

Synthesis and Characterization of Pt-Ru/MWCNTs

Electrocatalysts

Yuh-Ching Chiou* , Chin-Chieh Cheng, Shao-Ming Chen

Department of Chemical Engineering, Tatung University, Taipei, Taiwan

E-mail: chiou@gm.ttu.edu.tw

Pt nanoparticle is commonly used cathodic catalyst for PEMFC and anodic catalyst for DFAFC. In order to improve the activity, durability and anti-CO poison, this study synthesized nano-hybrid PtRu catalysts supported on MWCNTs. The metal catalyst is composed by 1:1 atomic ratio Pt and Ru, and the weight percent is 20%. Two preparation methods, NaBH₄ reduction and x-ray photosynthesis, were conducted and investigated the optimal process parameters. Raman spectra were used to evaluate the acid oxidized MWCNTs. XRD pattern was to confirm the metal catalyst structure. ICP-OES was to evaluate the composition. FESEM was to observe the morphology. The PtRu/MWCNTs catalysts were then prepared for CV experiments as anodic in working electrode and cathodic in counter electrode.

Keywords: DFAFC, Pt-Ru, MWCNTs, X-ray.