

Surface modified hydrocarbon membranes for high temperature PEMFC

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The most recent studies on PEMFC focused on phosphoric acid non-doped sulfonated hydrocarbon membrane for operating at higher temperature condition. Higher operation temperature has many advantages such as improved performance by efficient electrochemical reactions, prevented CO poisoning and eliminated flooding effect. However higher operation temperature condition lowered the membrane water content, reduced membrane proton conductivity and thus cell performance decreased.

In this study, to increase the water content in the membrane, plasma treatment of sulfonated hydrocarbon membrane is applied. Surface modified membranes are characterized by water uptake, proton conductivity and single cell measurement at high temperature.