

FACILE SYNTHESIS OF HIGH PERFORMANCE PLATINUM-CERIUM OXIDE NANOCATALYSTS FOR METHANOL OXIDATION

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Electrooxidation of methanol has been studied intensively in the scientific community, and various catalysts have been developed for direct methanol fuel cells.

In this study, platinum-cerium oxide nanoparticles have been synthesised, exhibiting high activity towards methanol electrooxidation. The materials were characterised using electrochemical and physical characterisation methods. The synthesised nanocatalysts have a very uniform dispersion on the catalyst support material, and a narrow size distribution.

Even at low platinum loadings, the materials have a lower overpotential towards methanol oxidation than commercial Pt-Vulcan catalysts. High currents for methanol oxidation were achieved. Methanol and carbon monoxide poisoning of the nanocatalysts was unnoticeable during the experiments.

The results of the study lay a promising foundation for the investigation of nanocatalysts containing other rare earth metal oxides, as well as to the investigation of the electrooxidation of ethanol or other organic fuels on composite catalysts.

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