عنوان مقاله:

Using a novel sulfonated mesoporous silica for PVA membrane for used in PEM fuel cell

محل انتشار:

چهارمین همایش پیل سوختی (سال: 1389)

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خلاصه مقاله:

Organic-inorganic hybrid membranes of poly (vinyl alcohol) (PVA) and mesoporous silica containing sulfonic acid groups are synthesized with the aim of increasing the proton conductivity and water retention as well as improving the thermal stability. These hybrid membranes were prepared via co-condensation of functionalized nanoporous SBA-15 (SBA-15-RSO3H) as hydrophilic inorganic modifier, glutaraldehyde (GLA) as cross-linking agent in a PVA matrix. Fourier transform infrared spectroscopy (FT-IR) and scanning electron microscopy (SEM) are used to characterize and confirm the structure of PVA and the crosslinked membranes.The impedance spectroscopy, water uptake and thermal stability are investigated to confirm their applicability in fuel cells. This work demonstrates the promising potential of new composite membranes for the development of high-performance and high-stability PEM fuel cells with improved proton conductivity.

کلمات کلیدی:

Hybrid membrane; Sulfonated nanoporous silica; PEM Fuel cells