Polyetherimide/nano-ionomer composite membrane prepared by electrospinning for high temperature PEMFC

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The polyetherimide(PEI) membranes for polymer electrolyte membrane fuel cell (PEMFC) are preapared by electrospinning method. It leads to high porosity and surface area of membrane to accomodate the proton conducting materials. The composite membrane was prepared by impregnating of nano-ionomer into the pores of electrospun PEI membranes. The characterization of the membranes was confirmed by field emission scanning electron microscope(FE-SEM), thermogravimetry analysis(TGA), and single cell performance test for PEMFC. The nano-ionomer impregnated electrospun PEI membrane showed good thermal, mechanical properties and satisfactory proton conductivity. The composite membrane exhibited a promising properties for the application in high temperatur PEMFC.