Electrical Properties of Pt/Carbon Blacks Catalysts Modified by N_2-Plasma Treatment

조미화, 김 석, 이재락, 류호진, 박수진*
한국화학연구원
(psjin@krict.re.kr*)

Direct methanol fuel cells (DMFCs) are very attractive power sources for electric vehicles and portable applications. The DMFCs have several advantages that suit their application for transportation including a high efficient, very low emissions, a potentially renewable fuel source, and convenient refueling. In the DMFCs catalysts, and PtRu/CBs (carbon blacks) is the typically utilized as the anode catalyst and Pt/CBs is utilized as the cathode catalyst. Increasing the reaction sites in the catalyst layer is important for improving the electrode performance. The objective of this study is to investigate the influence of detailed conditions of preparation methods and plasma treatments on the nanostructure of carbon blacks-supported Pt catalysts. The effect of N2-plasma treatments generated by radio-frequency is investigated by analyzing acid-base surface values and surface energetics of carbon blacks. The conductivities of the Pt/CBs are increased after N2-plasma treatment. This result can be explained by an improved metal dispersion on CBs surfaces resulting from the increases of surface energy of the CBs.