

Abstract Submitted
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DNA-Templated Synthesis of Pt Nanoparticles on Single-Walled Carbon Nanotubes and their Electrocatalytic Properties QIANQIAN LIU, LIFENG DONG¹, Missouri State University — Platinum (Pt) supported on single-walled carbon nanotubes is one of the most efficient catalysts for both methanol and ethanol electrooxidations. However, there is lack of a facile and environmental method to synthesize Pt nanoparticles on SWCNTs. In this study, we investigated a novel method to synthesize Pt nanoparticles on SWCNTs using DNA molecules as dispersing agent for nanotubes and templates for Pt nanoparticles. Morphology and structure of Pt nanoparticles and their distributions along SWCNTs as well as interactions between SWCNTs and DNA molecules were studied with the use of scanning electron microscopy, transmission electron microscopy, UV-vis spectroscopy, and X-ray diffraction spectrometer. Electrocatalytic activities of Pt nanoparticles for methanol and ethanol oxidations were characterized using cyclic voltammetry and impedance spectroscopy. With this study, we conclude effects of DNA molecules on synthesis of Pt nanoparticles on SWCNTs and electrocatalytic activity of Pt nanoparticles supported on SWCNTs for methanol and ethanol oxidations.

¹Qingdao University of Science and Technology

Lifeng Dong
Missouri State University

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