Palladium-Copper/Reduced Graphene Oxide Based Catalyst for Direct Methanol Fuel Cells

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Direct methanol fuel cells have been considered as an ideal choice for a clean and high efficiency energy source. However, the most commonly used anodic catalyst, platinum, has problems such as high cost and CO poisoning. In this study, to reduce the cost and also improve catalytic efficiency, platinum was replaced with palladium /copper as the catalyst. Palladium-copper nanoparticles were prepared to increase the surface area and thus catalytic efficiency. In addition, taking advantage of the excellent ability in electron transportation and the high surface area of reduced graphene oxide, the palladium-copper nanoparticles were decorated onto the surface of reduced graphene oxide. During the process of synthesis, the ratio of the metallic ions, the reaction time, and the reaction temperature are investigated in order to find out the nanomaterial with the best catalytic efficiency. The results showed that the as-prepared low cost nanomaterials provided better catalytic efficiency than the conventional platinum electrode.

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