

고온-저습용 연료전지를 위한 SPAES/Silicate 복합막

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SPAES/Silicate Hybrid Membranes for High-Temperature and Low-Humidity Proton Exchange Membrane Fuel Cells

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An electrolyte membranes for high temperature/low humidity is a demand for the proton exchange membrane fuel cells (PEMFCs). In this work, we prepared hybrid membranes, which have novel glass content in the hydrophilic and hydrophobic part of sulfonated poly(arylene ether sulfone) (SPAES) by in-situ sol-gel synthesis of various functional silane. The effect of silicate from functional silane content on the proton conductivity, water uptake of the hybrid membranes under high temperature and low humidity was quantitatively identified. The silicate content contributed to the enhancement of not only proton conductivity, but also water retention ability for PEMFCs operation.

Key words : SPAES, Functional silane(기능성 실란), PEMFC(고분자연료전지), Proton conductivity(이온전도도)

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