Highly CO tolerant Pt/WC methanol electro-oxidation catalyst

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Commercial tungsten carbide (WC) was used as a new support for methanol electro-oxidation. Synthesized Pt/WC catalyst (20 wt.% Pt) was analyzed by XRD, TEM, CV, CO-stripping and methanol electro-oxidation. From XRD and TEM, uniform Pt particle size of 7.5 nm was obtained. From CV and CO stripping analysis spill-over behavior of H^+ was observed in Pt/WC catalyst. In CO stripping results, CO electro-oxidation peak potential decreased from 0.80 V of Pt/C to 0.68 V in Pt/WC. The amount of H+ spill-over was determined to be 1.5 times of H^+ adsorbed on Pt. In methanol electro-oxidation the Pt/WC catalyst exhibited 30 % higher specific activity than that of Pt/C.