

가지형 공중합체 기반의 유무기 복합막 제조 기술(Organic/inorganic hybrid membranes based on graft copolymer)

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Research in our group has focused on the synthesis of graft copolymers that can be used as structure-directing agents for the fabrication of mesoporous metal oxides. Amphiphilic graft copolymers were synthesized via atom transfer radical polymerization (ATRP) such as poly(vinyl chloride)-g-poly(oxyethylene methacrylate), (PVC-g-POEM) was synthesized. Well-organized mesoporous TiO₂ films with high porosity and excellent channel connectivity were templated by the PVC-g-POEM graft copolymer as a structure directing agent. TiO₂ nanospheres with hierarchical pores were also prepared using the combined process of ATRP and sol-gel process. These metal oxides were combined with polymer matrix to produce mixed matrix membranes with better CO₂ permeability and CO₂/N₂ selectivity.