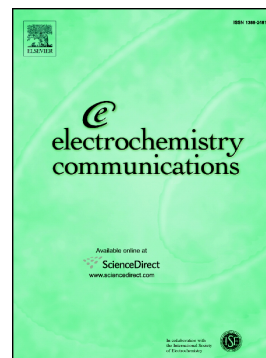


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Flame-like Ni(OH)<sub>2</sub> strongly promotes the dissociation of water and can be used to produce an excellent hybrid electrocatalyst for the hydrogen evolution reaction in alkaline media

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**Flame-like Ni(OH)<sub>2</sub> strongly promotes the dissociation of water and can be used to produce an excellent hybrid electrocatalyst for the hydrogen evolution reaction in alkaline media**

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**Abstract**

In this communication, Ni(OH)<sub>2</sub> with a flame-like morphology was successfully electrodeposited on nickel foam (NF) using a ZnO buffer layer. The flame-like Ni(OH)<sub>2</sub>/NF exhibited efficient activity for the hydrogen evolution reaction (HER) in alkaline media, requiring overpotentials of only 56.4 and 115.8 mV to reach current densities of 10 and 100 mA·cm<sup>-2</sup>, respectively, with a low Tafel slope of 52.8 mV dec<sup>-1</sup>. These results are nearly comparable to those of commercial Pt/C. The significant improvement in HER activity could be attributed to the flame-like morphology of Ni(OH)<sub>2</sub>, which may strongly promote the dissociation of water and accelerate the formation of H<sub>ad</sub>. This work also provides a new approach to designing efficient hybrid catalysts for the hydrogen evolution in alkaline media.

**Key words:** HER; alkaline media; flame-like Ni(OH)<sub>2</sub>; water dissociation

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