

Synthesis and properties of hydrophilic–hydrophobic multiblock copolymers based on sulfonated poly(ether ether ketone) for proton exchange membrane fuel cells

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Two series of multiblock copolymers based on poly(ether ether ketone) were developed and evaluated for use as proton exchange membranes(PEMs). The phase separation of the hydrophobic and hydrophilic blocks in the block copolymers was much improved with respect to that observed for previously reported random or other block copolymers. the multiblock copolymers were synthesized by a coupling reaction between phenoxide terminated fully disulfonated poly(ether ether ketone) and decafluorobiphenyl(DFBP) end-capped unsulfonated poly(ether ether ketone) as hydrophilic and hydrophobic blocks, respectively. The degree of polymerization of hydrophobic blocks(X) 5,6,8,10 and 12. So, multiblock membrane was prepared and their properties such as proton conductivity, wather uptake, methanol crossover, and etc were measured.