NiFe Layered Double Hydroxide/Reduced graphene oxide composite electrocatalyst for electrochemical and photoelectrochemical water oxidation

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As an efficient non-precious metal catalyst for oxygen evolution reaction in electrochemical and photoelectrochemical water splitting, NiFe LDH/RGO composite is synthesized by a simple solvothermal method in one-pot. NiFe LDHs are uniformly deposited on RGO layers of high electrical conductivity and large surface area. In electrochemical water splitting, NiFe LDH/RGO shows superior OER performance compared to bare NiFe LDH and reference IrO_2 with a lower benchmark η_{10} value of 0.245V. Furthermore, NiFe LDH/RGO substantially increases the performance of a hematite photoanode in photoelectrochemical water oxidation, demonstrating its potential as an OER cocatalyst for photoelectrodes.