Hierarchical Porous NiCo₂O₄ array grown on Ni foam for the Simultaneous Electrochemical Detection of Copper(II) and Mercury(II)

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doi: 10.20964/2018.01.57

Received: 30 September 2017 / Accepted: 16 November 2017 / Published: 16 December 2017

Hierarchical porous NiCo₂O₄ array grown on Ni foam (NiCo₂O₄/NF) was synthesized by a facile one-step hydrothermal reaction and then directly applied as the binder-free electrode of electrochemical sensor. Impressively, the NiCo₂O₄/NF exhibited rapid detection and high sensitivity for simultaneous electrochemical detection of copper and mercury ions, in which the sensitivity was about 29.8 μA/μM and 23.7 μA/μM, respectively. Moreover, it also showed good repeatability and long-term stability (2.4% decrease in response over 10 testing times and 30 days). This work did not only provided a facile method of synthesis hierarchical porous NiCo₂O₄/NF, but also proved that the hierarchical porous layered double hydroxides could be applied in simultaneous electrochemical detection of heavy metal ions.

Keywords: NiCo₂O₄ microflowers, Hierarchical porous, Metal determination, Electrochemical sensor.

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