Preparation of Nano- $\text{Ag}_4\text{Bi}_2\text{O}_5$ with Co-precipitation Method and Study of Its Application for Oxygen Reduction Reaction

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Nano $\text{Ag}_4\text{Bi}_2\text{O}_5$ rods were synthesized by co-precipitation method, in which mixed AgNO_3 - $\text{Bi}(\text{NO}_3)_3$ solution was used as Ag-Bi source and KOH solution as precipitant. The structure, morphology and composition were researched via powder X-ray diffraction (XRD), X-ray photoelectron spectroscopy (XPS) and scanning electron microscope (SEM), etc. Results show that the $\text{Ag}_4\text{Bi}_2\text{O}_5$ were nanorods crystal with 20-30 nm in width and 200-300 nm in length. Electrochemical measurements indicate that the $\text{Ag}_4\text{Bi}_2\text{O}_5$ has excellent performance for oxygen reduction reaction (ORR) followed a four-electron transfer pathway in alkaline electrolyte. Moreover, $\text{Ag}_4\text{Bi}_2\text{O}_5$ was further tested in an assembled zinc-oxygen (Zn-O_2) battery, which discharged up to 1400 h at 10 mA cm^{-2} . So essentially, the inexpensive and available $\text{Ag}_4\text{Bi}_2\text{O}_5$ electrocatalyst has superior electro-catalytic activity and good durability.

Keywords: Co-Precipitation; $\text{Ag}_4\text{Bi}_2\text{O}_5$; Electrocatalysis

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