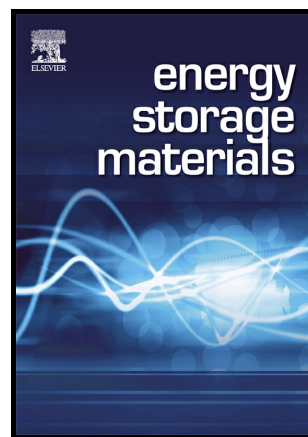


Author's Accepted Manuscript

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PII: S2405-8297(17)30384-7
DOI: <https://doi.org/10.1016/j.ensm.2017.09.013>
Reference: ENSM222

To appear in: *Energy Storage Materials*

Received date: 21 August 2017
Revised date: 25 September 2017
Accepted date: 27 September 2017

Cite this article as: Yuqi Jiang, Cheng Zhou and Jinping Liu, A non-polarity flexible asymmetric supercapacitor with nickel nanoparticle@ carbon nanotube three-dimensional network electrodes, *Energy Storage Materials*, <https://doi.org/10.1016/j.ensm.2017.09.013>

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A non-polarity flexible asymmetric supercapacitor with nickel nanoparticle@carbon nanotube three-dimensional network electrodes

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ABSTRACT

Asymmetric supercapacitors are one of the promising next-generation electrochemical energy storage devices. However, the necessity to distinguish the polarity of asymmetric supercapacitors makes it more like rechargeable batteries and affects the convenience of practical applications. We herein report a novel flexible asymmetric supercapacitor (FASC) that can be charged without distinguishing the electrode polarity based on CVD-grown nickel nanoparticle@carbon nanotube (Ni@CNT) network films. The FASC is assembled by using the binder-free Ni@CNT as both the negative and positive electrodes but aqueous alkaline solution as the electrolyte. In such a design, one electrode side is involved with the Faradaic redox reactions between nickel nanoparticles and OH⁻, while the other side works via electric double layer charge accumulation at the interface of CNTs/electrolyte, enabling the device

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