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Second Edition - Volume 1

 Springer

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Qun Wang



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Porous Silicon for Biomedical Applications Hélder A. Santos, 2021-10-23 Porous Silicon for Biomedical Applications Second Edition provides an updated guide to the diverse range of biomedical applications of porous silicon from biosensing and imaging to tissue engineering and cancer therapy Across biomedical disciplines there is an ongoing search for biomaterials that are biocompatible modifiable structurally sound and versatile Porous silicon possesses a range of properties that make it ideal for a variety of biomedical applications such as controllable geometry tunable nanoporous structure large pore volume high specific surface area and versatile surface chemistry This book provides a fully updated and detailed overview of the range of biomedical applications for porous silicon Part One offers the reader a helpful insight into the fundamentals and beneficial properties of porous silicon including thermal properties and stabilization photochemical and nonthermal chemical modification protein modification and biocompatibility The book then builds on the systematic detailing of each biomedical application using porous silicon from bioimaging and sensing to drug delivery and tissue engineering This new edition also includes new chapters on in vivo assessment of porous silicon photodynamic and photothermal therapy micro and nanoneedles Raman imaging cancer immunotherapy and more With its acclaimed editor and international team of expert contributors Porous Silicon for Biomedical Applications Second Edition is a technical resource and indispensable guide for all those involved in the research development and application of porous silicon and other biomaterials while providing a comprehensive introduction for students and academics interested in this field Reviews the fundamental aspects of porous silicon including the fabrication and unique properties of this useful material Discusses a broad selection of biomedical applications offering a detailed insight into the benefits of porous silicon in both research and clinical settings Includes fully updated content from the previous edition as well as brand new chapters covering topics such as porous silicon micro and nanoneedles and cancer immunotherapy

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Porous Silicon: From Formation to Applications: Optoelectronics, Microelectronics, and Energy Technology Applications, Volume Three Ghenadii Korotcenkov, 2016-01-06 Porous silicon is rapidly attracting increasing interest from various fields including optoelectronics microelectronics photonics medicine sensor and energy technologies chemistry and biosensing This nanostructured and biodegradable material has a range of unique properties that make it ideal for many applications This book the third of a *Advances in Porous Semiconductor Research* Thierry Djenizian, Nicolas Hans Voelcker, 2020-03-30 **Nanoporous Materials and Their Applications** Enrique Rodríguez-Castellón, Sibeles Pergher, 2019-05-27 This book is a special collection of articles dedicated to the preparation and characterization of nanoporous materials such as zeolitic type materials mesoporous silica SBA 15 MCM 41 and KIT 6 mesoporous metallic oxides metal organic framework structures MOFs and pillared clays and their applications in adsorption catalysis and separation processes This book presents a global vision of researchers from international universities research centers and industries working with nanoporous materials and shares the latest results on the synthesis and characterization of such materials which have given rise to the special interest in their applications in basic and industrial processes Functional Nanoporous Materials Christian Weinberger, Michael Tiemann, 2020-06-23 With pore sizes up to 100 nm the term nanoporous covers a wide range of material classes A broad field of applications has arisen from the diversity of unique structures and properties of nanoporous materials Recent research spans the range from fundamental studies of the behavior of atoms and molecules in confined space creative synthetic pathways for novel materials to applications in high performance technologies This Special Issue collects current studies about the progress in the development characterization and application of nanoporous materials including but not restricted to mesoporous silica carbon and metal oxides porous coordination

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