A direct deposition of Pt catalysts on Nafion modified with Polypyrrole for PEMFC

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To make PEM fuel cells a commercial reality, much development work in the past decades has focused on the performance improvement of polymer electrolytes, electro-catalysts, and electrode materials. One important thrust of present research is lowering overall fuel cell costs. Cost saving can be gained through several approaches, such as reducing electro-catalyst loading or simplifying the cell design and manufacturing process. Recently, we have examined the chemical reduction technique as a means to reduce cell costs than the both conventional membrane and the sputtering technique by achieving low levels of catalyst loading and simplified its preparation.

Pt/PPy/Nafion composite electrodes were fabricated using PPy/Nafion composite membranes prepared by chemical oxidation with pyrrole. In this study, we proposed the deposition technique of Pt catalysts on Nafion modified with polypyrrole that the catalyst deposit is highly localized at the membrane interface. This MEA fabricated for PEMFC with a chemically modified electrolyte membrane can achieve reproducible performance and has a promising alternative method of direct coating of Pt catalysts on Nafion membrane.