

Amino-Functional Polybenzimidazole Blends with Enhanced Phosphoric Acid Mediated Proton Conductivity as Fuel Cell Electrolytes - DTU Orbit (09/11/2017)

Amino-Functional Polybenzimidazole Blends with Enhanced Phosphoric Acid Mediated Proton Conductivity as Fuel Cell Electrolytes

A new amino-functional polybenzimidazole copolymer is synthesized by homogeneous solution condensation polymerization from a novel monomer, N,N'-bis (2,4-diaminophenyl)-1,3-diaminopropane. The copolymer readily dissolves in organic solvents and shows good film forming characteristics. To balance the phosphoric acid uptake and to obtain mechanically robust membranes, the amino-functional polybenzimidazole derivative is blended with high molecular weight poly [2,2'-(m-phenylene)-5,5'-bisbenzimidazole] at different ratios. Due to the high acid uptake, the homogenous blend membranes show enhanced proton conductivity at temperatures well above 100 °C as also confirmed by the fuel cell polarization data.

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