

Synthesis and Characterization of pH-Sensitive Hydrogel Microparticles in Supercritical Carbon Dioxide

양주승, 류원선, 이상민¹, 김규식¹, 최문재¹, 김범상*
홍익대학교 화학공학과; ¹네비온 주식회사
(bskim@hongik.ac.kr*)

Supercritical carbon dioxide is considered as a useful alternative of toxic or volatile organic solvents for polymer synthesis and processing. The use of supercritical CO₂ (scCO₂) as a solvent for polymerization is attractive since a polymerization medium are less-toxic, non-flammable, chemically inert and naturally abundant than many other organic solvents, the product may be easily collected from solution after processing, and the polymerization rate is promoted as the diffusion of monomer in the polymer particle is enhanced. In this study, we synthesized pH-sensitive P(MAA-co-EGMA) hydrogel particles with micro- and nano-scales using supercritical carbon dioxide. In order to evaluate the feasibility of the P(MAA-co-EGMA) hydrogel microparticles for intelligent drug delivery applications, the pH-sensitive swelling and release behavior in response to the external pH changes was investigated.