

Carbon Supported Pt-SnO₂ Nanoparticles Thin Films: Structural and Electrochemical Properties

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The tin oxide (SnO₂) thin film on carbon (C) paper was deposited by the plasma enhanced chemical vapor deposition (PECVD) using hydrated stannic chloride (SnCl₄.xH₂O) and oxygen (O₂, 300 sccm) as a source material with the glow discharge through a resistive coupling mechanism at 13.5 MHz and the power of 60 W. Further, the platinum (Pt) layer was coated on SnO₂ thin film through RF sputtering. The X-rays photoelectron spectroscopy (XPS) studies were confirmed the existence of Sn and O species in the prepared SnO₂ thin film. The cyclic voltammetry (CV) was carried out in the electrolyte solution of H₂SO₄ and H₂SO₄/(MeOH) using Pt/C and Pt/SnO₂/C thin film electrode. In H₂SO₄/MeOH electrolyte mixture, the Pt/SnO₂/C thin film electrode showed the increased anodic peak current than the Pt/C which deduced the efficient role of SnO₂ for the enhanced anodic oxidation.