

Supporting Information (SI)

Table S1. Comparison of Ni(OH)₂ and Ni-based electrodes recently reported in literatures

Electrodes	Capacitance	Cycling stability	References (Year)
Ni(OH) ₂ /NF	2384.3 F g ⁻¹ at 1 A g ⁻¹	3000, 75% at 5A g ⁻¹	[1] (2015)
Ni/Ni(OH) ₂ /NF	450 F g ⁻¹ at 1 mA cm ⁻²	4000, 90% at 15 mA cm ⁻²	[2] (2017)
GNS/Ni(OH) ₂ /NF	2053 F g ⁻¹ at 0.3 A g ⁻¹	1000, 97% at 2.5 A g ⁻¹	[3] (2017)
Ni ₃ S ₂ /NF	1293 F g ⁻¹ at 5 mA cm ⁻²	1000, 69% at 25 mA cm ⁻²	[4] (2014)
NiSe/NF	492 F g ⁻¹ at 0.5 A g ⁻¹	200, 91.4% at 0.5 A g ⁻¹	[5] (2016)
Ni(OH) ₂ /AC	2949 F g ⁻¹ at 20 mV s ⁻¹	5000, 88% at 20 mV s ⁻¹	[6] (2017)
GNS/Ni(OH) ₂	1335 F g ⁻¹ at 2.8 A g ⁻¹	2000, 100% at 0.5 A g ⁻¹	[7] (2010)
Ni(OH) ₂ /NF	340 mAh g ⁻¹ at 1 A g ⁻¹	3000, 81.1% at 10 A g ⁻¹	[8] (2018)
Ni(OH) ₂ /NF	453.6 mAh g ⁻¹ at 0.5 A g ⁻¹	2000, 85.6% at 10 A g ⁻¹	this work

References:

- [1] X. Xiong, D. Ding, D. Chen, G. Waller, Y. Bu, Z. Wang, M. Liu, Three-dimensional ultrathin Ni(OH)₂ nanosheets grown on nickel foam for high-performance supercapacitors. *Nano Energy*, 2015, 11: 154–161.
- [2] S. R. Ede, S. Anantharaj, K. T. Kumaran, S. Mishra, S. Kundu, One step synthesis of Ni/Ni(OH)₂ nano sheets (NSs) and their application in asymmetric supercapacitors. *RSC Advances*, 2017, 7(10): 5898–5911.
- [3] H. Chai, X. Peng, T. Liu, X. Su, D. Jia, W. Zhou, High-performance supercapacitors based on conductive graphene combined with Ni(OH)₂ nanoflakes. *RSC Advances*, 2017, 7(58): 36617–36622.
- [4] K. Krishnamoorthy, G. K. Veerasubramani, S. Radhakrishnan, S. J. Kim, One pot hydrothermal growth of hierarchical nanostructured Ni₃S₂ on Ni foam for supercapacitor application. *Chemical Engineering Journal*, 2014, 251: 116–122.
- [5] K. Guo, F. Yang, S. Cui, W. Chen, L. Mi, Controlled synthesis of 3D hierarchical NiSe microspheres for high-performance supercapacitor design. *RSC Advances*, 2016, 6(52): 46523–46530.
- [6] Y. Wang, X. Zhang, X. Li, X. Li, Y. Zhao, H. Wei, M. Liang, Highly dispersed ultrasmall Ni(OH)₂ aggregated particles on a conductive support as a supercapacitor electrode with superior performance.

Journal of Colloid and Interface Science, 2017, 490: 252–258.

[7] H. Wang, H. S. Casalongue, Y. Liang, H. Dai, Ni(OH)₂ Nanoplates Grown on Graphene as Advanced Electrochemical Pseudocapacitor Materials. *Journal of the American Chemical Society*, 2010, 132(21): 7472–7477.

[8] J. Guo, Y. Zhao, N. Jiang, A. Liu, L. Gao, Y. Li, T. Ma, In-Situ Grown Ni(OH)₂ Nanosheets on Ni Foam for Hybrid Supercapacitors with High Electrochemical Performance. *Journal of The Electrochemical Society*, 2018, 165(5), A882–A890.

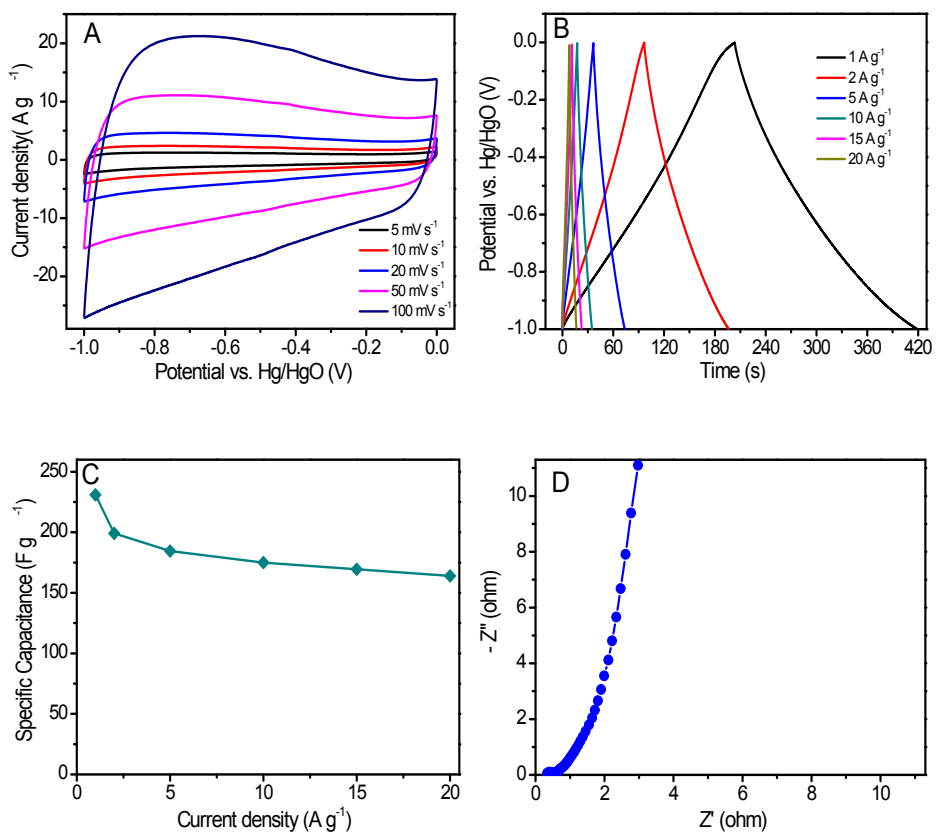


Fig. S1 (A) CV curves at different scan rates, (B) GCD curves under different discharging current densities, (C) Specific capacitance at different current densities, (D) Nyquist impedance plots of activated carbon's in 6 M KOH aqueous solution and the activated carbon mass loading is about 5 mg.

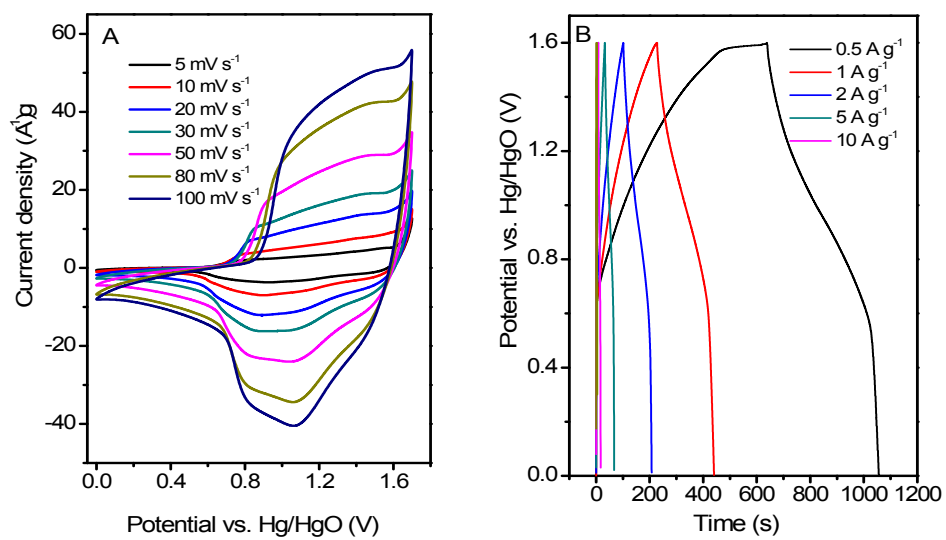


Fig. S2 (A) CV curves at various scan rates, (B) GCD curves at different current density of Ni(OH)₂ film-multiple bending//AC ASC in 6 M KOH.

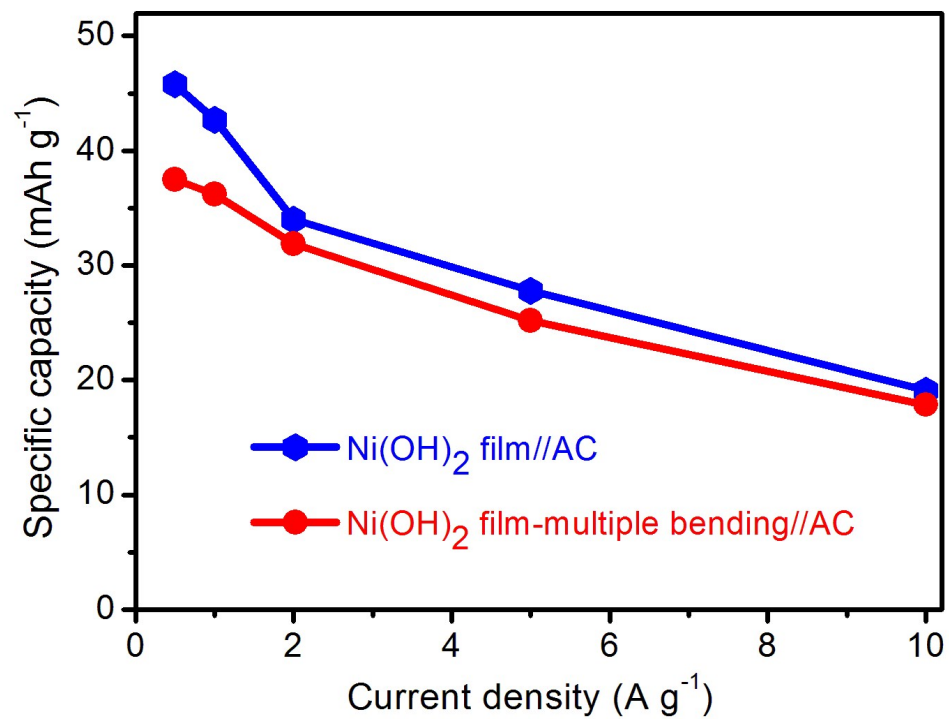


Fig. S3 the specific capacity of Ni(OH)₂ film//AC and Ni(OH)₂ film-multiple bending//AC ASCs at different current densities.