Short Communication

Visible light-induced photochemical fabrication of ultrathin Ag nanoparticles decorated PPy nanosheets and its oxygen reduction activity

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In this work, Ag nanoparticles decorated Polypyrrole (PPy) nanosheets were synthesized on the surface of Ag₃PO₄ nanoparticles (APNPs) by a visible light-induced photochemical method in a simple pyrrole solution. Independent Ag nanoparticles decorated PPy nanosheets (UAPNs) was obtained after nitric acid dissolution and sonication. The APNPs were used as visible-light photocatalyst, templates and silver source in the preparation process. The morphology, structure and composition of the resulting hybrid materials were characterized by a variety of characterization methods, which demonstrated that the photoreduced Ag nanoparticles were uniformly deposited in the photooxidized PPy nanosheets through this APNPs based visible light-induced photochemical method, forming the micro-sized UAPNs with a thickness less than 10 nm. The resulting UAPNs show a good electrocatalytic activity for oxygen reduction reaction (ORR) in alkaline solution.

Keywords: Ag nanoparticles; polypyrrole; photochemical; nanosheets; oxygen reduction reaction

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