

Synthesis of MOF-derived Mo doped NiCoS electrocatalyst and its application for hydrogen evolution reaction

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Electrocatalytic hydrogen evolution reaction (HER), as a potential green technology for hydrogen production, has attracted considerable attention of scientific and industrial communities. Although the platinum group metals (PGMs) have shown the best catalytic performance for HER, their high cost and low abundance of the material limit their applications. Currently, transition metal sulfide-based electrocatalysts showed potential possibility to replace PGM-based electrocatalysts. In particular, nickel-cobalt sulfide and molybdenum disulfide exhibit good conducting properties, making them highly attractive as electrocatalysts for HER. In this study, we designed and synthesized MOF-derived Mo doped NiCoS electrocatalysts with improved stability using hydrothermal method and then utilized them for HER. MOF has high surface area and porosity and doped metal and sulfur affect electrochemical properties. Thus, MOF-derived Mo-NiCoS provides good electrocatalytic activity and stability for HER. The synthesized catalysts were analyzed by BET, XRD, FE-SEM and electrochemical experiment.