

Lower overvoltage and high durable membrane-electrode assembly for proton exchange membrane fuel cells

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In membrane electrode assembly (MEA) of proton exchange membrane fuel cells (PEMFCs), Nafion ionomer is the most widely used as the electrolyte binder in the catalyst layer. A high performance MEA requires the effective contact so called the three-phase boundary, high Pt catalyst utilization, sufficient proton conduction, and facile H<sub>2</sub> and O<sub>2</sub> reactant and water product transport. In this study, we investigated relationship of electrochemically-active surface area by tuning the properties of the dispersing medium in the ionomer. Impedance data, cyclic voltammetry, and hydrogen gas crossover and polarization curves were measured.

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