

### Effect of Ce/Crown ether quencher on hydrocarbon membrane for PEMFC

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Sulfonated poly(ether ether ketone) (sPEEK)/cerium ion ( $Ce^{3+}$ ) composite membrane was studied for PEMFC applications. Cerium ion removes the OH radicals, the major degradation reaction material, in PEMFC operation.  $Ce^{3+}$  ion was prepared with 18-crown-6-ether to form metal/organic complex. This structure could prohibit the direct interaction between cerium ion and sulfonic acid groups in membranes and leak of cerium ion from membrane. Fourier transform infrared spectroscopy (FT-IR), scanning electron microscope (SEM), energy dispersive X-ray spectroscopy (EDX), and small angle X-ray scattering spectroscopy (SAXS) were used for structure analysis of membrane. Proton conductivity, wateruptake, tensile strength, degradation property by Fenton's test and other properties were analyzed for PEMFC application.