Preparation and Characterization of Carbon Nanofibers as Catalyst Support Material for DMFCs

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

In recent years, direct methanol fuel cells (DMFCs) have been considered one of the most promising power sources because they are appropriate for both mobile and stationary devices. In order to improve the performance of DMFCs, some factors in the catalyst layer have to be considered such as electron conductivity, proton conductivity, and mass transport. It has been proved that the structure of the carbon support influences the structure of the catalyst layer and, as a result, the electrochemical performance of the catalyst. The high electronic conductivity of GNFs and the specific crystallographic orientation of the metal particles resulting from well-ordered GNFs support are believed to be important factors for the enhanced catalytic activity of the catalysts. The objective of this study is to investigate the structural effect of GNFs on the electrochemical properties of the GNFs/Pt. The GNFs/Pt catalysts show the better electrochemical activity compared to the CBs-supported catalysts. With the increase of GNFs contents, a Pt average size increases and a sulfur impurity content decreases.