술폰화된 폴리아릴렌 에테르 실리카 나노복합막

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Sulfonated Poly(arylene ether)/Silica Nanocomposite Membranes

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In this work, silica was used to prepare composite membranes with the aim to decrease the methanol crossover which drastically reduced the DMFC(Direct methanol fuel cell)'s performance. The sulfonated poly(aylene ether)/silica hybrid membranes were prepared using a tetraethylorthosilicate(TEOS) hydrolysis sol-gel process under acidific conditions. Composite membranes were obtained by mixing different percentage of silica to the polymers and prepared by solution casting. The resulting membranes were characterized by water uptake, proton conductivity and methanol crossover. Silica loading in the composite membranes helped to inhibit methanol crossover while higher silica loadings decrease the proton conductivity in spite of the increasing membrane's water uptake.

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