Highly Active Pt-Co/C Nanoparticles: Controllable Preparation and Catalytic Performance for Methanol Electro-oxidation

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Carbon-supported platinum (Pt) for oxygen reduction reaction plays an important role in the operation of direct methanol fuel cells (DMFCs). However, complete oxidation of ethanol is difficult due to the low chemical activity of Pt / C. Herein, novel highly active Pt-Co/C nanoparticles with controllable chemical composition and particle size are prepared via a thermal reduction method. The results revealed that the catalyst (particle size: 2–4 nm) is characterized by a good size monodispersity, and exhibits satisfactory chemical activity. The nanoparticles were also characterized by an accurate and maintained stoichiometry ratio, resulting in improved electrocatalytic activity and anti-poisoning ability of the carbon-supported Pt.

Keywords: controllable preparation, catalytic performance, activity, Pt-Co/C nanoparticles

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