

# Highly Stable CoS<sub>2</sub>-MoS<sub>2</sub>/MXene as Efficient Electrocatalysts for Oxygen Evolution Reaction

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Oxygen evolution reaction (OER) is an important way to convert electric to chemical energy. Recently, non-noble metal catalyst has been demonstrated as high-efficiency and low-cost electrocatalyst[1-3]. In this study, CoS<sub>2</sub>-MoS<sub>2</sub>/MXene was synthesized by a facile hydrothermal method. The samples have been systematically characterized by X-ray diffraction (XRD), scanning electron microscope (SEM), transmission electron microscope (TEM), X-ray photoelectron spectroscopy (XPS), and Raman spectra. The SEM and TEM images shows that the CoS<sub>2</sub> nanoparticles anchor on MoS<sub>2</sub> sheets which grown on MXene, and the CoS<sub>2</sub>/MoS<sub>2</sub> nanocomposites were evenly dispersed on MXene. Further, the hybrid nanocomposites with different molecular ratio of Co and Mo were systematically studied. Electrochemical measurement shows that the sample with the Co and Mo ratio of 1:1 delivers excellent OER property with an overpotential of 854mV at 10mA cm<sup>-2</sup>, a small Tafel slope of 85 mVdec<sup>-1</sup>, and longtime durability. Compared with pure CoS<sub>2</sub> and MoS<sub>2</sub>, the enhanced OER activity may be attributed to the synergistic effect of MoS<sub>2</sub> and CoS<sub>2</sub>, as well as the excellent electron conductivity of MXene sheets.

## References:

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