

Effect of sulfonated poly(ether sulfone) ionomer content on PFEC performance of membrane electrode assemblies prepared by spray method

류성관, 최영우*, 박진수¹, 양태현, 임성대, 김한성², 김창수
한국에너지기술연구원; ¹상명대학교 환경공학과;
²연세대학교
(cozmoz67@kier.re.kr*)

Polymer electrolyte fuel cells (PEFCs) are has been reciving a lot of attention as a power source for both staionaly and movile applications due to its attractive features. Especially, the performance of PEFCs are greatly affected by the properties of polymer electrolyte membranes and catakyst layers. In generall, the most used proton conducting ionomers are perfluorinated sulfonic acid polymers such as Nafion from DuPont. The perfluoro sulfonic acid polymer used both as a proton conductor and a binder in electrodes to increase the catalyst utilization further. Although the Nafion ionomers show high proton conductivity and substantially stability, there is a great demand for alternative ionomers based on non-fluorinated materials in terms of high temperature availability, environmental adaptability and production cost.

In this study, we have prepared the gas diffusion electrodes (GDEs) containing the various SPES ionomer content in a catalyst layer. It was observed single performances and electrochemical properties to optimize the ionomer content in electrode.