nanostructure strategies, and applications, the book aims to support further progress, by offering different perspectives and a strong interdisciplinary approach to this rapidly growing area of innovation. This is an extremely valuable resource for researchers, advanced students, and scientists in industry, with an interest in nanoarchitectonics, nanostructures, and nanomaterials, or across the areas of nanotechnology, chemistry, surface science, polymer science, electrical engineering, physics, chemical engineering, and materials science. - Offers a nanoarchitectonic perspective on emerging fields, such as metal-organic frameworks, porous polymer materials, or biomimetic nanostructures - Discusses different approaches to utilizing "soft chemistry" as a source for hierarchically organized materials - Offers an interdisciplinary approach to the design and construction of integrated chemical nano systems - Discusses novel approaches towards the creation of complex multiscale architectures

21st Century Nanoscience – A Handbook CRC Press

This volume of the Subcellular Biochemistry series is the result of the long-standing research interest of the editor in the molecular mechanism underlying Alzheimer’s disease and other amyloid diseases, indicated also by the earlier book in the series (Volume 38), devoted to Alzheimer’s disease. The broad coverage within the present amyloidogenesis book represents an attempt to collate current knowledge relating to the proteins and peptides involved in most of the known amyloid diseases, together with some amyloid/fibril-forming proteins and peptides that are not involved in diseases. Thus, the range of topics included is comprehensive and furthermore it was thought appropriate to include both basic science and clinical presentation of the subjects under discussion.

Functionalized Nanocarriers for Theranostics William Andrew

Nanoscale structures and materials have been explored in many biological applications because of their novel and impressive physical and chemical properties. Such properties allow remarkable opportunities to study and interact with complex biological processes. This book analyses the state of the art of piezoelectric nanomaterials and introduces their applications in the biomedical field. Despite their impressive potentials, piezoelectric materials have not yet received significant attention for bio-applications. This book shows that the exploitation of piezoelectric nanoparticles in nanomedicine is possible and realistic, and their impressive physical properties can be useful for several applications, ranging from sensors and transducers for the detection of biomolecules to “sensible” substrates for tissue engineering or cell stimulation.

Peptide Materials Elsevier

This book is the ultimate assembly of recent research activities on molecular architectonics and nanoarchitectonics by authors who are worldwide experts. The book proposes new ways of creating functional materials at the nano level using the concepts of molecular architectonics and nanoarchitectonics, which are expected to be the next-generation approaches beyond conventional nanotechnology. All the contents are categorized by types of materials, organic materials, biomaterials, and nanomaterials. For that reason, non-specialists including graduate and undergraduate students can start reading the book from any points they would like. Cutting-edge trends in nanotechnology and material sciences are easily visible in the contents of the book, which is highly useful for both students and experimental materials scientists.

Piezoelectric Nanomaterials for Biomedical Applications CRC Press

Noble metal nanoparticles have attracted enormous scientific and technological interest because of their unique optical properties, which are related to surface plasmon resonances. The interest in nanosized metal particles dates back to ancient societies, when metals were used in various forms as decorative elements. From the famous Lycurgus cup, made by the Romans in the 4th century AD, through thousands of stained glasses in churches and cathedrals all over medieval Europe, bright-yellow, green, or red colors have been obtained by a touch of metallic additions during glass blowing. This peculiar interaction of light with nanometals can be widely tuned through the morphology and assembly of nanoparticles, thereby expanding the range of potential applications, from energy and information storage to biomedicine, including novel diagnostic and therapeutic methods. This book compiles recent developments that clearly illustrate the state of the art in this cutting-edge research field. It comprises different review articles written by the teams of Prof. Luis Liz-Marzán, an international leader in chemical nanotechnology who has made seminal contributions to the use of colloid chemistry methods to understand and tailor the growth of metal particles at the nanoscale. Apart from synthesis, the book also describes in detail the plasmonic properties of nanomaterials and illustrates some representative applications. This book will appeal to anyone involved in nanotechnology, nanocrystal growth, nanoplasmonics, and surface-enhanced spectroscopies.

Supramolecular Chemistry of Biomimetic Systems Elsevier

Nanotechnology and the future of Dentistry -- Nanoparticles for Dental Materials: Synthesis, analysis and Applications -- Antimicrobial nanoparticles in Restorative Composites -- Nanotechnology in operative dentistry: a perspective approach of history, mechanical behavior and clinical application -- Nanotechnology and dental implants -- Titanium surface modification techniques for dental implants - From microscale to nanoscale -- Titanium nanotubes as carriers of osteogenic growth factors and antibacterial drugs for applications in dental implantology -- Cellular responses to nanoscale surface modifications of titanium implants for dentistry and bone tissue engineering applications -- Corrosion Resistance of Ti6Al4V with Nanostructured TiO2 Coatings -- Multiwalled Carbon Nanotubes/Hydroxyapatite Nanoparticles incorporated GTR membranes -- Fabrication of PEG hydrogel micropatterns by Soft-photolithography and PEG hydrogel as Guided Bone Regeneration membrane in dental implantology -- Na ...

Protein Aggregation and Fibrillogenesis in Cerebral and Systemic Amyloid Disease Springer Nature

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Fibrous Assemblies: From Synthesis and Nanostructure Characterization to Materials Development and Application World Scientific

Synthesis of Polypeptides by Ring-Opening Polymerization of α-Amino Acid N-Carboxyanhydrides, by Jianjun Cheng and Timothy J. Deming.- Peptide Synthesis and Self-Assembly, by S. Maude, L. R. Tai, R. P. W. Davies, B. Liu, S. A. Harris, P. J. Kocienski and A. Aggeli.- Elastomeric Polypeptides, by Mark B. van Eldijk, Christopher L. McGann, Kristi L. Kiick andJan C. M. van Hest.- Self-Assembled Polypeptide and Polypeptide Hybrid Vesicles: From Synthesis to Application, by Uh-Joo Choe, Victor Z. Sun, James-Kevin Y. Tan and Daniel T. Kamei.- Peptide-Based and Polypeptide-Based Hydrogels for Drug Delivery and Tissue Engineering, by Aysegul Altunbas and Darrin J. Pochan.-

Nanotechnology in Drug Delivery CRC Press

Protein Design and Structure, Volume 130 in the Advances in Protein Chemistry and Structural Biology series, highlights new advances in the field, with this new volume presenting interesting chapters. Each chapter is written by an international board of authors. - Provides the authority and expertise of leading contributors from an international board of authors - Presents the latest release in the Advances in Protein Chemistry and Structural Biology series - Includes the latest information on protein design and structure

Materials Nanoarchitectonics Academic Press

This book encompasses the fundamental concepts of Nanochemistry that involve the self-assemblage of nanostructures, surface stabilization, and functionalization of nanoparticles. It’s a review of the work of world-renowned scientists and is the first of its kind that gives a detailed fundamental understanding of physical, chemical, and biological methods of nanoparticle synthesis. There is a comprehension of different characterization techniques of nanoparticles. This book, for the first time, explains applications of such nanochemicals in nanomedicine, nanoimmunomedicine, lab-on-a-chip, organ-on-a-chip, bioimplants, cyborgs, hydrogen storage, electrochemical splitting of water, and construction industries.

Protein Design and Structure CRC Press

The reader will be introduced to various aspects of the fundamentals of nanotechnology based drug delivery systems and the application of these systems for the delivery of small molecules, proteins, peptides, oligonucleotides and genes. How these systems overcome challenges offered by biological barriers to drug absorption and drug targeting will also be described.

Peptide-based Biomaterials CRC Press

Nanotechnology has received tremendous interest over the last decade, not only from the scientific community but also from a business perspective and from the general public. Although nanotechnology is still at the largely unexplored frontier of science, it has the potential for extremely exciting technological innovations that will have an enormous impact on areas as diverse as information technology, medicine, energy supply and probably many others. The miniturization of devices and structures will impact the speed of devices and information storage capacity. More importantly, though, nanotechnology should lead to completely new functional devices as nanostructures have fundamentally different physical properties that are governed by quantum effects. When nanometer sized features are fabricated in materials that are currently used in electronic, magnetic, and optical applications, quantum behavior will lead to a set of unprecedented properties. The interactions of nanostructures with biological materials are largely unexplored. Future work in this direction should yield enabling technologies that allows the study and direct manipulation of biological processes at the (sub) cellular level.

Self-Assembled Peptide Nanostructures Springer Science & Business Media

Design, Principle and Application of Self-Assembled Nanobiomaterials in Biology and Medicine discusses recent advances in science and technology using nanoscale units that show the novel concept of combining nanotechnology with various research disciplines within both the biomedical and medicine fields. Self-assembly of molecules, macromolecules, and polymers is a fascinating strategy for the construction of various desired nanofabrication in chemistry, biology, and medicine for advanced applications. It has a number of advantages: (1) It is involving atomic-level modification of molecular structure using bond formation advanced techniques of synthetic chemistry. (2) It draws from the enormous wealth of examples in biology for the development of complex, functional structures. (3) It can incorporate biological structures directly as components in the final systems. (4) It requires that the target self-assembled structures be thermodynamically most stable with relatively defect-free and self-healing. In this book, we cover the various emerging self-assembled nanostructured objects including molecular machines, nano-cars molecular rotors, nanoparticles, nanosheets, nanotubes, nanowires, nano-flakes, nano-cubes, nano-disks, nanorings, DNA origami, transmembrane channels, and vesicles. These self-assembled materials are used for sensing, drug delivery, molecular recognition, tissue engineering energy generation, and molecular tuning. - Provides a basic understanding of how to design, and implement various self-assembled nanobiomaterials - Covers principles implemented in the constructions of novel nanostructured materials - Offers many applications of self-assemblies in fluorescent biological labels, drug and gene delivery, bio-detection of pathogens, detection of proteins, probing of DNA structure, tissue engineering, and many more

Handbook of Nanophysics John Wiley & Sons

This book investigates the latest developments in supramolecular assembly systems for mimicking biological structures and functions. Consisting of 14 chapters, it covers various assembly systems, such as polysaccharides, peptides, proteins, biopolymers, natural materials and various hybrid systems. Further, it focuses on different types of supramolecular systems with particular functions or structures that are relevant to living systems. A number of modern techniques used to study the supramolecular systems, such as total internal reflection fluorescence microscopy (TIRFM) and

two-photon confocal microscopy, are also introduced in detail. Unlike conventional books on supramolecular assemblies, this book highlights the functions of the assembly systems, particularly their biological applications. As such, it offers a valuable resource for experienced researchers, as well as graduate students working in the field of supramolecular chemistry and biomimetic systems.

Nanogenerators Academic Press

Solid-binding peptides have been used increasingly as molecular building blocks in nanobiotechnology as they can direct the assembly and functionalisation of a diverse range of materials and have the ability to regulate the synthesis of nanoparticles and complex nanostructures. Nanostructured materials such as β-sheet fibril-forming peptides and α-helical coiled coil systems have displayed many useful properties including stimulus-responsiveness, modularity and multi-functionality, providing potential technological applications in tissue engineering, antimicrobials, drug delivery and nanoscale electronics. The current situation with respect to self-assembling peptides and bioactive matrices for regenerative medicine are reviewed, as well as peptide-target modeling and an examination of future prospects for peptides in these areas.

Biological and Bio-inspired Nanomaterials Frontiers Media SA

Self-assembled nanostructures based on peptides and proteins have been investigated and presented as biomaterials with an impressive potential for a broad range of applications such as microfabrication, biosensing platforms, drug delivery systems, bioelectronics and tissue reparation. Through self-assembly peptides can give rise to a range of well-defined nanostructures such as nanotubes, nanofibers, nanoparticles, nanotapes, gels and nanorods. However, there are challenges when trying to integrate these biological nanostructures in the development of sensing devices or drug-delivery systems – challenges such as controlling the size during synthesis, the stability in liquid environments and manipulation. In "Micro and Nanofabrication Using Self-assembled Biological Nanostructures" the options and challenges when using self-assembled peptide nanostructures in micro and nanofabrication are discussed. The publication covers different ways to manipulate, deposit and immobilize on specific locations these biological nanostructures in order to use them in the fabrication of new structures or as part of biosensing platforms. Examples where researchers used biological nanostructures for those types of applications are provided. Finally, future applications are discussed as well as parameters to accelerate and expand the use of these biological building blocks in nano- and micro-fabrication processes by taking advantage of their impressive properties such as low-cost and short synthesis time.

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