

Sulfonated poly(arylene ether ketone) based membranes with low vanadium ion permeability
for all vanadium redox flow battery applications

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In this study, we developed poly(arylene ether ketone) (PAEK) containing pendant sulfonation group as proton conductor for the membrane of all vanadium redox flow battery system. Sulfonated PAEK with flexible side chain were prepared by polycondensation of 4,4-Difluorobenzophenone with 2,2-Bis(3-amino-4-hydroxyphenyl) hexafluoropropane and Bisphenol-A, followed by post-sulfonation using 1,4-butanediol. We confirmed the structure by using $^1\text{H-NMR}$, FT-IR. and the physical properties of membrane such as ion conductivity, ion exchange capacity were investigated for their applications in all vanadium redox flow battery system.