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Development of Partial Sulphonated Poly(Vinylidene Fluoride - Hexafluoro Propylene)–Montmorillonite Nano-Composites as Proton Exchange Membranes

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Abstract : Proton conducting sulphonated poly (vinylidene fluoride- hexafluoro propylene) PVdF-HFP membranes were modified with nano – sized montmorillonite (MMT) through homogeneous dispersive mixing and solution casting technique for fuel cell applications. The prepared composite membranes were characterized using Fourier Transform Infrared Spectroscopy and 1HNMR technique. The suitability of the composite membranes for fuel cell application was evaluated in terms of water uptake, swelling behavior, and proton conductivity. These composites showed good conductivities and durability and expected to be used in the development of proton exchange membrane for fuel cells.

Keywords : composite, proton conduction, sulphonation, water uptake
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