Engineered Biomimicry

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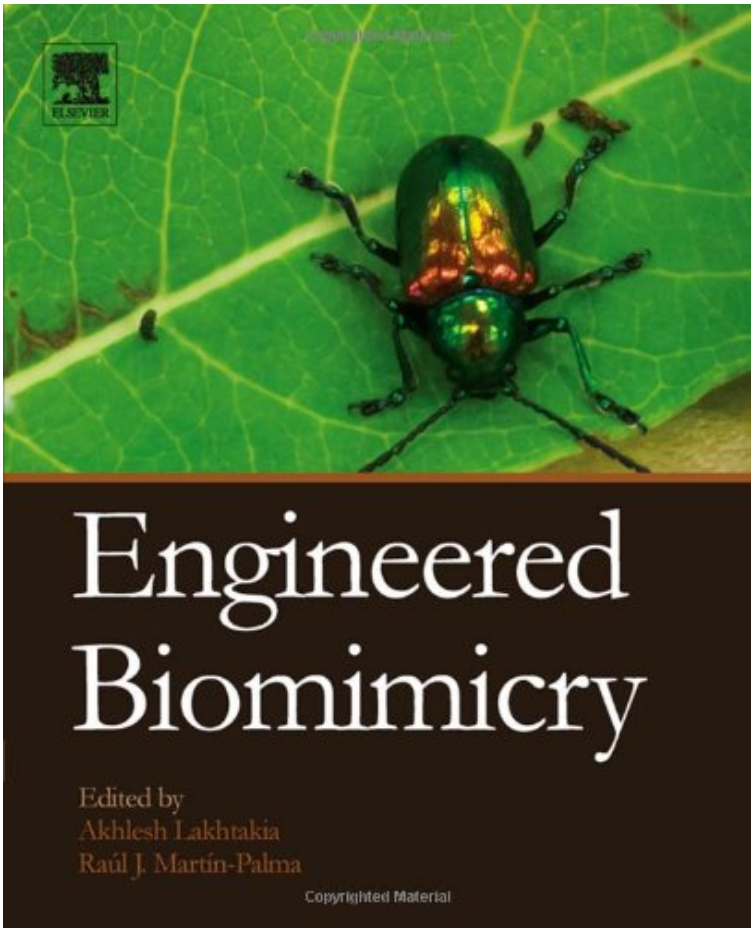

#645088 in Books Elsevier 2013-06-19Ingredients: Example IngredientsOriginal language:EnglishPDF # 1 9.75 x 8.00 x 1.25l, 2.61 #File Name: 0124159958496 pages | File size: 58.Mb

From Elsevier : Engineered Biomimicry before purchasing it in order to gage whether or not it would be worth my time, and all praised Engineered Biomimicry:

3 of 3 people found the following review helpful. Great Text for A 300 level class!By circa24This book is an excellent text on biomimicry, but keep in mind it is aimed at a 300 level or higher, and it assumes the reader is familiar with a sophistication in math that includes series, calculus, and differential equations. Assumes a solid grounding in basic physics too. Excellent for advanced biology, engineering, and physics students, but not for the beginner.0 of 0 people found the following review helpful. Hubby loves itBy CustomerHubby loves it0 of 0 people found the following review helpful. A worthwhile read for engineers interested in the subjectBy E.The most detailed, and therefore best, book presently available on the subject. A fine review of the current state of the art.

Engineered Biomimicry covers a broad range of research topics in the emerging discipline of biomimicry. Biologically inspired science and technology, using the principles of math and physics, has led to the development of products as

ubiquitous as Velcro (modeled after the spiny hooks on plant seeds and fruits). Readers will learn to take ideas and concepts like this from nature, implement them in research, and understand and explain diverse phenomena and their related functions. From bioinspired computing and medical products to biomimetic applications like artificial muscles, MEMS, textiles and vision sensors, Engineered Biomimicry explores a wide range of technologies informed by living natural systems. Engineered Biomimicry helps physicists, engineers and material scientists seek solutions in nature to the most pressing technical problems of our times, while providing a solid understanding of the important role of biophysics. Some physical applications include adhesion superhydrophobicity and self-cleaning, structural coloration, photonic devices, biomaterials and composite materials, sensor systems, robotics and locomotion, and ultra-lightweight structures.Explores biomimicry, a fast-growing, cross-disciplinary field in which researchers study biological activities in nature to make critical advancements in science and engineeringIntroduces bioinspiration, biomimetics, and bioreplication, and provides biological background and practical applications for each Cutting-edge topics include bio-inspired robotics, microflyers, surface modification and more

"Chemical, electrical, and mechanical engineers explain the basic process of mimicking biological systems to achieve certain goals, and illustrate them with some recent examples. Among their topics are noise exploitation and adaptation in neuromorphic sensors, biomimetic robotics, surface modification for bio-compatibility, biomimetic anti-reflection surfaces"--Reference Research Book News, October 2013From the Back CoverEngineered Biomimicry Living organisms provide inspiration for innovations in many different arenas of science and engineering. Engineered Biomimicry provides exposure to a broad range of research topics within an evolving field comprising bioinspiration, biomimetics, and bioreplication. The reader will learn to grasp concepts from nature, implement them into his/her research, and gain the ability to understand and reproduce a diversity of natural outcomes, functionalities, and devices. Like any mimicked organism, the field of engineered biomimicry is highly cross-disciplinary and embraces physics, materials science, nanotechnology, biology, chemistry, computing and control, design integration, optimization, multifunctionality, and economics. Engineered Biomimicry will help the reader seek solutions in nature to address the most pressing technological problems of our times. Among the research topics covered are adhesion, superhydrophobicity and self-cleaning, structural color, biomaterials and composite materials, sensor systems, robotics and locomotion, and ultra-light-weight structures. As the only technical reference that covers the broad scope of the field of engineered biomimicry through chapters authored by visionary and award-winning research leaders, this book is a major resource that presents physical and chemical mechanisms underlying biological activities and devices and introduces appropriate mathematical tools. KEY FEATURES Explores a fast-growing, cross-disciplinary field in which researchers study biological activities and devices to develop critical advancements in science and engineering Introduces bioinspiration, biomimetics, and bioreplication to reproduce natural outcomes, functionalities, and devices, respectively Provides physical, chemical, and biological backgrounds for practical applications of engineered biomimicry About the editors: Akhlesh Lakhtakia is the Charles Godfrey Binder (Endowed) Professor of Engineering Science and Mechanics at Pennsylvania State University. He has published 725 papers and 5 books, and edited 11 research books and 14 conference proceedings. He is the founding Editor in Chief of the Journal of Nanophotonics (SPIE) and a Fellow of the American Association for the Advancement of Sciences, American Physical Society, Optical Society of America, Institute of Physics (UK), and SPIE. Among his many awards is the 2010 SPIE Technical Achievement Award. Ral J. Martn-Palma is a Professor of Applied Physics at Universidad Autnoma de Madrid, Spain. He has published over 100 papers and is co-author of two books in nanoscience and nanotechnology. A Fellow of SPIE, he is also an Associate Editor of the Journal of Nanophotonics (SPIE). He has received several awards on his research on nanoscience. Shelving code: Applied PhysicsAbout the AuthorRal Jos Martn-Palma is Adjunct Professor of Materials Science and Engineering at Universidad Autonoma de Madrid, Spain. His research interests include work in nanostructures and nanotechnology, optics and photonics.