

Electrocatalytic Performance and Stability of PtNi/MWCNT

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Multi-walled carbon nanotubes (MWCNT) are nowadays well recognized for their properties and in consequence for the good characteristics that they can provide to a catalytic system when used as support. On the other hand, Pt/MWCNT catalytic systems are of great interest due to the high activity of the Pt in electrochemical reactions. However, the problem of the high cost of the Pt is still not resolved.

Different metals have been added to the Pt/MWCNT system in order to increase the activity as well as decrease the Pt loading. Special interest is focused on the addition of Ni nanoparticles to the Pt systems. The Ni has demonstrated to generate a beneficial effect, increasing the electrochemical surface area as well as the CO poisoning tolerance [1].

This research work proposed two different approaches to obtain PtNi/MWCNT materials, adding the Ni *in-situ* during the MWCNT synthesis, or *ex-situ* adding the Ni nanoparticles along with the Pt nanoparticles deposition.

The electrocatalytic performance evaluation as well as the stability tests of the synthesized materials were executed in a conventional three electrodes cell, using a glassy carbon rod as working electrode, a Pt wire as counter electrode, and a Ag/AgCl (NaCl Sat) electrode as reference. The interesting results obtained as well as the discussion will be presented at the conference.

References:

1. Ana M. Valenzuela-Muñiz, Gabriel Alonso-Nuñez, Mario Miki-Yoshida, Gerardine G. Botte, Ysmael Verde-Gómez, High electroactivity performance in Pt/MWCNT and PtNi/MWCNT electrocatalysts. International Journal of Hydrogen Energy, Available online 27 December 2012

Acknowledgments:

Authors recognize the support to FOMIX-QRoo under grant no. QR00-2011-001-174895.