

Platinized WC nanoporous as an anode catalyst for PEMFC : Activity and CO tolerance in half cell system

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Tungsten carbides have been considered as an electrocatalysts for hydrogen oxidation because of their platinum-like catalysis and high CO resistance in various reactions. In this study, a mesoporous tungsten carbide of WC phase was synthesized by using ammonium meta tungstate as tungsten precursor and resorcinol-formaldehyde polymer as carbon source in the presence of a surfactant. The platinum supported on this material with a low loading (7.5wt%) served as an effective CO tolerant electroanode catalyst. The Pt/WC catalyst showed two times higher activity per mass of Pt for hydrogen electro-oxidation compared to a commercial Pt/C catalyst (E-Teck). In addition, it exhibited much improved resistance to CO poisoning relative to the Pt/C (E-Tech) catalyst. Since the catalyst is also stable in electrochemical environment, it could become an alternative anode catalyst for PEMFC.