

Tungsten carbides and CNT-graphene supported Pd electrocatalysts toward electrooxidation of hydrogen

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Tungsten carbides and CNT-GR composite-supported Pd electrocatalysts are synthesized by pH-adjusted polyol method. Their electrochemical properties are investigated by cyclic voltammetry and single cell test and compared with commercial Pt/C (BASF, 20 wt. % Pt) catalyst. In the cyclic voltammetry, the electrochemical active surface area of Pd/WC/CNT-GR is much larger than that of other synthesized catalysts and commercial Pt/C catalyst. The introduction of CNT-GR into Pd/WC also improves performance of single cell and stability during 50 hours continuous operation. Pd/WC/CNT-GR shows 65% maximum power density of Pt/C and lose only 5% of maximum power density after 50 hours.