

Cross-linked Poly(arylene ether ketone) sulfonated at pendant for proton exchange membrane

Nguyen Minh Dat Thinh, 김덕준<sup>1,†</sup>  
성균관대학교; <sup>1</sup>성균관대학교 화학공학과  
(djkim@skku.edu<sup>†</sup>)

Poly(arylene ether ketone) was synthesized containing pendant carboxylic groups which could produce a series of cross-linked sulfonated poly(arylene ether ketone). In order to limit the harmful degradation of sulfonated groups on the main chain, sulfonated groups were attached on pendant 3,3-diphenylpropylamine. Cross-linked systems achieved from pendant allylamine under the initiation of AIBN provided the enhancement of mechanical stability and prohibited excessive membrane swelling in high humidity condition. Grafting of sulfonated groups onto the PAEK main chain could control the ion exchange capacity and thus could tune the properties of the polymer by controlling the degree of substitution. Proton conductivity, water uptake, thermal stability, mechanical properties of the cSPAEEK membranes were investigated to evaluate their possible application for fuel cell.