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A Thematic Special Issue on

Bio-Inspired Materials: Discovery, Assembly, Functions, and Applications

Biology evolves complex pathways and mechanisms to fabricate materials that are able to function within specific environmental constraints. Bioinspired materials are artificial molecules, compounds, complexes, and super-/hyper-structured materials whose composition, properties and synthetic strategies are reversely engineered from functional components in natural biosystems. Since biology has developed a blueprint for translating atomic and nanoscale elements into mesoscale materials, a major focus of this interdisciplinary field is to uncover the secrets of these natural processes (e.g. the composition, synthetic pathways, self-assembly, hierarchical and spatial organization, and properties of biological materials), and apply this information to synthesize and assemble novel functional materials under a broader range of harsher conditions. Bioinspired concepts are increasingly adapted into materials and devices intended for a variety of practical applications, ranging from consumer industry, health care, energy conversion to military use. This special topics issue on Bioinspired Materials seeks to capture exciting research in this burgeoning field.

We invite researchers to contribute original research articles and review articles to this special issue. Potential research topics include, but are not limited to:

- DNA, peptide, and protein self-assembled nanostructures
- Light-harvesting photonic materials
- Glycomimetics and Immuno-materials
- Artificial Photosynthesis for solar fuel production
- Bio-mimetic complexes with hierarchical and spatial organization
- New pathways for bioinspired materials discovery that link scalable physical and chemical processes
- Mineralized/Hybrid Materials, Adaptive Hydrogel Materials
- Non-equilibrium self-assembly
- Structure and Mechanics of Biological Materials

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