



Microcosmos: Biological micro- and nanostructures as a source for biomimetics

Abstract

Plant surfaces that let raindrops roll off, belly scales on snakes that optimize friction for locomotion, iridescent colors of butterfly wings that do not fade, gecko feet that stick without glue. This sounds like a kind of magic at first, but these biological surfaces have evolved to develop highly functional micro and nano structures and optimized them over millions of years. Modern highresolution microscopic methods enable precise structural analysis of these surfaces and today's nanotechnology offers a way to technically imitate such structures. In this lecture, the above-mentioned natural phenomena are presented through a journey into the microcosmos and their potential application in modern technology is discussed.

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Stanislav Gorb is professor of zoology at the University of Kiel. His research focuses on morphology, structure, biomechanics, physiology, and evolution of surface-related functional systems in animals, as well as the development of biologically inspired technological surfaces and systems. Gorb has authored four books, more than 200 papers in peer-reviewed journals, and four patents. His awards include Science Award of the Donors' Association for the Promotion of Science and Humanities in Germany (Stifterverbandpreis für die Deutsche Wissenschaft), International Forum Design Gold Award and Materialica "Best of" Award. He is member of Academy of the Science and Literature Mainz, and of the National Academy of Sciences Leopoldina.