

Pt-Carbon Catalysts for Direct Methanol Fuel Cell by Using Ordered Nanoporous Carbon Materials

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Mesoporous carbon materials produced by using MCM-41 silica template were used as a cathode catalyst supports in the direct methanol fuel cells (DMFCs). The inverse carbon replica of the MCM-41 template was synthesized by carbonization of sucrose exhibiting a large surface area. The mesoporous carbon structure could be an ideal catalyst support for electrode materials in DMFCs providing a favorable hosting morphology for the metallic catalyst clusters and interconnected pore network for a facile transport of feeds and products. The electrical percolation of the interconnected carbon also exhibited a great potentiality for the development of novel DMFCs catalyst supports. In this work, the ordered nanoporous carbon was synthesized by using MCM-41 silica as a template and sucrose as a carbon source. The nano-size platinum particles were implemented into the mesoporous carbon structure, which was subsequently used for the catalyst supports of DMFCs cathode.