Polymer-directed Synthesis of Functional Inorganic Nanoporous Materials with Tailored Structures and Morphologies

황종국†
아주대학교
(jongkook@ajou.ac.kr†)

Inorganic porous materials have attracted great attention in a wide range of applications such as energy storage and heterogeneous catalysis. To maximize their uses in various potential applications, synthesis of nanoporous materials with well-defined structures and morphologies is highly required. However, previously reported approaches either require complicated multi-step process or considerably lack ability to control the nano- and macrostructures. In this talk, I will present the strategies for polymer directed synthesis of functional inorganic nanoporous materials. I will introduce a novel synthesis platform that simultaneously control the meso- (pore size, structure and orientation) and macrostructures (macropores, particle morphologies) of various inorganic materials (e.g., aluminosilicate, metal oxide, carbon and metal-organic frameworks). The comprehensive design rules for combining mesoscale block copolymer microphase separation and macroscale spinodal decomposition will be presented.