Characterization of sPEEK and csPEEK membranes With different degree of sulfonation for fuel cell application

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Sulfonated poly(ether ether ketone) with pendant carboxylic acid groups is directly synthesized. It offers the opportunity to control the degree of sulfonation and distribution of the sulfonic acid groups and the pendant carboxylic acid groups are functionalized by unsaturated groups to produce a series of cross-linkable sulfoanted poly(ether ether ketone). Cross-linking hinders the mobility of the polymer chains, and cross-linking density strongly affects the properties of the membranes. Proton conductivity, water uptake, methanol permeability and thermal stability are investigated to evaluate the properties of the obtained cross-linked membranes for fuel cell application.