Editorial

Direct Alcohol Fuel Cell

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Received 24 November 2011; Accepted 24 November 2011

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Fuel cells are of tremendous interest, from both energy and environmental points of view. Fuel cells convert chemical energy directly into electrical energy with high efficiency and low emission of pollutants, may help to reduce the dependence on fossil fuels, and operating without combustion, and can contribute to reduce environmental impact. Fuel cells are a practical answer to the world's pressing need for clean and efficient power. Direct alcohol fuel cell (DAFC) fuel has attracted enormous attention as power source for portable electronic devices and transportation due to the much higher energy density than gaseous fuels such as hydrogen and natural gas. Pt has been extensively investigated as the electrocatalyst for methanol and ethanol electrooxidation. However, the high price and limited supply of Pt constitute a major barrier to the development of DAFCs: the development of Pt-free electrocatalysts for alcohol oxidation and the development of other metal-oxide-modified Pt electrocatalysts.

This special issue on focuses on the DAFCs. The authors have focused on reporting the alcohol oxidation on Pt-free and Pt-based electrocatalyst and the optimization of DAFCs. Here, the Pt-free electrocatalysts for alcohol oxidation are Ni-based electrocatalysts in alkaline medium. The development of other metal-oxide-modified Pt-electrocatalysts is Pd, SnO₂-modified Pt. The authors have given good results to increase the electrocatalyst activity and thus to reduce the usage of the Pt. Other authors have studied the oxygen reduction reaction and alcohol supply optimization in the DAFCs. The results will contribute to the development of DAFCs.

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