

Preparation of electrodes using ionic liquid/sulfonated polymer based ionomer binder for high temperature anhydrous polymer electrolyte fuel cells

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Recent advances in polymer electrolyte fuel cell(PEFCs) technology have been being made for the operation at high working temperatures due to several advantages. We prepared composite polymers based on ionic liquids (ILs)/sulfonated polymers to prepare membrane as well as ionomer binder for high temperature anhydrous polymer electrolyte fuel cells. For fuel cell applications such as a single cell test, it is required to prepare membrane-electrode assemblies (MEAs). It is, in particular, important to prepare the electrodes in MEAs. The electrodes prepared by catalyst slurry consisting of catalyst, ionomer binder and organic solvent can have various configuration with the composition of catalyst slurry. In this study, various catalyst slurries with the content of ionomer binder have been prepared to make electrodes and characterized to investigate the effect of the contents of ionomer on electrochemical improvement of activation region in current-potential polarization curves.