総 説 論 文

カテコール基含有ランダム・ブロック共重合体の合成とその応用展開

藪　　浩*

Synthesis of Catechol-Containing Random/Block Copolymers and Their Applications

Hiroshi YABU†

This review shows synthesis and application of catechol-containing random and block copolymers. We successfully synthesized amphiphilic random copolymers containing catechol moieties as side chains by free radical copolymerization of dopamine methacrylic amide and hydrophobic monomers including styrene. The synthesized amphiphilic copolymers firmly adhered onto inorganic materials and change surface properties from hydrophilic to hydrophobic. The polymer-immobilized inorganic nanoparticles can be dispersed in hydrophobic organic solvents and form porous hierarchic films after casting under humid conditions followed by calcination. Block copolymers containing catechol moieties have also been synthesized reversible addition-fragmentation transfer (RAFT) polymerization of 3,4-dihydroxy styrene and styrene followed by deprotection of methoxy groups. Metal ions can be reduced by using the synthesized block copolymers as templates and reductants, metal nanoparticles consequently formed by simple addition of metal ions into solution or film of catechol-containing block copolymers.

Key Words : Random copolymer, Block copolymer, Catechol, Adhesion, Reduction