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Performance analysis for direct 2-propanol fuel-cell based on Pt containing anode electrocatalysts

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Keywords
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Abstract: Direct 2-propanol cell performance based on Pt containing anode electrocatalyst was evaluated. Cell performance, open circuit voltage, maximum current density, and maximum power density were measured at various alcohol concentrations and cell temperatures. 2-propanol fuel cell shows the highest performance at 1 M concentration and 80 °C operating temperature. The highest practical efficiency (at the maximum power density) was found at 2 M 2-propanol concentration and 60 °C operating temperature. Parameter estimation was performed by non-linear least squares method using the Levenberg Marquardt algorithm. According to the parametric analysis, cross-over current was minimum for 0.5 M 2-propanol concentration at 40 °C operating temperature.

Key Words: Propanol, Fuel cell, Performance, Electrocatalyst.

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