

Supplementary Materials

Figure S1. FT-IR characterization of different condition synthesis of LFP by microwave-assisted hydrothermal method.

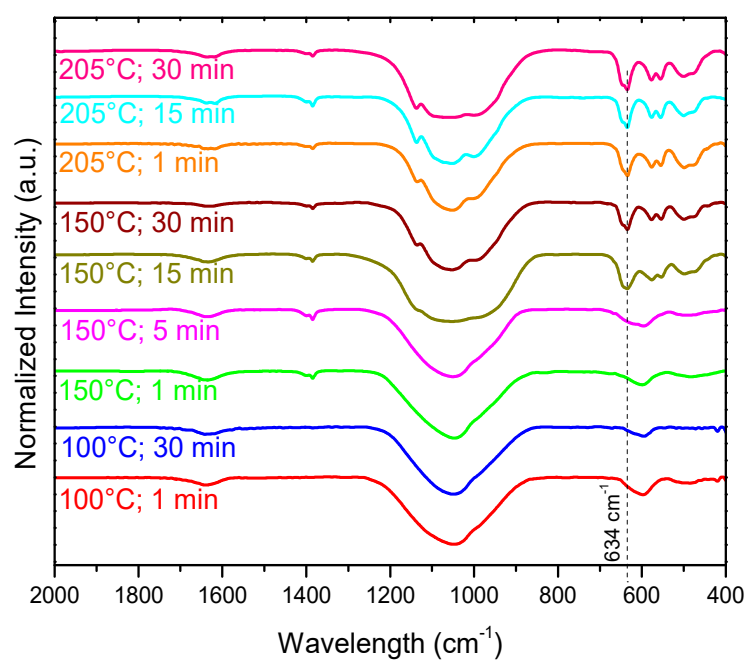


Table S1. Average particle size of the N samples, measure with Image J software

Sample	Type NC	% wt NC	Average particle size (nm)
N1	CNC	0.15	369
N2	CNC	1	111
N3	CNF	0.15	212
N4	CNF	1	117
N5	CNC	0.15	147
N6	CNC	1	369
N7	CNF	0.15	92
N8	CNF	1	95
N9	CNC	0.15	270
N10	CNC	1	129
N11	CNF	0.15	149
N12	CNF	1	108
N13	CNC	0.15	159
N14	CNC	1	336
N15	CNF	0.15	459
N16	CNF	1	94

Figure S2. FE-SEM images of LFP samples synthesized with ethanol as reducing agent at different synthesis conditions.: (a) 150°C for 15 min; (b) 150°C for 30 min; (c) 205°C for 15 min. The particle distribution is inserted in each image.

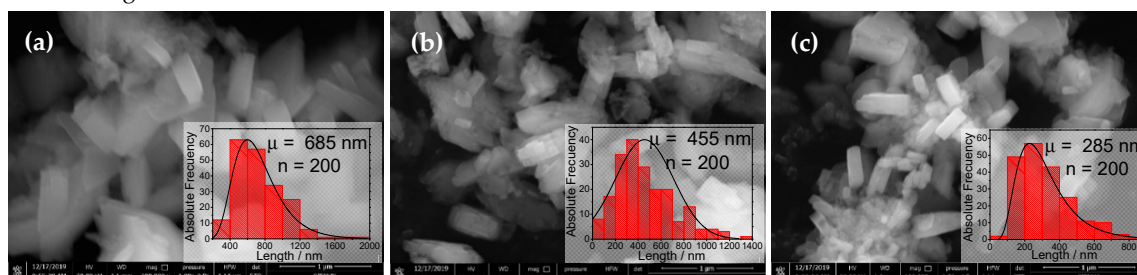


Table S2. Rietveld values obtained for LFP synthesized using ethanol as reducing agent.

Sample	COD-4001849	LFP-ethanol 150°C and 15 min	LFP-ethanol 150°C and 30 min	LFP-ethanol 205°C and 15 min
a (Å)	10.31	10.24	10.24	10.25
b (Å)	6.01	5.90	5.92	5.94
c (Å)	4.69	4.66	4.67	4.66
Volume (Å ³)	291.31	282.93	282.93	283.70
Occ	Li	1	1	1
Occ Fe	1	0.456	0.873	0.677
Occ P	1	0.393	0.734	0.582
Occ O1	1	0.475	0.998	0.785
Occ O2	1	0.536	0.808	0.642
Occ O3	1	0.503	0.953	0.699

Table S3. Comparison of LFP material obtained in this study and previous works.

LFP synthesis condition				LFP/C formation			Performance		Ref.
LFP precursors	Type of synthesis	Temperature and time	Reducing agent	Carbon source	Carbon incorporation	Condition	Particle size (nm)	Specific capacity at 0.1C (mAhg ⁻¹)	
LiOH, FeSO ₄ , H ₃ PO ₄ ; naphthenic acid, isoocetyl alcohol	Hydrothermal stripping	250°C; 3 h	Ascorbic acid	No carbon	-	-	~250 nm	156,1	13
LiOH; FePO ₄	Carbothermal reduction	200°C; 3 h	Glucose	Glucose and synthetic graphite	In situ	Microwave: 1-5 min; 800W	100-150	Not informed	14
Li ₂ CO ₃ ; FePO ₄	Solid-state	650°C; 4 h	Argon	Sucrose	In-situ	-	46	140	15
LiOH, FePO ₄ , H ₃ PO ₄	Hydrothermal	160°C; 12 h	Ascorbic acid	MWCNT	Ex-situ;	700°C; 6 h in Ar	Non-uniform	126	18
LiOOCCH ₃ , FeCl ₂ , H ₃ PO ₄	Hydrothermal	160°C; 12h	Ascorbic acid	MWCNT	Ex-situ	-	-	14	21
LiOH, FePO ₄ ; H ₃ PO ₄	Hydrothermal, microwave	150°C, 30 min	NC	CNC or CNF	In-situ	600°C; 1 h in N ₂	69	40	This work