

HIGH PERFORMANCE PLATINUM-PRASEODYMIUM 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. Due to the complex process of methanol electrooxidation and the poisoning of Pt catalysts by reaction intermediates, co-catalysts need to be used. While ruthenium has been extensively studied as such, more recently rare earth metal oxides have received increased attention.

In this study, platinum-praseodymium oxide nanoparticles have been synthesised, using common precursor materials and facile synthesis methods. The materials were characterised using various electrochemical and physical characterisation methods.

High methanol oxidation current densities were achieved in case of the synthesised catalysts as well as relatively low overpotential towards methanol oxidation. The praseodymium oxide particles are shown to be very effective co-catalysts with platinum, and the results are compared with data measured on Pt-C and Pt-CeO₂-C catalysts.

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