

Fabrication of porous membrane using Sulfonated poly (arylene ether ketone) / Polylactide block copolymer for proton exchange membrane fuel cell

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Sulfonated poly (arylene ether ketone) (SPAEK) with hydroxyl group in end chain of polymer (SPAEKOH) was synthesized from bisphenol A, Ketone, S- Ketone and hydroxyl phenyl ethanol. SPAEKOH is a precursor for ring-opening polymerization of lactide to form block copolymer. The pores will be fabricated from diblock copolymer SPAEK/PLA by selectively remove on the sacrificial block via degradable PLA in diblock copolymer. By using various amounts of Lactide for synthetic block copolymer reaction, the different pore sizes from 50nm to 2 μ m, which is created in proton exchange membrane fuel cell in order to enhance the ability of proton conductivity. Morphology of porous in membrane is observed by Scanning Electron Microscope (SEM). Properties of membrane such as water uptake, dimension swelling, thermal and mechanical stability, especially proton conductivity will be investigated at different temperature.