

179c Molecular Anchor Pt Nanoparticles on Multi-Walled Carbon Nanotubes as Fuel Cell Electrocatalysts

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Molecular anchor will dramatically improve the electrocatalytic activity of electrocatalysts. Our previous calculation results show that the molecular anchor can improve internal conductivity ~100 times larger than van der Waals connection, which enhance the electron transport process in electrochemical process. Here different surface functionalized (-NH₂, -COOH, -SH, purified) multi-walled carbon nanotubes supported Pt nanocatalysts (2-5 nm) were prepared by ethylene glycol (EG) method. The catalysts were characterized by X-ray diffraction (XRD), transmission electron microscopy (TEM) and cyclic voltammetry (CV) as well as linear voltammetry. The electrocatalytic activity of these nanocatalysts are in the order of -NH₂ > -COOH > purified > -SH. Polarization and power density data in a proton exchange membrane fuel cell (PEMFC) test were in good agreement with the electrochemical characterization and calculation results.