

Characterization of poly(arylene ether ketone) synthesized for anion-exchange membranes with quaternary ammonium groups

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Poly(arylene ether ketone)s (PAEKs) with pendant quaternary ammonium groups were synthesized. Firstly, PAEKs containing carboxylic acid groups was activated and react with N,N-Dimethylethyleneamine. Then, quaternization and alkalinization method were used to develop the membrane. Anion conductivity were expected as an important characteristic of membrane. Nuclear magnetic resonance (^1H NMR) confirms the chemical reaction for PAEKs and PAEKs-NHS, Fourier transform infrared spectroscopy (FT-IR) will characterize the quaternary ammonium poly(arylene ether ketone)s hydroxide (QAPAEKs-OH). Differential scanning calorimetry (DSC) is used to determine thermal properties of the membranes. The anion conductivity, water uptake, ion-exchange capacity (IEC), mechanical properties of the QAPAEKs-OH membranes were measured for applications in alkaline fuel cells. QAPAEKs-OH will promise as a new materials for alkaline fuel cells.