

Stainless Steels as a Bipolar Plate Material for Polymer Electrolyte Membrane Fuel Cells

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Due to their low cost, high strength, ease of machining and shaping into the sheets, as well as their corrosion resistance, stainless steels are considered to be good candidates for a bipolar plate material for the polymer electrolyte membrane fuel cells (PEMFCs). In this study, we have tested several stainless steels in simulated PEMFC environments for application as a bipolar plate material. Contact resistance and potentiodynamic polarization curves are measured. Additionally, we also measured their performance of single cell with stainless steel foam in the various flow-filled of the bipolar plate at 70°C, in comparison with graphite, such as polarization curves (I-V curves), EIS (Electrochemical Impedance Spectroscopy), CV (Cyclic Voltammetry), LSV (Linear Sweep Voltammetry) and lifetime curves.