Performance and Synthesis of Phosphoric acid-doped Polybenzimidazole Membranes via a Direct Casting Process

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Polybenzimidazole showed excellent thermochemical stability and mechanical properties. Particularly, phosphoric acid-doped polybenzimidazole membrane has spotlighted for high temperature polymer electrolyte membrane fuel cells because of its high proton conductivity without humidification. The conventional process of membrane fabrication is complicated. In addition, there is a problem for acid doping level. However, direct casting process is very simple to fabricate membranes and it is possible to raise the acid doping level dramatically. In this study, we fabricated phosphoric acid-doped polybenzimidazole membrane with direct casting process and measured single cell performance at 150℃.