

Impedance Spectroscopy and Polarization curve of anodic Pt based electro-catalyst for Direct Methanol Fuel Cells (DMFC)

서민호, 최승목, 김재홍, 김형주, 김원배*
광주과학기술원
(wbkim@gist.ac.kr*)

Recently, direct methanol fuel cells (DMFC) have been receiving increasing attention. Among their greatest advantages are ease of transportation and storage of the fuel, reduced system weight, size and complexity, high energy efficiency and low emissions. PtRu alloys are still considered to be the best catalysts for methanol electrooxidation. Ac impedance spectroscopy(EIS) method allows the separate examination of anode kinetics, anode mass transport, cathode kinetics, cathode mass transport, and membrane conductivity, making it a valuable diagnostic tool for DMFC development. PtRu/C nanocatalysts were prepared by molar ratio of platinum and ruthenium metal on 1:1 using sodium borohydride (NaBH₄) as a reducing agent, and metal loading is 20 wt.% in this study. MEA was made by using spray method. We make an experiment in cyclic voltammetry with PtRu/C nanocatalysts. Particle size was calculated by XRD and HRTEM. DMFC are characterized by EIS under realistic operating condition.