ABSTRACT

This thesis "Preparation and analysis of CoO- NiO composite for electrochemical studies" focused on the electrochemical properties of the binary mixed metal oxides of nickel and cobalt composite. The binary mixed metal oxide (CoO-NiO) composite prepared intended to have great electrochemical properties and it also have more enhanced properties than the individual oxides of nickel and copper. The CoO-NiO composite was synthesized by sol gel method and characterized by Fourier Transform Infrared spectroscopy (FTIR), X-ray diffraction (XRD) and Raman techniques to study their structural properties. The Raman and XRD are also performed to study the crystal structure of the composite. The activities of the catalysts for methanol oxidation were determined by using cyclic voltammetry. A comparison between CoO-NiO, CoO and NiO revealed that all of the peak and the exchange current were appreciably higher for CoO-NiO composite. Binary composite CoO-NiO have 1.375 times and 5.5 time higher peak current value than CoO and NiO respectively due to synergistic effect between Co and Ni oxides.