

Electrochemical Deposition and Characterization of Polyaniline/Graphene Oxide-Polyaniline Composite Films on Pt-Ir Electrode

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Abstract: In this study, the electrochemical deposition and characterization of polyaniline/graphene oxide-polyaniline (PANI/GO-PANI) composite films on Pt-Ir electrode was investigated. Graphene oxide (GO) was synthesized by modified Hummers method from pure graphite powder and dried in oven at 60°C for 24 hours to obtain GO powder. 4 mg/mL GO powder was ultrasonicated in 0.5 M H₂SO₄ prior to electrochemical deposition. Pt-Ir electrodes (Dr. Wieland, Germany) were used as anode and cathode material. 0.4 M aniline and 4 mg/mL GO in 0.5 M H₂SO₄ were electrolyzed for 6 hours under direct current at a potential value of +0.75V. The coating on Pt-Ir was dried at room temperature for 24 hours. Then PANI was electrochemically deposited on GO-PANI/Pt-Ir composite material at +0.75V with 1 M aniline in 0.5 M H₂SO₄ solution. Finally PANI/GO-PANI composite film on Pt-Ir electrode was obtained after drying at room temperature for 24 hours. PANI/GO-PANI composite films were characterized using FTIR, SEM and XRD.

Keywords: Electrochemical deposition, Graphene oxide, Polyaniline, Pt-Ir electrode, PANI/GO-PANI.

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