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Metal-coated Polyether Ether Ketone Monopolar Plates for Polymer Electrolyte Membrane Fuel Cell

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Abstract

For the polymer electrolyte fuel cell application, novel multilayer metal-coated polyether ether ketone (PEEK) monopolar plates were developed via electroless plating and electroplating process. The coating layers consisted of 7 μm thick Ni-P layer on a PEEK surface, 7 μm thick Cu layer on it, and 500 nm thick Au layer on the top surface. With metal-coated PEEK monopolar plates on both anode and cathode side, the current density of a single cell at 0.6 V was found to be 734 mA/cm^2 , which is about 85% using the conventional plates (869 mA/cm^2).

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