Short Communication

The Effect of Gas Diffusion Layer PTFE Content on The Performance of High Temperature Proton Exchange Membrane Fuel Cell

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doi: 10.20964/110402919

Received: 14 October 2015 / *Accepted:* 10 January 2015 / *Published:* 1 March 2016

Gas diffusion layer (GDL) with different polytetrafluoroethylene (PTFE) contents in the carbon substrate and the micro-porous layer (MPL) were investigated for the application in poly(2,5-benzimidazole) (ABPBI)-based high temperature polymer electrolyte membrane fuel cell (HT-PEMFC). The physical properties of the GDLs were characterized by scanning electron microscopy (SEM) and pore size distribution. The electrochemical properties of the single cell based on these GDLs were evaluated and analyzed by I-V curve and electrochemistry impedance spectroscopy (EIS). The results showed the use of a minimal quantity of PTFE in the carbon substrate (~15 wt%) and the MPL (~5-10 wt%) are suggested for both good mechanical properties of the GDLs and the good fuel cell performance.

Keywords: High temperature proton exchange membrane fuel cell, Polybenzimidazole, Gas diffusion layer, Micro-porous layer, PTFE loading, Cell performance

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