Controlled Supramolecular Assemblies of Photoresponsive Molecular Amphiphiles at Multiple Length-Scale

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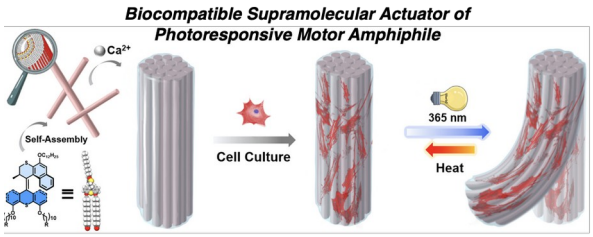
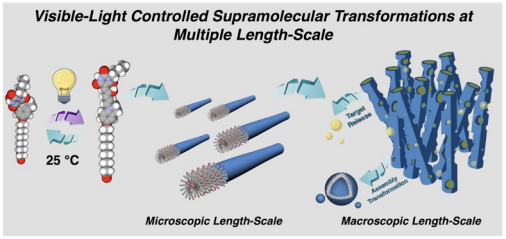
Advancements in supramolecular chemistry and soft materials design have enabled various supramolecular assembling systems responsive to external stimuli, *e.g.*, light, heat, pH, small organic molecules, and ions. Among the various external stimulations, light provides as a non-invasive method with high-spatial and high-temporal precision in controls of supramolecular assembling structures in both organic and aqueous media. Implementations of photoresponsive molecular functionalities, *e.g.*, azobenzenes, molecular motors, and stiff stilbenes, into molecular amphiphilic motifs, *i.e.*, photoresponsive molecular amphiphile, have constructed a series of synthetic photoresponsive supramolecular systems at air-water interface and in aqueous media, enabling controlled interfacial properties, reversible nanoscale assembly, and artificial muscle functions.[1a] Some of these photoresponsive molecular amphiphiles are capable to assemble across multiple length-scale, fabricating photoresponsive soft materials or supramolecular actuators at macroscopic length-scale.[1b,1c] However, the biocompatibility remains unsolved in the reported bio-damaging UV-light activated systems. We discuss our recent works on the biocompatible supramolecular actuator of photoresponsive motor amphiphile[2] and visible-light controlled supramolecular soft materials.[3]





References

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