Anion exchange membrane prepared from imidazolium grafted poly (arylene ether ketone) with enhanced durability for vanadium redox flow battery

안연호, 김덕준†
성균관대학교
(djkim@skku.edu†)

The anion exchange membrane was synthesized from poly(arylene ether ketone) with 1-(3-aminopropyl) imidazole pendant groups (PAEK-API) for vanadium redox flow battery. The properties of the PAEK-API membranes were compared with those of Nafion® 117 membrane. All of the synthesized membranes showed higher ion exchange capacity than Nafion®117 membrane. Also the membranes showed lower vanadium ion permeability than Nafion® 117 membrane, and excellent chemical stability in electrolyte solution because of Donnan exclusion phenomena. During the 100 cycling tests, the PAEK-API 2.0 membrane showed higher coulombic and energy efficiencies than Nafion® 117 membrane without any degradation.