

Preparation and characterization of ion-exchange membrane using sulfonated Polyetheretherketone

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Excessive sulfonated cation-exchange membranes show too high swelling which leads to poor mechanical properties and are not suitable electromembrane processes, especially at elevated temperature.

In this work, poly(ether ether ketone)(PEEK) of high thermal and mechanical polymer is accepted to improve the poor properties.

Hydrophobic poly(ether ether ketone)(PEEK) were modified by sulfonation at different temperature and varying period of time with concentrated sulfuric acid used as solvent.

The characterization of membranes were applied on conductivity, impedance spectroscopy, ion-exchange capacity(IEC), FT-IR, DSC, SEM, SAXS, contact angle, electrical resistance.

Furthermore, the membrane will be tested in polymer electrolyte fuel cells and direct methanol fuel cells.