Electronic Supplementary Material (ESI) for New Journal of Chemistry.

Supplementary material

Preparation and electrochemical performances of $NiCo_2O_4$@$NiCo_2O_4$ composite of nanoplates for high performances supercapacitor applications

Yedluri Anil Kumar* and Hee-Je Kim

[a] School of Electrical Engineering, Pusan National University, Busandaehak-ro 63beon-gil, Geumjeong-gu, Busan, 46241, Rep. of KOREA

*Corresponding Author. Tel: +82 10 3054 8401. Fax: +82 51 513 0212.

E-mail: yedluri.anil@gmail.com (A. K. Yedluri); heeje@pusan.ac.kr (H.-J. Kim)

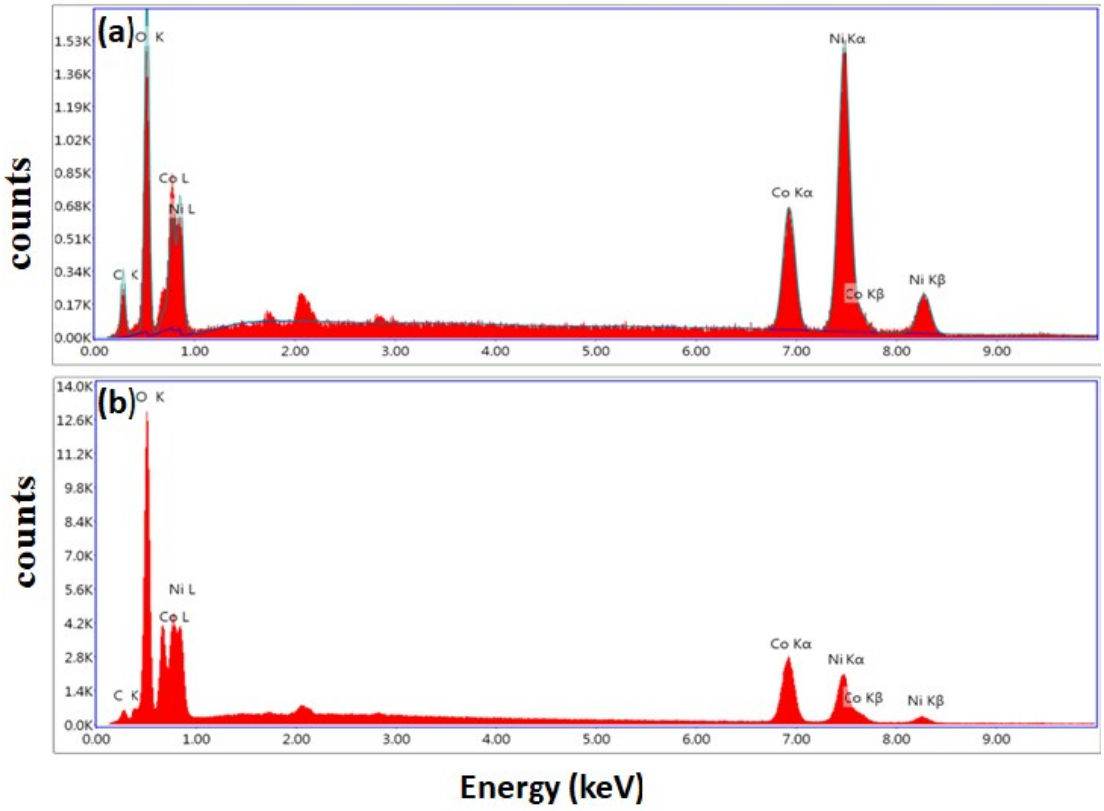

Fig. S1 EDX spectrum of (a) $NiCo_2O_4$ and (b) $NiCo_2O_4$@$NiCo_2O_4$.

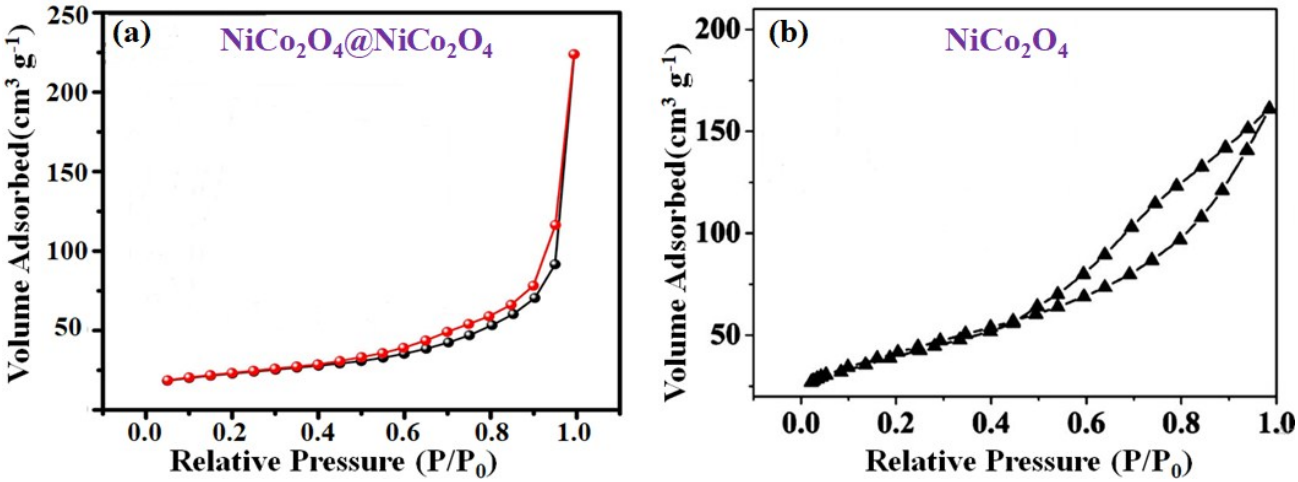

Fig. S2 Nitrogen adsorption-desorption isotherm of a) $NiCo_2O_4$ b) $NiCo_2O_4$@$NiCo_2O_4$ electrodes.

Table. S1 Comparison of capacitances between the present $NiCo_2O_4$@$NiCo_2O_4$ electrode and similar Ni-Co-O based electrodes taken from the recently published reports.

Electrode materials	Electrolyte	Specific capacitance at current density	Capacitance retention (no. of cycle)	Year Ref.
$NiCo_2O_4$ nanosheets/$CuCo_2O_4$	3 M KOH	42 F/g at 1 A/g	90.6% (5000)	2018 (ref. 1)
Hexahedral-like $NiCo_2O_4$	6 M KOH	1710.9 F/g at 1 A/g	70.58% (5000)	2018 (ref. 2)
$NiCo_2O_4$@MnO_2	6 M KOH	1895.0 F/g at 1 mA cm^{-2}	90.1% (5000)	2018 (ref. 3)
$NiCo_2O_4$@$Ni(OH)_2$	6 M KOH	1810 F/g at 1 A/g	87% (5000)	2018 (ref. 4)
$Ni_xCo_{2x}(OH)_{6x}$/$NiCo_2O_4$	3 M KOH	827.1 F/g at 1 A/g	97.8% (2000)	2018 (ref. 5)
Hallow $NiCo_2O_4$ nanospheres	1 M KOH	1229 F/g at 1 A/g	86.3% (3000)	2018 (ref. 6)
NiCo2O4@Co-Fe LDH	2 M KOH	1557.5 F/g at 1A/g	76.9% (5000)	2018 (ref. 7)
rGO/$NiCo_2O_4$	6 M KOH	1248 F/g at 2 mA cm^{-2}	90% (2000)	2018 (ref. 8)
$NiCo_2O_4$@Co_3S_4	3 M KOH	1468 F/g at 1 A/g	84.7% (3000)	2018 (ref. 9)
C@$NiCo_2O_4$	6 M KOH	404 F/g at 1 A/g	87.1% (1000)	2018 (ref. 10)
$NiCo_2S_4$-C-MoS_2	6 M KOH	1601 F/g at 0.5 A/g	75% (2000)	2018 (ref. 11)
$NiCo_2O_4$@$NiCo_2O_4$ core–shell nanocones	2 M KOH	2045.2 F/g at 1 A/g	85.3% (21,000)	2018 (ref. 12)
Monodisperse MnO_2@$NiCo_2O_4$	3 M KOH	1127.27 F/g at 1 A/g	123% (10000)	2018 (ref. 13)
$NiCo_2O_4$ with Oxygen Vacancies	6 M KOH	1590 F/g at 1 A/g	84.90% (5000)	2018 (ref. 14)
Sodium dodecyl sulfate-assisted-$NiCo_2O_4$	3 M KOH	1538 F/g at 10 A/g	92.3% (2500)	2018 (ref. 15)
$NiCo_2O_4$@$NiCo_2O_4$ nanoplate	**3 M KOH**	**2800 F/g at 35 mA cm^{-2} (3.18 A/g)**	**90.3% (3000)**	**This work**

References

1 S. Wen, Y. Liu, H. Bai, R. Shao, W. Xu and W. Shi, *Journal of solid State Chemistry.,* 2018, **262**, 327-334.

2 Y. Li, X. Hou, Z. Zhang, Z. Hai, H. Xu, D. Cui, S. Zhuiykov and C. Xue, *Applied Surface Science.,* 2018, **436**, 242-251.

3 L. Su, L. Gao, Q. Du, L. Hou, Z. Ma, X. Qin and G. Shao, *Journal Of Alloys and Compounds.,* 2018, **749**, 900-908.

4 H. Tong, S. Yue, F. Jin, L. Lu, Q. Meng and X. Zhang, *Ceramics International.,* 2018, **44**, 3113-3121.

5 L. Lu, Y. Xie and Z. Zhao, *Journal of Alloys and Compounds.,* 2018, **731**, 903-913.

6 K. Xu, J. Yang and J. Hu, *Journal of Colloid and Interface Science.,* 2018, **511**, 456-462.

7 W. Chen, J. Wang, K.Y. Ma, M. Li, S.H. Guo, F. Liu and J.P. Cheng, *Applied Surface Science.,* 2018, **451**, 280-288.

8 C. Zhang, C. Lei, C. Cen, S. Tang, M. Deng, Y. Li and Y. Du, *Electrochimica Acta.,* 2018, **260**, 814-822.

9 Y. Liu, S. Wen, W. Shi, *Materials Letters.,* 2018, **214**, 194-197.

10 W. Li, F. Yang, Z. Hu and Y. Liu, *Journal of Alloys and Compounds.,* 2018, **749**, 305-312.

11 D. wang, W. Zhu, Y. Yuan, G. Du, J. Zhu, X. Zhu and G. Pezzotti, *Journal of Alloys and Compounds.,* 2018, **735**, 1505-1513.

12 X. Wang, Y. Fang, B. Shi, F. Huang, F. Rong and R. Que, *Chemical Engineering journal.,* 2018, **344**, 311-319.

13 Y. Zhou. L. Ma, M. Gan, M. Ye, X. Li, Y. Zhai, F. Yan, F. Cao, *Applied Surface Science.,* 2018, **444**, 1-9.

14 D. Yan, W. Wang, X. Luo, C. Chen, Y. Zeng and Z. Zhu, *Chemical Engineering Journal.,* 2018, **334**, 864-872.

15 H. Wang, J. Lu, S. Yao and W. Zhang, *Journal of Alloys and Compounds.,* 2018, **744**, 187-195.