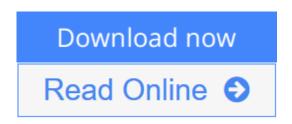


Biomineralization and Biomaterials: Fundamentals and Applications

By Conrado Aparicio, Maria Pau Ginebra



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Biomineralization is a natural process by which living organisms form minerals in association with organic biostructures to form hybrid biological materials such as bone, enamel, dentine and nacre among others. Scientists have researched the fundamentals of these processes and the unique structures and properties of the resulting mineralized tissues. Inspired by them, new biomaterials for tissue engineering and regenerative medicine have been developed in recent years.

Biomineralization and biomaterials: fundamentals and applications looks at the characteristics of these essential processes and natural materials and describes strategies and technologies to biomimetically design and produce biomaterials with improved biological performance.

- Provides a thorough overview of the biomineralization process
- Presents the most recent information on the natural process by which crystals in tissues form into inorganic structures such as bone, teeth, and other natural mineralized tissues
- Investigates methods for improving mineralization
- Explores new techniques that will help improve the biomimetic process

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Editorial Review

From the Back Cover

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Part One explores the fundamentals of biomineralization with an emphasis on describing and discussing the new theories about the process of mineralization of hard tissues. Part Two focuses on the wide range of biomaterials --ceramics, hydrogels, metals, collagen, etc. that have been mineralized using inspiration from our fundamental knowledge on biomineralisation.

Dr Conrado Aparicio is Associate Professor at the University of Minnesota, USA with a research focus on the design, modification and characterization –physical-chemical, mechanical, and biological of biomaterial surfaces. His areas of research include biomineralisation of advanced bio-inspired hydrogels and functionalized surfaces with biomolecules.

Dr Maria-Pau Ginebra is Professor at the Technichal University of Catalonia, Spain with a research focus on designing calcium phosphates and developing biomaterials for bone regeneration and drug delivery. Her research contributions include characterisation of low-temperature calcium phosphates that mimic the mineral component of bone, including cements and foams, incorporating synthetic or natural biologically-active molecules.

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