Durability and Activity Tunable Pt/Graphene Catalyst for Oxygen Reduction Reactions

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We report durability and activity tunable Pt/graphene with micropores controllable graphene as the supports for oxygen reduction reactions. The graphene supports are prepared by thermal reduction of few-layered graphite oxide in hydrogen atmosphere. Oxygen atoms emission and carbon atoms rearrangement occur during the thermal reduction at variable temperature, thus form tunable micropores and graphitization degree in the graphene supports. Symmetrical dispersion of Pt nanoparticles with an medial diameter of 2.3 nm loaded on stable graphene supports contribute to a supernal electrochemical surface area, enhanced electrochemical catalytic activity and durability toward oxygen reduction reactions compared to mercantile Pt/C catalyst. The results demonstrate that durability and activity tunable Pt/graphene is a promising electrocatalyst for oxygen reduction in fuel cells.

Keywords: Durability; Activity tunable; Oxygen reduction reaction; Micropores; Graphene supports.

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