Direct Oxidation of Ethylene Glycol on PtSn/C for Application in Alkaline Fuel Cell

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PtSn/C electrocatalysts with different molar ratios were synthesized by borohidrate process for glycol ethylene oxidation. All electrocatalysts were, also, characterized by X-ray diffraction (XRD), transmission electronic microscopy (TEM), attenuated total reflectance Fourier transform infrared spectroscopy (ATR-FTIRS), energy dispersive X-ray (EDX), while the electrochemical activities of those materials were evaluated by cyclic voltammetry, chronoamperometry and polarization curves in Direct Ethylene Glycol Alkaline Fuel Cells (DEGAFC). TEM results for PtSn/C electrocatalysts showed crystallite size of 4 nm. The curves of power density indicated that PtSn/C, with molar ratio of 70:30, presented the best results for glycol ethylene oxidation, in comparison with other alternatives prepared. These results may be associated to the selectivity to form oxalate or a bifunctional mechanism (oxygenated species from Sn).

Keywords: PtSn/C electrocatalysts, ethylene glycol oxidation, alkaline fuel cell, ATR-FTIRS *in situ*.

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