# Exceptional Pseudocapacitive Properties from Hierarchical Ultrafine NiO Nanowires Grown on Mesoporous NiO Nanosheets

*Lei An[a], Kaibing Xu[a], Wenyao Li[a,b], Qian Liu[a], Bo Li[a], Zhigang Chen[a], Rujia Zou[a,c,]* and Junqing Hu[a,]**

[a] *State Key Laboratory for Modification of Chemical Fibers and Polymer Materials, College of Materials Science and Engineering, Donghua University, Shanghai 201620, China.*

[b] *School of material engineering, Shanghai university of engineering science, Shanghai 201620, China*

[c] *Center of Super-Diamond and Advanced Films (COSDAF), Department of Physics and Materials Science, City University of Hong Kong, Hong Kong.*

*E-mail: hu.junqing@dhu.edu.cn, rjzou@dhu.edu.cn.*

**Part I: Calculations**

The specific capacitance (C) of the electrode was calculated from the discharge curves using the following formula[1]:

$$C = \frac{I \times \Delta t}{m \times \Delta V}$$

where $I$ (A), $\Delta t$ (s), $m$ (g), and $\Delta V$ (V) are the discharge current, discharge time consumed in the potential range of $\Delta V$, mass of the active materials, and the potential windows, respectively.

The energy density (E) and power density (P) are calculated from the discharge curves using the following formula:

$$E = \textbf{Error!} \times C \times \Delta V^2$$

$$P = \frac{E}{\Delta t}$$

1. J. Yan, E. Khoo, A. Sumboja and P. S. Lee. *ACS Nano*, 4 (2010), 4247.

**Part II: Supplementary Figures**

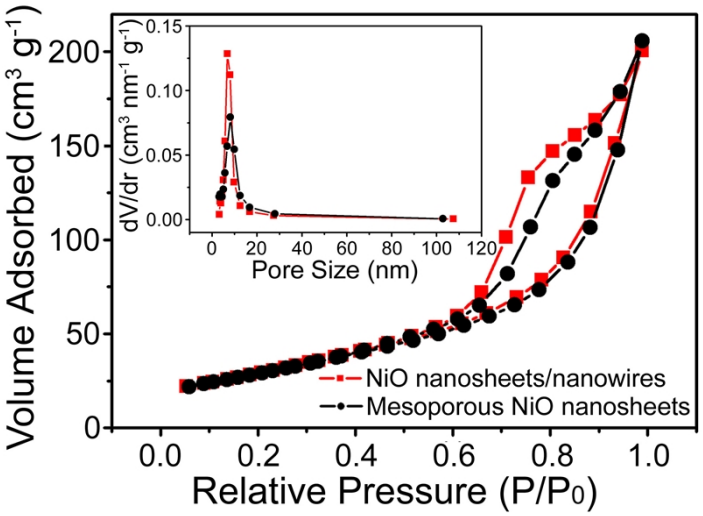


**Fig. S1** Nitrogen adsorption-desorption isotherms of the NiO nanosheets/nanowires and mesoporous NiO nanosheets, respectively. Insets display their corresponding BJH pore size distribution plots, respectively.

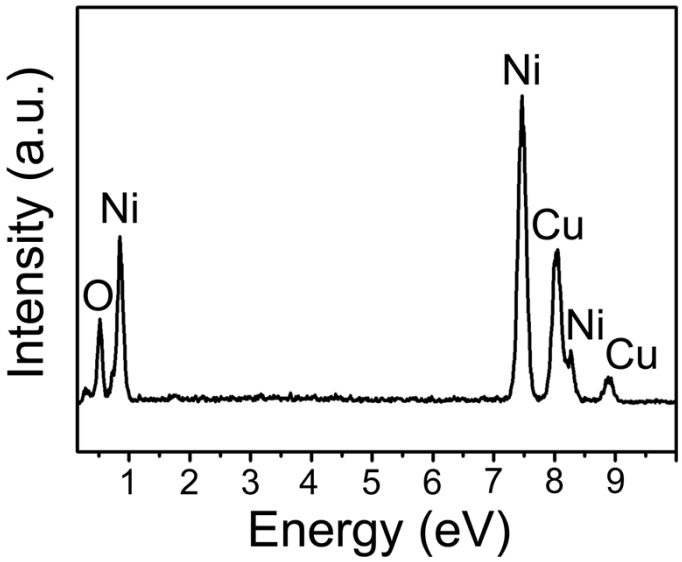


**Fig. S2** EDX pattern taken from the NiO nanosheets/nanowires.

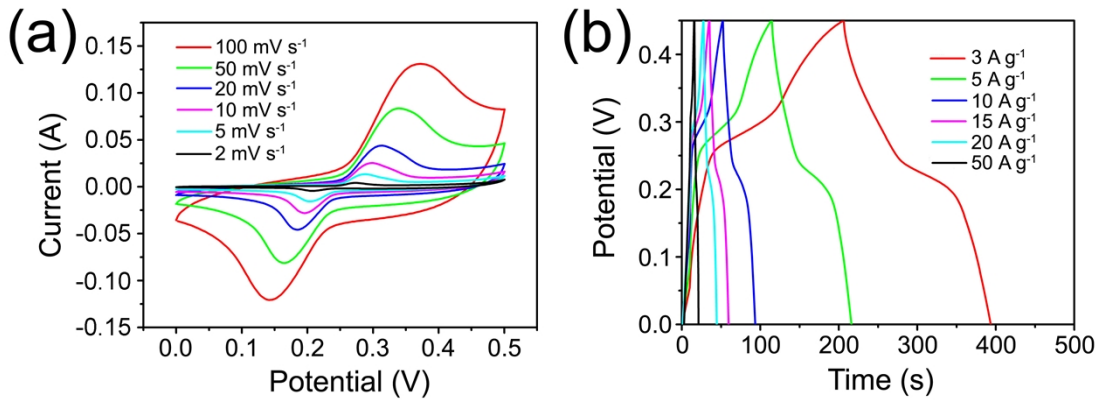


**Fig. S3** (a) CV curves of the mesoporous NiO nanosheets with different scan rates. (b) Galvanostatic charge-discharge curves of the mesoporous NiO nanosheets at different current densities.

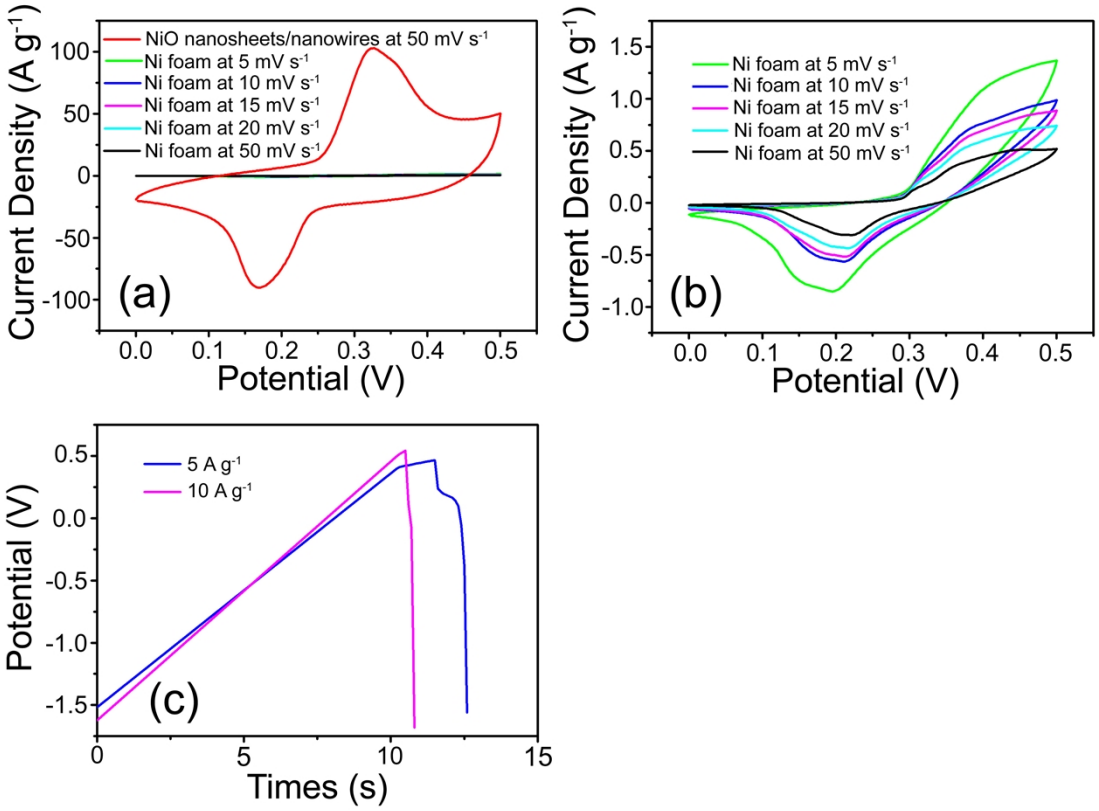


**Fig. S4** (a) CV curves comparison of the Ni substrate at different scan rates and NiO nanosheets/nanowires at a scan rate of 50 mV $s^{-1}$. (b) Enlarged CV curves of Ni substrate in (a) at different scan rates. (c) Galvanostatic charge-discharge (CD) curves of the Ni foam measured at 5 and 10 A $g^{-1}$, respectively.