

Supplementary Material

Porous $\text{LiFePO}_4/\text{NiP}$ Composite Nanospheres as the Cathode Materials in Rechargeable Lithium-Ion Batteries

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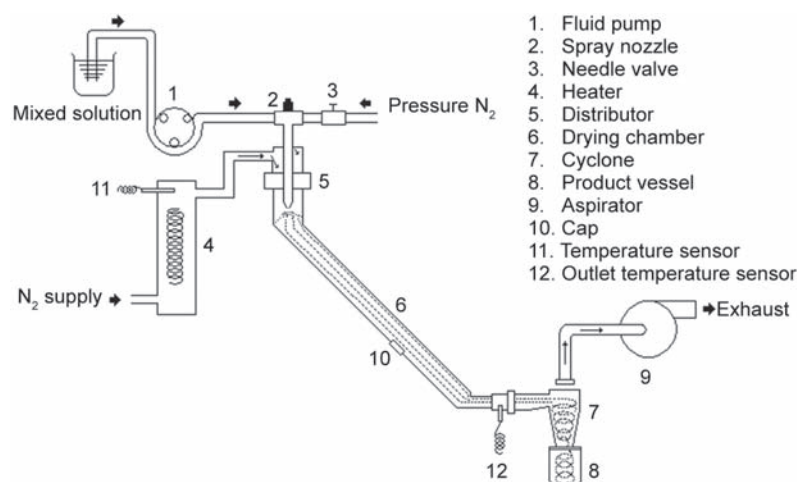


Figure S-1 Schematic diagram of the apparatus used for the preparation of LiFePO_4 nanospheres

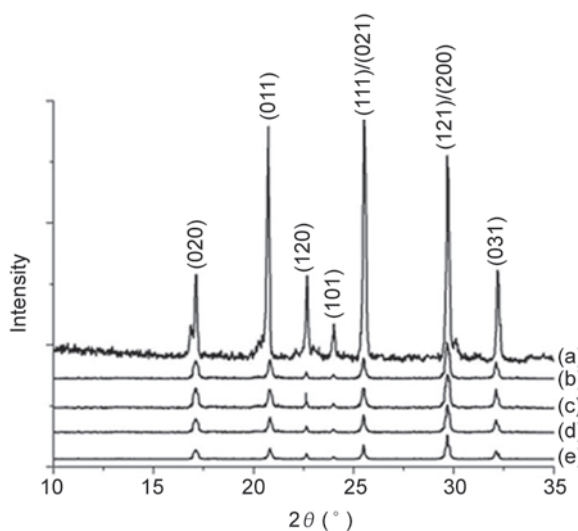


Figure S-2 XRD patterns of the as-prepared LiFePO_4 bulk particles (a), nanospheres without NiP (b) and containing 0.35 wt% (c), 0.86 wt% (d), and 1.50 wt% NiP (e). The peak intensities for the bulk particles are much higher than those of the nanospheres because the crystallization of bulk LiFePO_4 is better than that of nanoparticles, due to the elevated temperature employed in the solid phase synthesis route



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Table S-1 Cell parameters from the Rietveld refinement compared with the standard data for LiFePO₄

Cell parameters	<i>a</i> (Å)	<i>b</i> (Å)	<i>c</i> (Å)	<i>α</i> (°)	<i>β</i> (°)	<i>γ</i> (°)	<i>R</i> _{wp} ^a	<i>S</i> ^a
Refined data	6.0241	10.409	4.7365	90	90	90	14.18	1.9256
PDF No. 40-1499	6.0189	10.347	4.7039	90	90	90	-----	

^a *R*_{wp}: reliability factor; *S*: goodness of fit. (*R*_{wp} and *S* are defined in Ref. S-1 in the ESM)

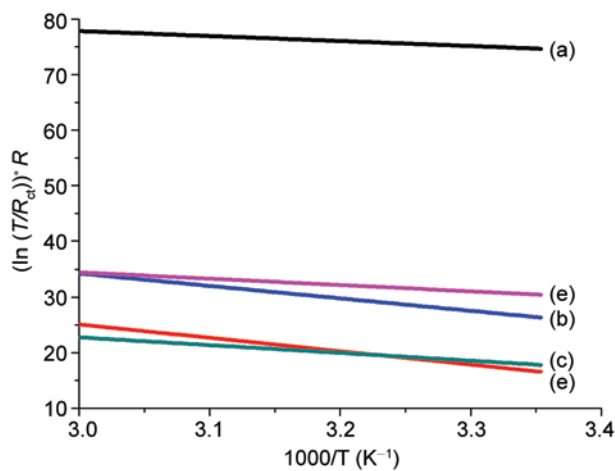


Figure S-3 Arrhenius plots of $\ln (T/R_d) \times R$ vs $1000/T$ [S-2]. The slopes of the lines indicate the value of $-E_a$

References

S-1 Izumi, F.; Ikeda, T. A Rietveld analysis program RIETAN-98 and its applications to zeolites. *Mater. Sci. Forum* **2000**, 321–324, 198–203.

S-2 Schranzhofer, H.; Bugajski, J.; Santner, H. J.; Korepp, C.; Möller, K. -C.; Besenhard, J. O.; Winter, M.; Sitte, W.; Electrochemical impedance spectroscopy study of the SEI formation on graphite and metal electrodes. *J. Power Sources* **2006**, 153, 391–395.