

Nanostructured NiCoP-WO_x for efficient alkaline hydrogen evolution reaction김도경, 용기중[†]

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Developing efficient electrocatalysts for alkaline hydrogen evolution reaction (HER) is highly desirable for ecofriendly H₂ production in water splitting system but still challenging. In this study, we present a nanostructured NiCoP-WO_x as efficient and durable electrocatalysts in alkaline HER. WO_x nanowires effectively transport charges to the NiCoP nanosheets. The NiCoP nanosheets grown on WO_x nanowires provide excessive active sites for splitting water molecules to H₂. As a result, our hierarchical 2D-nanosheet/1D-nanowire structured NiCoP-WO_x demonstrates excellent HER activity, requiring low overpotentials of 49 mV for 10 mA/cm² current density, exhibiting high electrochemical stability for over 60 h in 1 M KOH. This heterostructuring engineering in current study offers not only efficient electrocatalysts but also promising, useful strategy to develop functional 1D/2D materials for advanced energy applications.