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Titolo	Biomimetics : Bridging the Gap // edited by Ziyad S. Haidar
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Descrizione fisica	1 online resource (172 pages)
Collana	Biomedical engineering
Disciplina	610.28
Soggetti	Biomimetics
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Livello bibliografico	Monografia
Nota di contenuto	1. Introductory Chapter: bioMimetics for HealthCare - Innovations Inspired by Nature -- 2. Perspective Chapter: Biomimetics - Bio-Inspired Tissular Engineering for Regenerative Oral, Dental and Cranio-Maxillo-Facial Solutions -- 3. Perspective Chapter: Design and Characterization of Natural and Synthetic Soft Polymeric Materials with Biomimetic 3D Microarchitecture for Tissue Engineering and Medical Applications -- 4. Novel Composites for Bone Tissue Engineering -- 5. Bio-Simulation of the Induction of Forced Resonance Mechanical Oscillations to Virus Particles by Non-Ionizing Electromagnetic Radiation: Prospects as an Anti-Virus Modality -- 6. Assessment of the Addition of Fluorapatite in Hydroxyapatite Coatings: Implementation Prosthetics/Bone in Vivo -- 7. Perspective Chapter: Viscoelastic Mechanical Equivalent Models.
Sommario/riassunto	Biomimetics is an innovative form of technology that emulates, imitates, or mimics nature in order to improve human lives by creating desirable solutions. It is the study of nature and natural phenomena in an attempt to understand its laws, principles, and underlying mechanisms, to obtain ideas from nature, and to apply concepts that may benefit science, engineering, pharmacy, dentistry, and medicine. Smart/intelligent biomaterials for tissue engineering and regenerative medicine are fine examples of biomimetics. Yet, biomimicry can go above and beyond the simplistic inspiration and use of natural properties as the basis for the innovation of new products. It bridges the gap between the lab and the industry via the intra-disciplinary design and formulation of functional solutions combining knowledge,

methods, techniques, and advances in the fields of chemistry, biology, architecture, engineering, medicine, pharmaceuticals, dentistry, and biomedical engineering. Three-dimensional printing, self-healing nanocoatings, hydrogels, bio-mechanical carbon nanotubes, stimuli-sensitive and -responsive cell/drug delivery systems, and robotics are some of the topics covered in this book. In a simplified style, the book provides interested readers with a practical reference approaching biomimetics and biomimicry from a realistic and translational perspective, discussing problems and offering solutions and including studies ranging from basics to the clinic to scale-up and industrial or go-to-market obstacles. Through *Biomimetics - Bridging the Gap*, you'll quickly discover that biomimicry is more than just looking at a silkworm (silk is one of the first examples in history) or at the shape of a flower, a damselfly, or even a humpback whale and becoming re-inspired. Biomimicry is an intra-/multi-disciplinary methodology and technological-oriented approach presently employed by the most innovative organizations on this planet.
