Study of PBI Rendom Copolymer Composite with Mesoporous Inorganic filler for high temperature PEMFC application

최원진, 한학수*
연세대학교
(hshan@yonsei.ac.kr*)

To prepare PBI Rendom Copolymer and mesoporous inorganic filler composite membranes for PEMFC (Polymer electrolyte membrane Fuel Cell), 3,3'-diaminobenzidine was synthesized with pyridine-2,5-dicarboxylic acid and Terephtalic acid. Polyphosphoric acid was used as solvent. And also organic-inorganic composite membranes from PBI Rendom Copolymer and mesoporous inorganic materials were synthesized. The mesoporous inorganic materials were containing specific metal ions. Composite membranes were doped with phosphoric acid (H3PO4).

The synthesis of PBI Rendom Copolymer was confirmed by a Fourier Transform Infrared Spectroscopy (FT-IR, DIGILAB Co.). We also investigated thermal stability using Thermal Gravimetric Analysis (TGA, TA instrument, Q-50) for the composite PBI Rendom Copolymer membranes. The ion conductivity depending on the temperature was measured with an Impedance analyzer (Autolab Impedence Analyzer), and interpreted as a function of the acid content and the weight percent of porous inorganic materials.