

Nanoscale Graft Copolymer Templates Decorated by Silver Bromide Nanoparticles Arrays

박정태^{1,2}, 증효뢰^{1,2}, 고종관^{1,2}, 지원석^{1,2}, 김종학^{1,2,*}
¹연세대학교 화공생명공학과; ²수소연료전지 특성화 대학원
(jonghak@yonsei.ac.kr*)

A novel amphiphilic poly(4-vinyl pyridine)-co-poly(lauryl methacrylate) (P4VP-PLMA) statistical copolymer at 29:71 wt% was synthesized via free radical polymerization, as confirmed by nuclear magnetic resonance (¹H NMR). This self-assembled copolymer was used to template the in-situ growth of silver bromide (AgBr) nanoparticles, producing a solid-state nanocomposite film. Interestingly enough, AgBr nanoparticles with a bimodal size distribution were selectively grown within the copolymer matrix. Large nanoparticles with diameters of 30–40 nm were formed in the center of the hydrophilic P4VP spherical domains whereas smaller particles with diameters of 8–10 nm were decorated in hydrophobic PLMA domains. To the best of our knowledge, this is the first report on the nanoscale decoration of amphiphilic copolymer by AgBr nanoparticles with a size-selective, bimodal size distribution.