

Crosslinked Sulfonated Polyimide-based Composite Membranes with Strong Resistance to Free Radical Attack

황신영, 이창현, 박호범, 이영무*, 김주영¹
한양대학교; ¹삼척대학교
(ymlee@hanyang.ac.kr*)

Proton exchange membranes (PEMs) should satisfy stringent requirements in relation to proton conductivity, fuel permeability, and mechanical strength. In addition to these basic properties, chemical stability is one of most important factors for maintaining the reliability of electrochemical performances based on the PEMs, since fuel cell is a complex system containing numerous chemicals such as novel metal catalysts, fuel molecules, oxidants, and free radicals. Up to now, a lot of effort has been made to enhance resistances of PEMs to the aggressive chemicals. In this present study, an approach to improve membrane stability to peroxide radicals was investigated *via* the incorporation of organometallic complex including Al_2O_3 and MnO_2 . The effect of the organometallic fillers on the membrane performances as well as resistance to free radical attack was discussed considering the availability of the fillers as radical scavengers.