

Nanostructured Carbon Doped with Heteroatoms as Electrocatalyst in Fuel Cells.

E. Montiel-Macias^{1,*}, I. Alonso-Lemus¹, P.B. Balbuena², Y.Verde-Gómez¹

¹Instituto Tecnológico de Cancún, Av. Kábah Km. 3, Cancún, Q. Roo, México, 77500.

²Department of Chemical Engineering, Texas A&M University, TAMU 3122, College Station, TX, USA, 77843.

*Tel: +529988807432; e-mail: elizabethmontielmacias@hotmail.com

ABSTRACT

The importance of finding new options for generation of energy that are friendly to the environment has taken more relevance in recent years. In this context, hydrogen fuel cell has been recognized as a promising option to produce clean energy. One of the most important components in fuel cell consists are the electrocatalyst for anode and a cathode, respectively. Platinum supported on carbon (Pt / C), is conventionally as electrocatalyst due to its stability and high electrocatalytic activity, principally in the oxygen reduction reaction (ORR). However, due to the shortage and consequently the high cost of platinum: Alternatives have been developed to replace or decrease the amount of Pt in the electrocatalyst. Recent research has shown that free platinum electrocatalyst based on supported carbons doped with heteroatoms (e.g. B, N, P and S) have similar electrocatalytic activities to the conventional Pt/C for ORR. On the other hand, carbon nanotubes have unique properties that make them excellent candidates for using as electrocatalyst support. This work present a review from the state of art of synthesis and evaluation of free platinum catalysts materials based on nanostructured carbon doped with heteroatoms in fuel cells applications.

Keywords: heteroatoms doped carbons, free platinum elctrocatalysts, hydrogen fuell cells.

