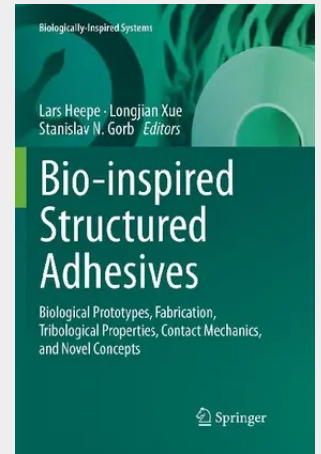


Bio-inspired Structured Adhesives

This book deals with the adhesion, friction and contact mechanics of living organisms. Further, it presents the remarkable adhesive abilities of the living organisms which inspired the design of novel micro- and nanostructured adhesives that can be used in various applications, such as climbing robots, reusable tapes, and biomedical bandages. The technologies for both the synthesis and construction of bio-inspired adhesive micro- and nanostructures, as well as their performance, are discussed in detail.

Representatives of several animal groups, such as insects, spiders, tree frogs, and lizards, are able to walk on (and therefore attach to) tilted, vertical surfaces, and even ceilings in different environments. Studies have demonstrated that their highly specialized micro- and nanostructures, in combination with particular surface chemistries, are responsible for this impressive and reversible adhesion. These structures can maximize the formation of large effective contact area on surfaces of varying roughness and chemical composition under different environmental conditions.

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