

Synthesis of Polymer Microspheres Including Nano-shutter Structures

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In this present study, nanocomposite hydrogel particles with multiple layered structures have been created. To do this, first, hydrogel particles with thermo-responsive property were prepared by aqueous free radical precipitation polymerization. Using the obtained hydrogel particles as cores, seeded precipitation polymerization with various chemical species was investigated to obtain hydrogel particles with multiple layers. It is found that one-pot synthesis of multiple layered hydrogel particles was possible by modifying conventional precipitation polymerization for forming nanocomposite hydrogel particles with nano-scale shutters. The obtained particles were evaluated by dynamic light scattering, various microscopy including optical microscopy, scanning electron microscopy, and transmission electron microscopy.