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Sulfonated Polyether Ether Ketone Based Composite Polymer Electrolyte Membranes

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Abstract

Electrochemical properties of a series of composite membranes prepared by incorporation of boron phosphate into polymeric matrix of sulfonated PEEK were studied. The conductivity of the composites was found to exceed largely that of pure SPEEK polymer. It was however lower than predicted by the effective medium theory for these mixtures. This is associated to the formation of a capillary pore system in the membranes. Despite the developed porosity the composite membranes proved to be mechanically strong and not affected by long term storage in water.

Keywords: Composite membranes; Electrochemistry; Polyether ether ketone (PEEK); Boron phosphate