

Effect of Graphene Oxide Loading on Cobalt Oxide Performance as Electrocatalyst for Methanol Oxidation Reaction

O. Javed¹ and R. Aziz²

Faculty of Manufacturing and Mechatronics Engineering, Universiti Malaysia Pahang, 26300 Pekan Pahang, Malaysia

*Corresponding authors: ¹omamaj36@gmail.com, ²radhiyah@ump.edu.my

Abstract

In this paper, cobalt oxide with graphene oxide included were prepared using a straightforward hydrothermal approach in this study for the electrocatalytic oxidation of methanol. Scanning electron microscopy (SEM), and X-ray diffraction (XRD), FTIR, and XPS techniques were used to evaluate the produced cobalt oxide with graphene oxide. Cyclic voltammetry (CV) and electrochemical impedance spectroscopy (EIS) techniques were used to examine the electrochemical behaviour of an electrode modified with GO-CO₃O₄. In regard to the oxidation of methanol in an alkaline medium, the electrocatalytic performances of electrodes modified with graphene oxide at various graphene oxide weight percentages were examined. The graphene oxide, and cobalt oxide modified electrodes, the GO-CO₃O₄ modified electrode displayed higher current density brought on by the oxidation of methanol.

Keywords: Cobalt Oxide, Graphene Oxide, Fuel Cell, Renewable Energy