



Engineered Biomimicry

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Engineered Biomimicry: Chapter 3. Biomimetic Hard Materials



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Materials such as for example bone, tooth, and seashells possess remarkable mixtures of properties despite the poor structural quality of their ingredients (brittle minerals and soft proteins). This staggered structure offers a universal method of arranging hard building blocks in nature and is also found in bone and teeth. Because of this, nacre is just about the model for bio-inspiration for novel structural materials. The framework of nacre is organized over many length scales, but the microscopic brick-and-mortar set up of the mineral tablets is certainly prominent. Nacre from mollusk shells can be 3,000 times tougher compared to the brittle mineral it is made of, a level of toughness amplification presently unmatched by any engineering materials. The fabrication of engineering materials that duplicate the framework, mechanics, and properties of organic nacre still present formidable issues to this day. Recent models possess demonstrated how an appealing combination of stiffness, strength, and toughness can be achieved through the staggered structure.



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