

Author's Accepted Manuscript

Enabling redox chemistry with hierarchically designed bilayered nanoarchitectures for pouch-type hybrid supercapacitors: A sunlight-driven rechargeable energy storage system to portable electronics

Goli Nagaraju, S. Chandra Sekhar, Bhimanaboina Ramulu, L. Krishna Bharat, G. Seeta Rama Raju, Young-Kyu Han, Jae Su Yu



PII: S2211-2855(18)30379-3
DOI: <https://doi.org/10.1016/j.nanoen.2018.05.063>
Reference: NANOEN2771

To appear in: *Nano Energy*

Received date: 28 March 2018
Revised date: 16 May 2018
Accepted date: 25 May 2018

Cite this article as: Goli Nagaraju, S. Chandra Sekhar, Bhimanaboina Ramulu, L. Krishna Bharat, G. Seeta Rama Raju, Young-Kyu Han and Jae Su Yu, Enabling redox chemistry with hierarchically designed bilayered nanoarchitectures for pouch-type hybrid supercapacitors: A sunlight-driven rechargeable energy storage system to portable electronics, *Nano Energy*, <https://doi.org/10.1016/j.nanoen.2018.05.063>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Enabling redox chemistry with hierarchically designed bilayered nanoarchitectures for pouch-type hybrid supercapacitors: A sunlight-driven rechargeable energy storage system to portable electronics

Goli Nagaraju^{a,b}, S. Chandra Sekhar^a, Bhimanaboina Ramulu^a, L. Krishna Bharat^a, G. Seeta Rama Raju^c, Young-Kyu Han^c, Jae Su Yu^{a*}

^aDepartment of Electronic Engineering, Institute for Wearable Convergence Electronics, Kyung Hee University, 1732 Deogyong-daero, Giheung-gu, Yongin-si, Gyeonggi-do 17104, Republic of Korea.

^bDepartment of Chemical Engineering, College of Engineering, Kyung Hee University, 1732 Deogyong-daero, Gihung-gu, Yongin-si, Gyeonggi-do 17104, Republic of Korea.

^cDepartment of Energy and Materials Engineering, Dongguk University-Seoul, Seoul 04620, Republic of Korea.

*Address correspondence to. Tel: +82-31-201-3820; Fax: +82-31-206-2820. jsyu@khu.ac.kr

Abstract

An essential key to enhance the redox chemistry of battery-type materials is to construct rational design of nanoarchitectures with high electrochemical activity. Herein, we reported a hierarchical composite consisting of bilayered nickel hydroxide carbonate nanoplates decorated nanoflowers on nickel foam (NHC NPs@NFs/Ni foam) *via* a facile homogeneous precipitation method for use as an effective cathode in hybrid supercapacitor (HSC). Under controlled growth time (4 h), the bilayered NHC NPs@NFs with hierarchical alignment were spontaneously crystallized on Ni foam, which substantially enhance the electroactive surface area and enabled the rapid redox chemistry in alkaline electrolyte. Notably, the hybrid NHC NPs@NFs/Ni foam

Download English Version:

<https://daneshyari.com/en/article/7952462>

Download Persian Version:

<https://daneshyari.com/article/7952462>

[Daneshyari.com](https://daneshyari.com)