

Nanoparticles of Pt and Ag-Pt Synthesized by Ultrasonic for Oxygen Reduction Reaction

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ABSTRACT

This paper presents the synthesis of nanoparticles of Pt, Ag and Pt-Ag using ultrasonic irradiation at room temperature. The metal nanoparticles were supported on carbon substrates. A concentration study of alcohol was carried out to determine the kinetics of reduction metallic using UV-vis spectroscopy. The materials synthesized (Pt/C, Ag/C and Pt-Ag/C) were evaluated on the oxygen reduction reaction (ORR) for be applied as cathodes in a Proton Exchange Membrane Fuel Cell (PEMFC). The electrochemical evaluation of the materials synthesized was performed using a cyclic and linear voltammetry technique in acidic medium and room temperature conditions. The kinetic reaction study indicates that the higher alcohol concentration favors the reduction of the metal precursor. Preliminary results demonstrate that the bimetallic electrocatalyst exhibits greater catalytic activity for the ORR compared to the monometallic sample. Pt-Ag/C electrocatalyst can be used as a cathode in a fuel cell.

Keywords: Ag-Pt electrocatalyst, ultrasonic, oxygen reduction reaction, fuel cell

