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# Metal-organic framework anchored sulfonated poly(ether sulfone) as a high temperature proton exchange membrane for fuel cells

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## ABSTRACT:

A proton-conducting sulfonated poly(ether sulfone)-metal-organic framework membrane with high proton conductivity at high temperature and anhydrous conditions was synthesized by anchoring the Cr-MIL-101-NH<sub>2</sub> to the aromatic polymer backbone via a Hinsberg reaction. The effect of metal-organic frameworks as the pendant porous aminated moieties on membrane features such as water uptake, swelling ratio, mechanical, oxidative and thermal stabilities, morphology, acid retention capacity, ion exchange capacity, long-term durability, hydrogen crossover, proton conductivity and fuel cell performance was methodically studied. The presence

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