Performance of Porous Carbon as Catalyst Support for Anode from Rice Husk in a Direct Methanol Fuel Cell

Yilhoon Yi^{1,2}, Bong-Do Lee¹, Sang-Kyung Kim^{1,3}, Doo-Hwan Jung^{1,3}, Eun-Mi Jung⁴, Sang-Moon Hwang⁴, Se-Young Choi², Dong-Hyun Peck^{1,3,*}

¹ Fuel Cell Research Center, Korea Institute of Energy Research (KIER), 305-343 Daejeon, Republic of Korea

² Department of Materials Science and Engineering, Yonsei University, 120-749 Seoul, Republic of Korea

³ Major of Advanced Energy Technology, University of Science and Technology (UST), 305-333 Daejeon, Republic of Korea

⁴ Research Institute, Pro-Power Co., 864-2 Dunsan, Bongdong, Wanju, 565-902 Jeollabuk-do, Republic of Korea

*E-mail: dhpeck@kier.re.kr

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This study aims to investigate preparation process of porous carbon as a catalyst support from rice husk (RH) and to measure its electrochemical characteristics for use in a direct methanol fuel cell (DMFC). During heat treatment of RH in inert atmosphere, organic compounds decompose and partly change to H₂O, CO, CO₂, and volatile compounds, remaining carbon and silica. Two types of porous carbon (RH-N₂ and RH-HF) derive from rice husk are used as a catalyst support. RH-N₂ is processed with a heat treatment and carbonization. RH-HF is prepared by etching of RH-N₂ with HF. The samples show a porous structure and high specific surface areas. An anode catalyst is prepared with an impregnation method with RH-N₂ and RH-HF. The catalysts have a superior electrochemical active surface area as measured by the CO stripping and CV methods. Finally, single-cell tests of DMFCs are conducted to analyze the characteristics of the PtRu/C catalyst.

Keywords: porous carbon, rice husk, catalyst support, single cell, direct methanol fuel cell

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