

Supporting Information for

Optimizing $\text{LiFePO}_4@\text{C}$ core-shell structures via the 3-Aminophenol-Formaldehyde
polymerization for improved battery performance

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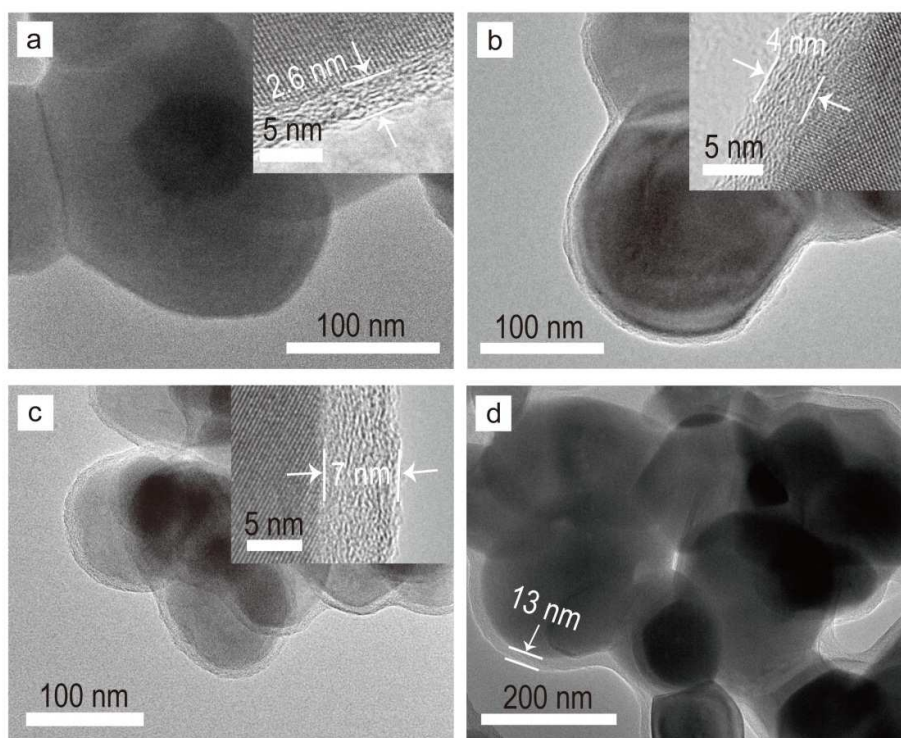


Figure S1 LFP@C samples with coating thickness of 2.6, 4, 7 and 13 nm, prepared by controlling

the reaction time for 1 h, 3 h, 6 h and 16 h respectively in the synthesis of LFP@C4.

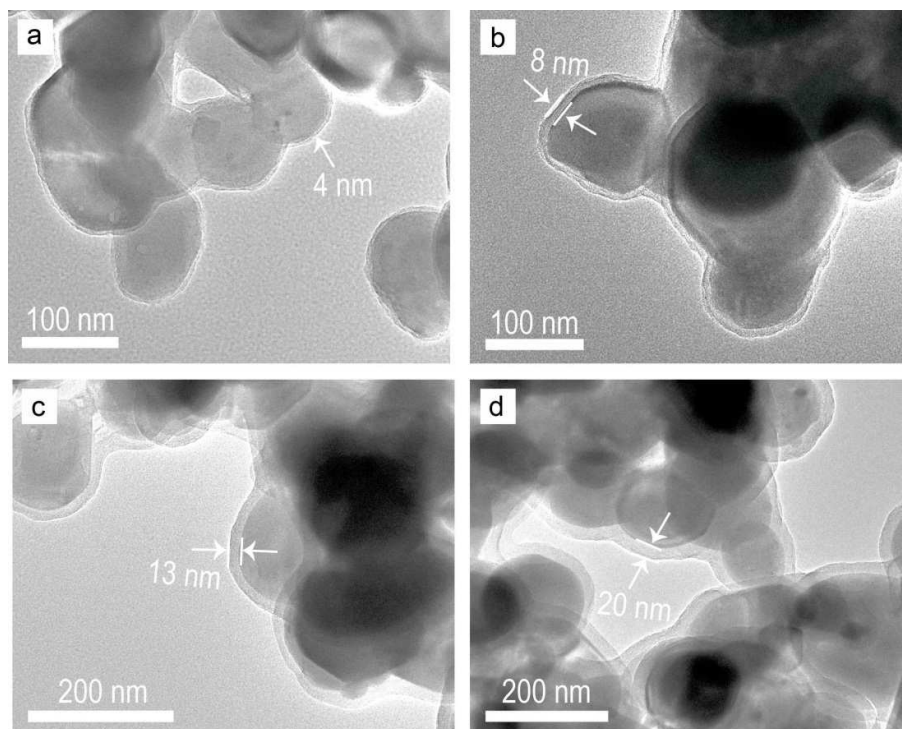


Figure S2 TEM images of samples before calcination: (a) LFP@3-AF1, (b)LFP@3-AF2, (c) LFP@3-AF3, and (d) LFP@3-AF4. The surface 3-AF layers are around 4 nm, 8 nm, 13 nm, and 20 nm in thickness, respectively.

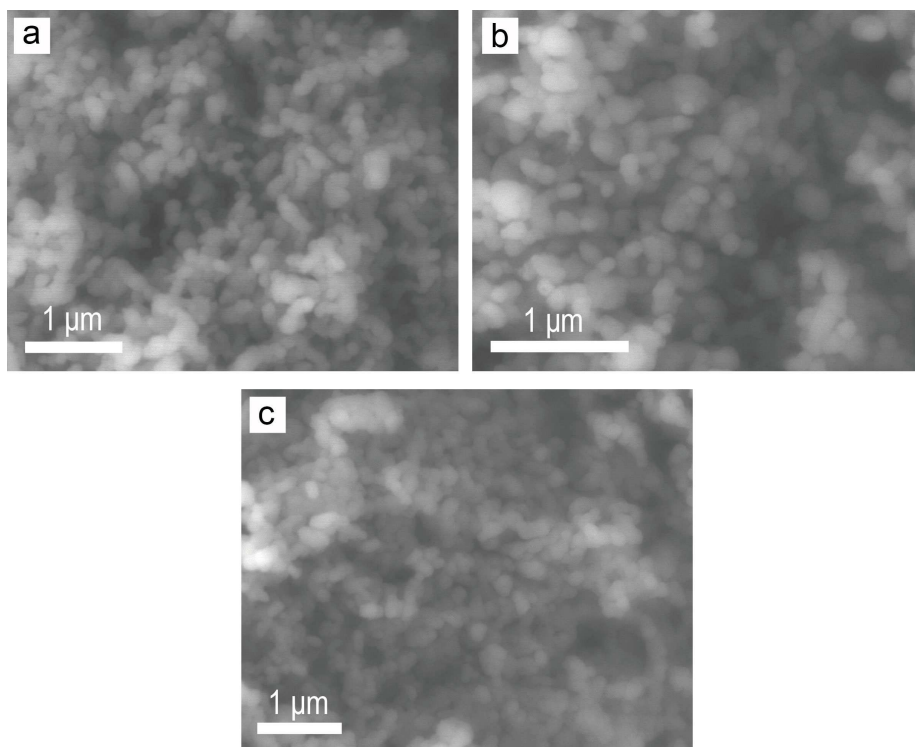


Figure S3 SEM images of the hydrothermally synthesized LFP (a), LFP@3-AF (b) and LFP@C

(c).

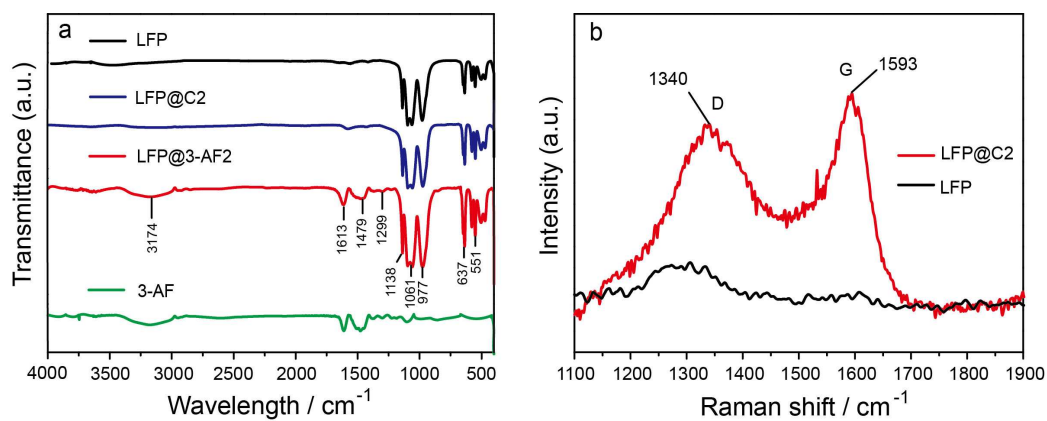


Figure S4 (a) IR spectra of LFP, LFP@C2, LFP@3-AF2 and 3-AF; (b) Representative Raman spectra of carbon coated LFP@C sample with a thickness of 5 nm.

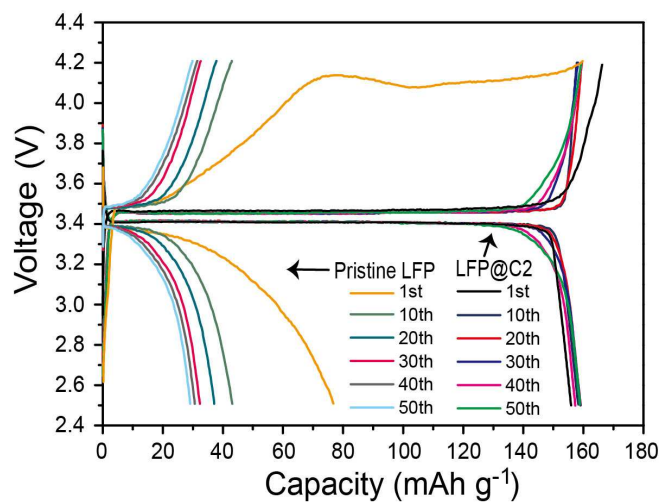


Figure S5 Comparison of voltage profiles between LFP and LFP@C2 in 50 cycles.

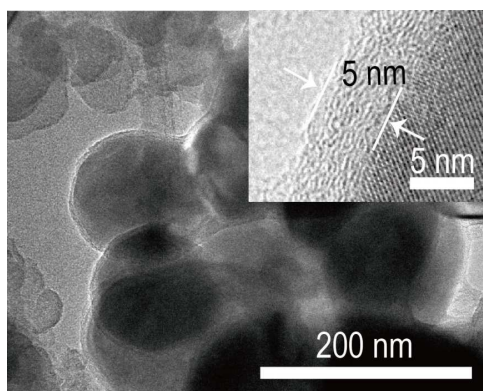


Figure S6 TEM image of LFP@C2 after charge-discharge cycling. No shedding of carbon layer is detectable and the thickness remains around 5 nm for LFP@C2, indicating the core-shell structured samples are pretty stable during cycling.