Synthesis and characterization of sulfonated-fluorinated poly(biphenylene-co-sulfone) ether membranes for fuel cell applications

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We report on the preparation and characterization of sulfonated poly(arylene ether sulfone) copolymer (PAES) membranes containing fluorinated moieties. PFCB-containing PAES copolymers were synthesized and sulfonated using chlorosulfonic acid and then cast into membranes for fuel cell applications. All the synthesized compounds were characterized by FT-IR, 1H-NMR, 19F-NMR, and TGA. The sulfonated PAES copolymer membranes showed a high ion conductivity comparable to that of Nafion-115 membrane. These results indicate that the sulfonated PAES copolymer membranes can be promising electrolyte membranes for fuel cells.