Bioinspired Optical Materials

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Natural systems are able to produce materials with unique properties. The formation of complex three-dimensional structures in nature is of fundamental importance to break the limits imposed by available construction elements. Structuring into ordered, and in especially into irregular or disordered systems is the key to define new roadmaps to innovative engineering materials. Natural materials and processes offer a tremendous pool of solutions to tailor and design a novel class of materials and surfaces also known as bioinspired materials, which have the potential to conquer complex multi-variant environments and applications. The idea of a bioinspired materials design is to employ biological processing solutions, design strategies and hierarchical structures for advanced engineering and the formation of functional materials. Examples for bioinspired processing among many others include the biotemplating approach or the use of natural polymers with self-assembly capabilities for the fabrication of optical materials.

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