Supplementary Information Available

Hierarchical Flower-like Nickel Phenylphosphonate Microspheres and Their Calcined Derivatives for Supercapacitor Electrode

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Fig. S1 SEM images of nickel phenylphosphonates synthesized with different hydrothermal reaction time: (a) 2 h; (b) 4 h; (c) 6 h; (d) 8 h.

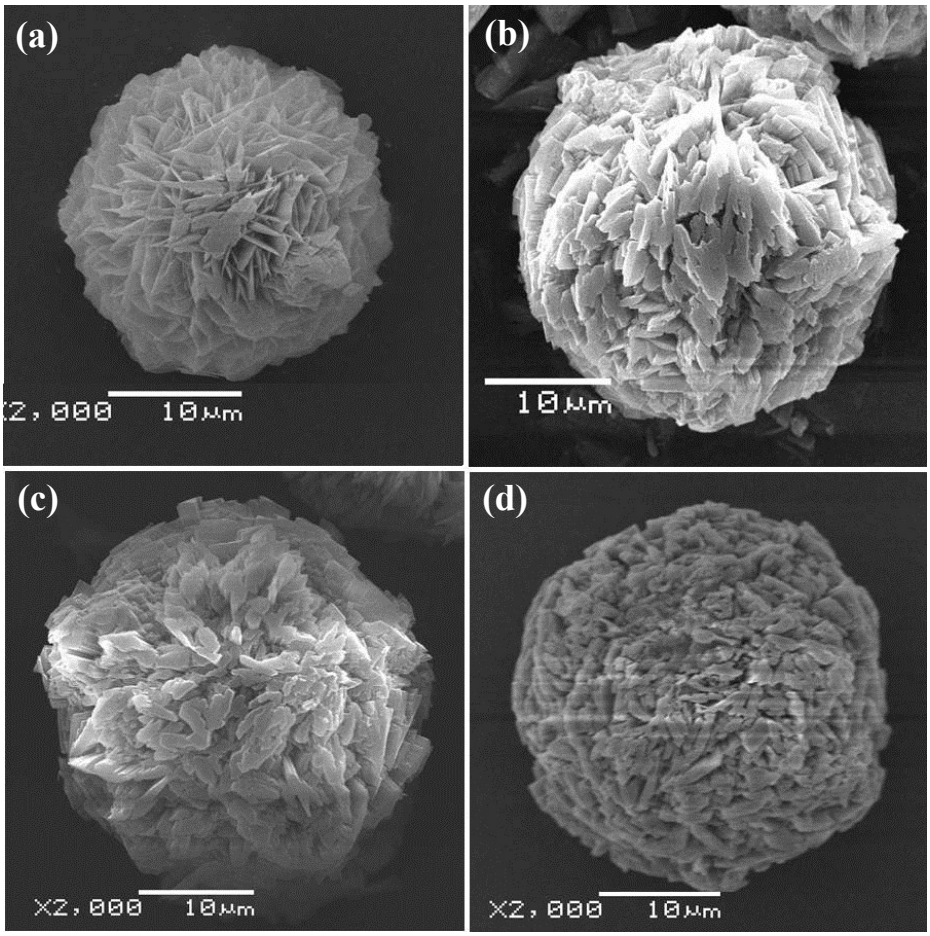


Fig. S2 FT-IR spectra of PPA (phenylphosphonic acid) and NiPP.

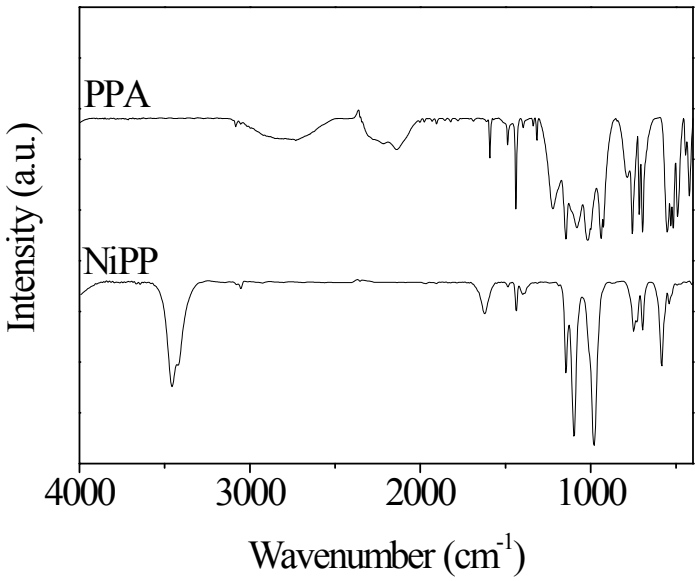


Fig. S3 (a) XPS survey spectrum of NiPP and the high-resolution XPS spectra of (b) Ni 2p; (c) P 2p; (d) C 1s; (e) O1s.

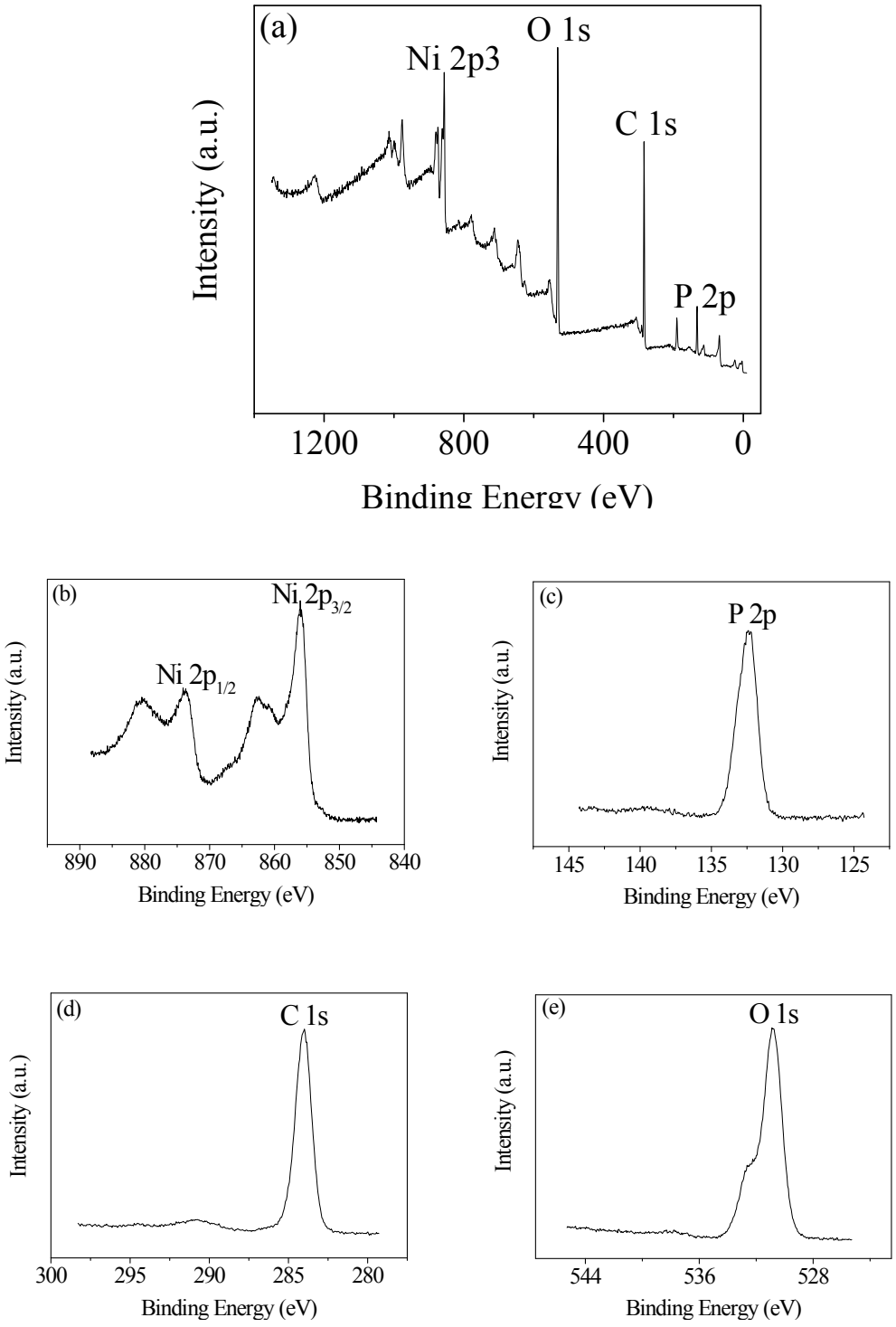


Fig. S4 TG-DTA curve of NiPP.

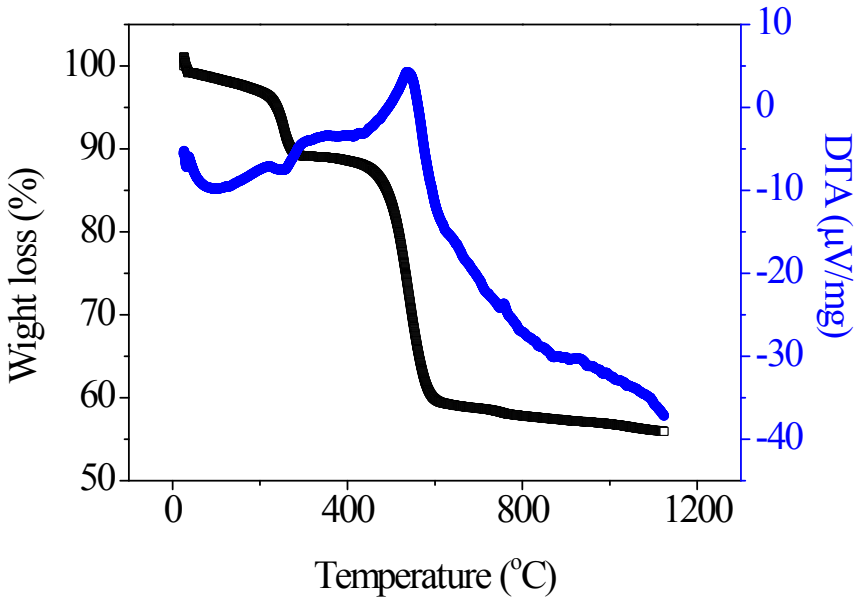


Fig. S5 The specific capacitances *vs*. different current densities (0.5 A g^{-1} to 8 A g^{-1}), i.e., rate capability of four electrode materials.

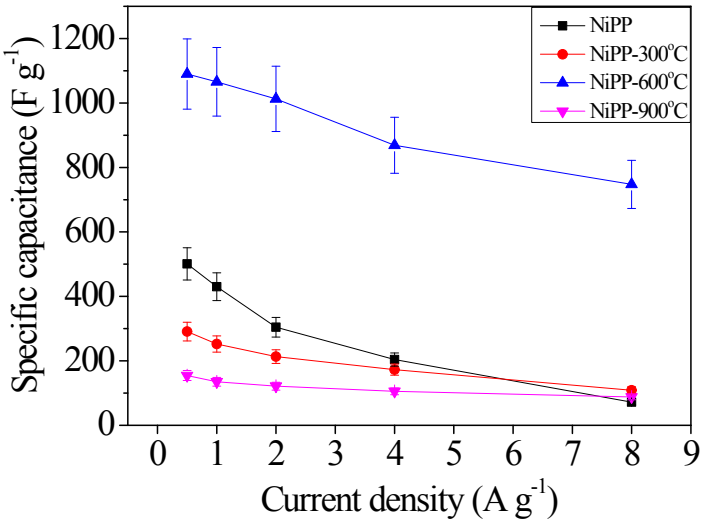
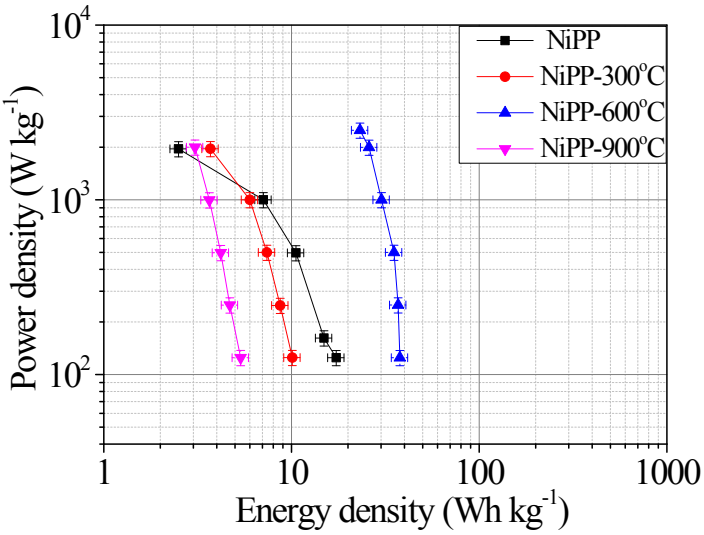


Fig. S6 Ragone plots of four electrode materials.



The formula calculation for specific capacitance (C), energy density (E) and power density (P) as follows (1)–(3):[1,2]

$$C\ (F\ g^{-1}) = \frac{I\Delta t}{m\Delta V} \qquad (1)$$

$$(Wh\ kg^{-1}) = \frac{I\Delta V\Delta t}{m} \qquad (2)$$

$$(W\ kg^{-1}) = \frac{I\Delta V}{m} \qquad (3)$$

Where I is current, Δt is discharging time, m is mass of active material, and ΔV is potential difference.

[1] K. Raju, K. I. Ozoemena, *Scientific Reports*, 2015, 17629.

[2] B. Senthikumar, Z. Khan, S. Park, K. Kim, H. Ko, Y. Kim, *J. Mater. Chem. A*, 2015, **3**, 21553–21561.