Facile Synthesis of Cr-doped NiSx Nanoflowers as Ultra-Highly Efficient Electrocatalyst for Hydrogen Evolution Reaction

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Hydrogen evolution reaction (HER) is a pivotal process for green-energy technologies involved in overall water splitting. One of the biggest challenges for HER is to have low-cost, abundant, stable and high-efficient electrocatalysts. Here, we report that Cr-doped NiSx (Cr-NiSx) in situ grown on Ni foam via a facile hydrothermal method. The doped nanoflowers show excellent electrocatalytic performance toward HER. We find that Cr-NiSx exhibits an excellent HER activity with an ultralow overpotential of 81 mV at 10 mA·cm-2, better than those of most nickel sulfide catalysts, and good stability. We believe that this work provides a simple approach to design cost-effective and ultra-highly efficient HER electrocatalysts for practical applications.

Awards Won: