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Modification of Molybdenum Disulfide in Methanol Solvent for Hydrogen Evolution Reaction

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Abstract

Molybdenum disulfide is a promising catalyst to replace the expensive platinum as an electrocatalyst but needs to be modified to present excellent electrocatalytic properties. Herein, we successfully modify molybdenum disulfide in methanol solvent for hydrogen evolution reaction by using a simple hydrothermal method. Overpotential reduced to -0.6 V from -1.5 V, and energy band gap decreased from 1.73 eV to 1.58 eV after the modification. The modified molybdenum disulfide also demonstrated lower resistance (42 Ω) at high frequency (1000 kHz) compared with that (240 Ω) of the precursor, showing that conductivity of the modified molybdenum disulfide has improved.

Keywords: molybdenum disulfide, methanol, and hydrogen evolution reaction

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