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PII: S1385-8947(18)31663-2
DOI: https://doi.org/10.1016/j.cej.2018.08.187
Reference: CEJ 19801

To appear in: *Chemical Engineering Journal*

Received Date: 4 June 2018
Revised Date: 25 July 2018
Accepted Date: 27 August 2018

Please cite this article as: X. Wu, S. Li, Y. Xu, B. Wang, J. Liu, M. Yu, Hierarchical heterostructures of NiO nanosheet arrays grown on pine twig-like β-NiS@Ni_3S_2 frameworks as free-standing integrated anode for high-performance lithium-ion batteries, *Chemical Engineering Journal* (2018), doi: https://doi.org/10.1016/j.cej.2018.08.187

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ABSTRACT: Electroactive 3D conductive collectors of β-NiS@Ni_3S_2 are obtained from the in-situ conversion of Ni foams and exhibit unique hierarchical pine twig-like microstructure, in which the β-NiS nanorod arrays are uniformly supported on hollow Ni_3S_2 skeletons. Then the mesoporous NiO nanosheet arrays are grown successfully on the surface of β-NiS nanorods via a facile hydrothermal method and the following calcination, forming hierarchical NiO@β-NiS@Ni_3S_2 composites. When directly used as anodes for lithium-ion batteries (LIBs), the obtained composites deliver superior lithium storage properties with a considerable reversible capacity of 498.5 mAh g^{-1} (calculated by the mass of the whole anode including substrate) after 100 cycles and excellent rate capability, holding a great promise as free-standing integrated anodes for high-performance LIBs. The remarkable electrochemical performance could be attributed to the well-designed 3D hierarchical heterostructures and the synergy effect