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Anhydrous Proton Conductive Polystyrene Sulfonic Acid Membranes

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Keywords
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Abstract: A novel anhydrous proton conducting polymer electrolyte based on polystyrene sulfonic acid, PSSA and benzimidazole (BnIm) was synthesized. The PSSA-BnIm interactions were studied by FT-IR. The thermal properties of the blends were investigated by thermogravimetric analysis (TG) and differential scanning calorimetry (DSC). The proton conductivities of these materials were measured by AC impedance technique. The conductivities of these materials increase with increasing BnIm content and temperature and maximum conductivity was found to be approximately 5 \times 10^{-4} S/cm at 150 °C.

Key Words: Polystyrene sulfonic acid, benzimidazole, thermal properties, proton conductivity

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