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Cobalt-Molybdenum Nanosheet Arrays as Highly Efficient and Stable Earth-Abundant Electrocatalysts for Overall Water Splitting

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Abstract: Although great advances have been achieved in the field of electrocatalysis, the design of highly efficient and stable earth-abundant electrocatalysts for overall water splitting remains a significant challenge. Herein, we have successfully developed cost-efficient three dimensional (3D) highly open hierarchical catalysts with cobalt-molybdenum nanosheet arrays on nickel foam (NF) (denoted as CoMoO NSs@NF) and CoMoP NSs@NF via phosphorization for efficient overall water splitting. The optimized Co₅Mo_{1.0}O NSs@NF exhibits excellent OER activity with low overpotentials of 270 mV at 10 mA cm⁻² and superior stability after 140 h and the optimized Co₅Mo_{1.0}P NSs@NF shows excellent HER activity with low overpotential of 173 mV at 10 mA cm⁻² and superior stability after 1000 CV cycles. In addition to the enhanced electron migration and mass transfer benefited from the 3D

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