Supporting information for

Capacity Fading Mechanism of The Commercial 18650 $LiFePO_4$-Based Lithium Ion Batteries: An *In-Situ* Time-Resolved High-Energy Synchrotron XRD Study

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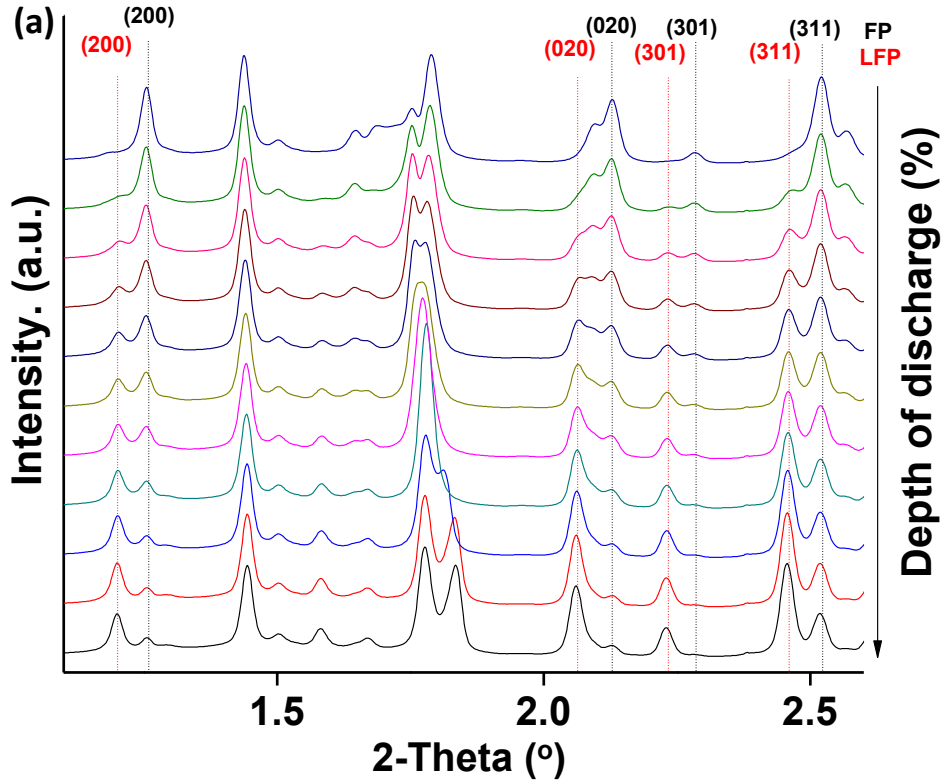
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(200)
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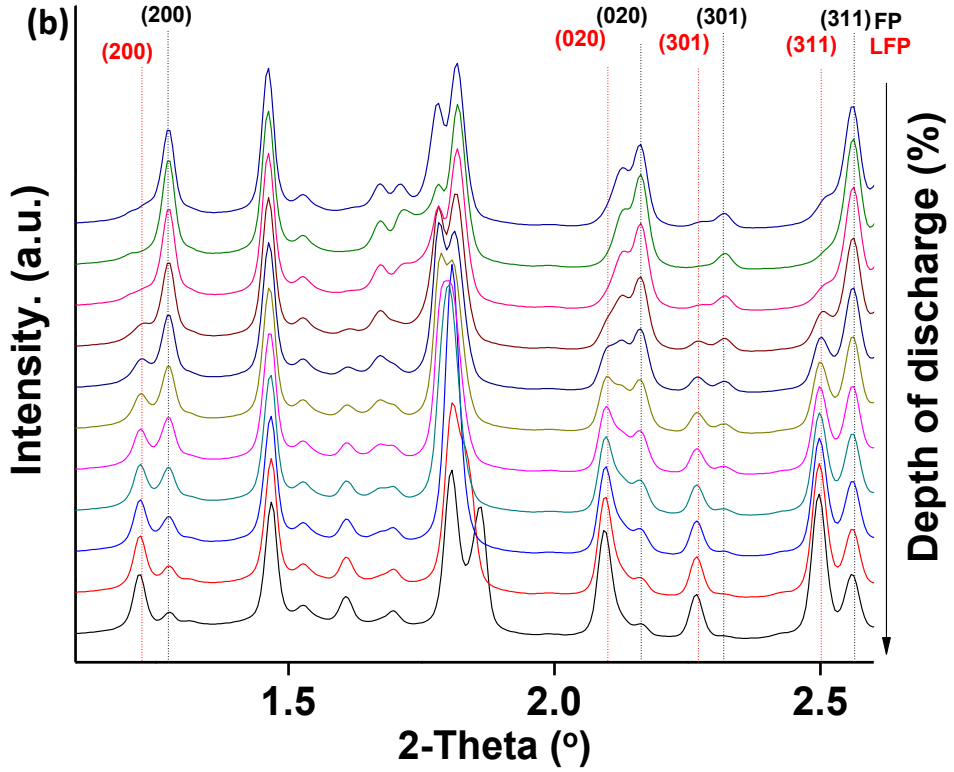
FP
LFP
Intensity. (a.u.)
Depth of discharge (%)
1.5
2.0
2.5
2-Theta (°)


(b)
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FP
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Intensity. (a.u.)
Depth of discharge (%)
1.5
2.0
2.5
2-Theta (°)

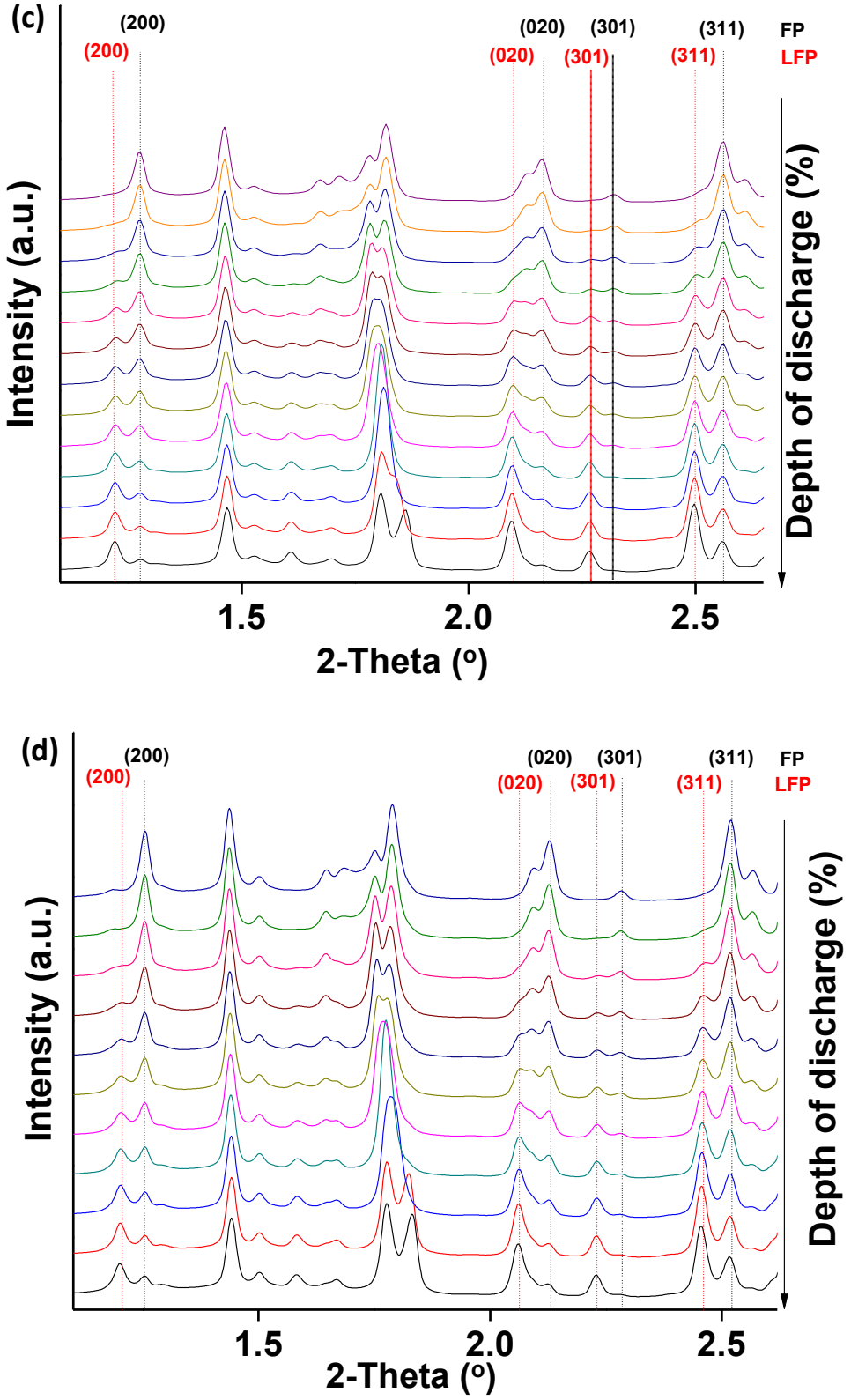

Figure S1 XRD patterns between 2θ= 1.0 ˚and 2.8 ˚ during discharge process at 1C rate: (a) 500th, (b) 1000th, (c) 1500th, (d) 2000th cycles.

Table S1. Summary of electrochemical impedance spectra fitting results

Cycle Number	R_0	C_{SEI}	R_{SEI}	C_{dl}	R_{ct}	σ
1st	0.076434	0.35731	0.002323	0.85074	0.00406	1.982
2500th	0.079489	0.47317	0.002184	0.73111	0.004583	3.096