

# Preface

The bottom-up synthesis of highly complex functional materials from simple modular blocks is an intriguing area of research. Driven by the chemistry of supramolecular assembly, modules which self-assemble into intricate structures have been described. These hierarchically assembled systems extend beyond the individual molecule and relies on noncovalent interactions in a directed self-assembly process. The intrinsic properties of the materials can be modified by exploiting the dynamic and specific unidirectional interactions among the building. This also allows the building of novel supramolecular structures such as hydrogels, micelles, and vesicles. These aqueous supramolecular networks belong to a novel category of soft biomaterials exhibiting attractive properties such as stimuli-responsiveness and self-healing properties derived from their dynamic behavior. These are important for a wide variety of emerging applications. In this book, the latest literature describing the formation of dynamic polymeric networks through host–guest complex formation will be summarized. These approaches carried out in the aqueous medium has unlocked a versatile toolbox for the design and fine-tuning of supramolecular self-assembled materials.

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For Biomedical Applications

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