Short Communication

Preparation of Molybdenum doped Nickel Sulfides Supported on Nickel Foam via Two-step Electrodeposition for Oxygen Evolution Reaction

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doi: 10.20964/2020.06.88

Received: 9 March 2020 / *Accepted:* 14 April 2020 / *Published:* 10 May 2020

Nickel sulfides-based electrocatalyst has been believed to be a very promising alternative for noble metal catalysts for efficient oxygen evolution reaction (OER). However, the dispersion and intrinsic activity of active sites for OER still need improvements. In our work, a facile two-step electrodeposition has been used to help the better dispersion of Ni sties and realize the Mo doping for enhanced intrinsic activity of Ni_3S_2 supported on nickel foam (Mo- $\text{Ni}_3\text{S}_2/\text{NF}$). Firstly, Mo/Ni/NF as precursor has been obtained by through the two-step electrodeposition of Ni and Mo, respectively. Secondly, the hydrothermal sulfurization of the precursor provides the homogeneous dispersion of Mo- Ni_3S_2 nanoparticles on NF. The prepared Mo- $\text{Ni}_3\text{S}_2/\text{NF}$ for OER only needs a low overpotential of 179 mV to reach the current density of 50 mA cm^{-2} in alkaline solution. The excellent stability has also been kept for more than 10 h. This result suggest that the method of electrodeposition can be a promising way for constructing transition metal-based sulfides electrocatalysts for OER.

Keywords: nickel sulfides; electrodeposition; doping; oxygen evolution reaction

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