

Judicious design of lithium iron phosphate electrodes by poly(3,4-ethylenedioxythiophene) for high performance battery

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Table S1 : Fitted hyperfine parameters for pristine and charged electrodes.

Sample	Polymer	Assignment	IS (mm/s)	QS (mm/s)	LW (mm/s)	Contribution (%)
LFP pristine	No	Fe ²⁺	1.220(1)	2.96(1)	0.245(3)	93(2)
		FeP	0.48(3)	0.79(4)	0.38(6)	7(2)
LFP Charged	No	Fe ²⁺	1.22(3)	2.87(4)	0.33(6)	10(4)
		Fe ³⁺	0.427(3)	1.526(7)	0.326(7)	85(4)
		FeP	0.42(4)	0.78(5)	0.26(1)	5(4)
bulk 1% Charged	PEDOT:PSS	Fe ³⁺	0.431(3)	1.534(7)	0.301(8)	92(1)
		FeP	0.41(6)	0.9(1)	0.4(1)	8(1)
EG-bulk1% Charged	EG-PEDOT:PSS	Fe ³⁺	0.426(3)	1.525(7)	0.285(7)	95(7)
		FeP	0.48	0.7(1)	0.4(2)	5(7)

(IS: Isomer shift, QS: Quadrupolar splitting, LW: Line width.)

Table S2. Fitted binding energy (BE) of the Fe(2p) levels and satellite (Sat) signals for LFP-based electrodes.

Sample	BE 2p _{3/2} (eV)	BE 2p _{1/2} (eV)	BE Sat 1 (eV)	BE Sat 2 (eV)
standard (pristine)	710.98	724.64	713.73	727.38
bulk 1% (charged)	712.03	725.75	713.80	727.52
EG-bulk (charged) 1%	711.98	725.80	714.20	728.03

Table S3. Fitted peak positions for the S(2p_{3/2}) level and calculated PSS / PEDOT ratios with associated standard deviation values. The binding energy (BE) of the corresponding S(2p_{1/2}) signals was fixed 1.2 eV above the corresponding S(2p_{3/2}) signals.

Sample	State	BE S(2p _{3/2}) (eV)		PSS/PEDOT ratio
		PEDOT	PSS	
PEDOT:PSS	pristine	164.12	168.46	3.70(2)
PEDOT:PSS	charged C/10	164.14	168.57	3.3(2)
bulk1%	charged C/10	164.11	168.44	1.74(3)
EG-PEDOT:PSS	pristine	164.14	168.38	2.90(2)
EG-PEDOT:PSS	charged C/10	164.17	168.47	2.43(3)
EG-bulk1%	charged C/10	164.13	168.50	1.186(3)