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Single cell performances of MEA with hybrid membrane and Pt/C catalyst for low temperature H_2/O_2 fuel cells

Thanganathan Uma
KPR Institute of Technology, India

Presently, an important problem for low temperature polymer electrolyte fuel cells (PEMFCs) operating in the temperature range 50-100°C is the short time-life of proton conducting membranes. The present research work is thus focused on the development of single cell performances at low temperatures using alternative nonfluorinated hybrid proton exchange membrane based PVA polymer, which are chemically and mechanically more stable at low temperatures and Pt/C electrodes which can result into better fuel cell performance. The polarization profiles with the relationship between current density-potential (*I*–*V*) and the power density-current density curves of the MEA consisting hybrid membrane and Pt/C catalyst analyzed at various humid conditions (50, 75 and 100% RH) with constant temperatures in the range from 40, 60, 80 and 90°C. The maximum current density of about 600 mA cm^{-2} was obtained at 90°C with 100% RH. We have compared these values with commercial Nafion® membrane and PVA based hybrid membrane electrolytes performed at low temperatures for H_2/O_2 fuel cells.

Biography

Thanganathan Uma has her expertise in Evaluation and passion in improving the health and wellbeing. She is well experienced in the field of Membrane and Fuel Cells. She got a prestigious international award AvH, Germany and JSPS, Japan during her research periods. She has excellent teaching/research skills in the area of Physical Chemistry and Materials Chemistry. Her main aim of work is to introduce a new class of materials and catalyst for energy applications.

ptuma2005@gmail.com

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