

Influence of antimony content as a dopant in IrO_x/ATO catalysts for oxygen evolution reaction

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Proton exchange membrane water electrolyzer (PEMWE) stands out as a promising method for its production and storage of hydrogen. Iridium-based catalysts are the most promising for oxygen evolution reaction (OER) [1]. However, due to the high cost and scarcity of this noble metal, it is necessary to optimize its use in PEM. This work investigated the activity of amorphous iridium oxide (IrO_x) supported on antimony-doped tin oxide (ATO) with different amounts of Sb (3-10%) as a catalyst for OER. The electrocatalysts were characterized by XRD, EDS and TEM. Electrochemical characterization and OER were evaluated in a three-electrode cell with 0.1 mol L⁻¹ H₂SO₄ electrolyte. The (Fig. 1) shows that despite the antimony amount, the IrO_x/ATO catalyst activity was lower than of IrO_x, demonstrating that changes in antimony content do not greatly affect electrocatalyst activity.

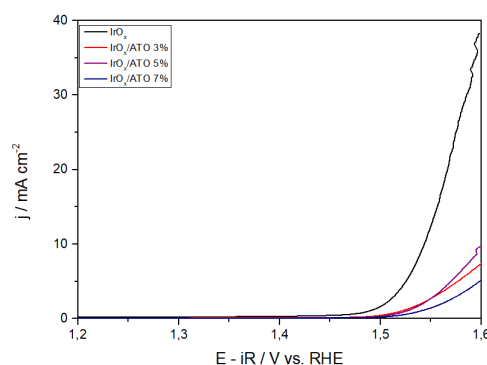


Figure 1: iR-corrected OER curve showing the comparative activity of IrO_x and IrO_x/ATO catalysts, in 0.1 mol L⁻¹ H₂SO₄ electrolyte.

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References:

[1] L. Moriau, M. Smiljanić et al., ChemCatChem, vol. 14, no. 20, 2022.