Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A.

Supplementary Information

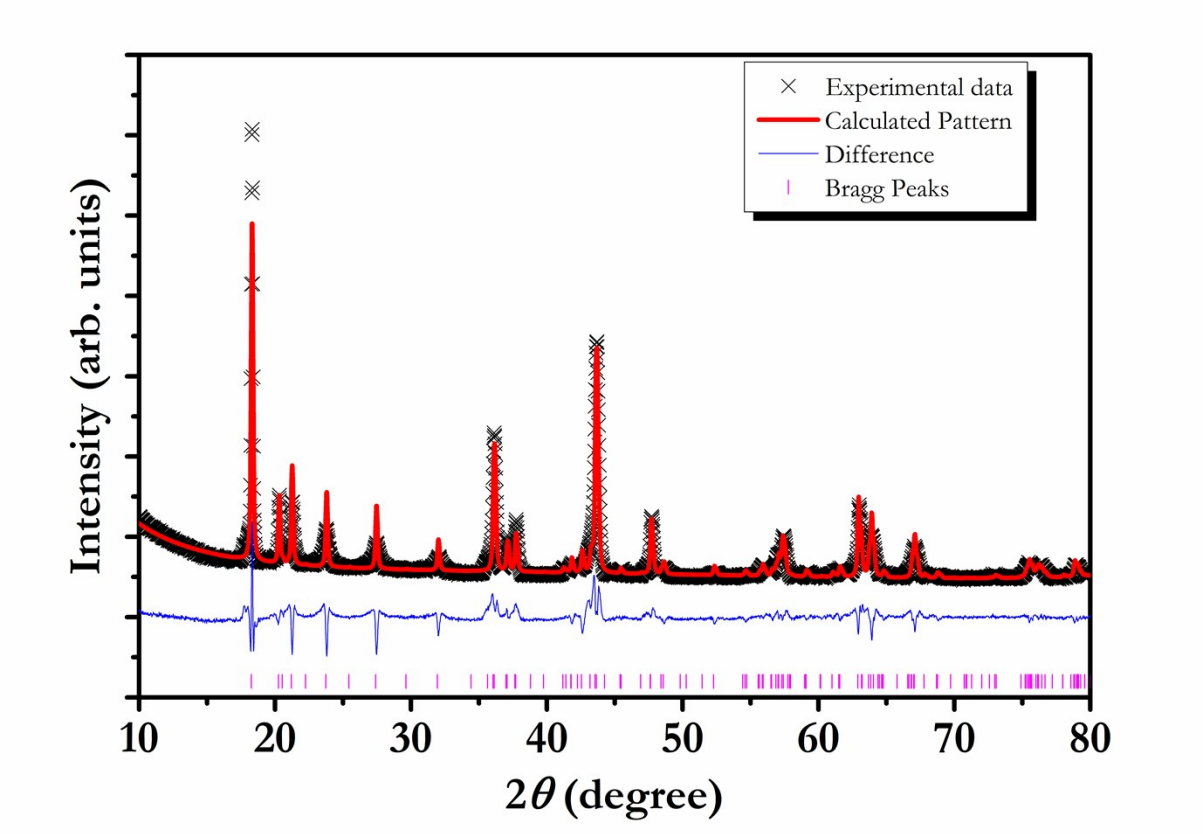

Figure S 1: Rietveld refinement of LRFO

Table S1 Rietveld Refined lattice parameters and crystallite sizes of LRO, LRTO and LRFO

Phase	**LRO**	**LRTO**	**LRFO**
Space Group	C 2/c	C 2/c	C 2/c
a(Å)	4.91(4)	5.03(1)	5.04(4)
b(Å)	8.76(1)	8.72(7)	8.75(6)
c(Å)	9.85(5)	9.84(8)	9.84(9)
β (°)	99.96(5)	99.79(7)	99.89(5)
Crystallite Size (nm)	143.9	138.5	133.5

Table S2: Fe K-edge EXAFS parameters for 8 different voltage points. Only the first nearest neighbour is considered in the fitting.

Voltage	Path	N	ΔE_0 [eV]	R_{eff} [Å]	σ^2 [Å^{-2}]
3.0 V	[Fe] – O – [Fe]	6	1.553	2.013	0.0068
3.7 V		5.675	1.011	2.005	
3.8 V		5.635	0.973	1.996	
4.6 V		4.040	0.795	1.907	
3.8 V		4.421	-1.762	1.900	
3.6 V		4.484	-12.628	1.892	
3.0 V		5.293	-9.254	1.924	
2.0 V		5.397	-9.257	1.950	

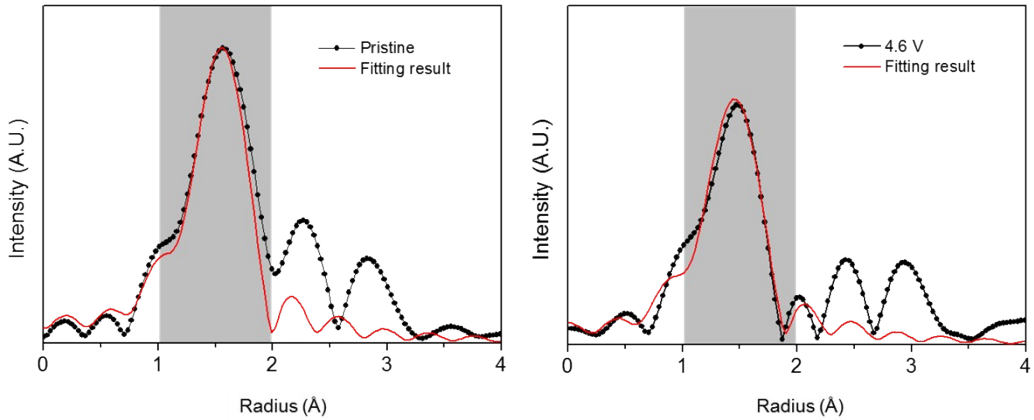

Figure S2. k^2-weighted EXAFS spectra for (Left) 3.0 V during charging and (right) 4.6 V at fully charged state. The x-axis is proportional to the distance between the Fe and neighboring atoms, and the intensity in the y-axis is related to the number of atoms at that distance. The grey area means a fitting range.

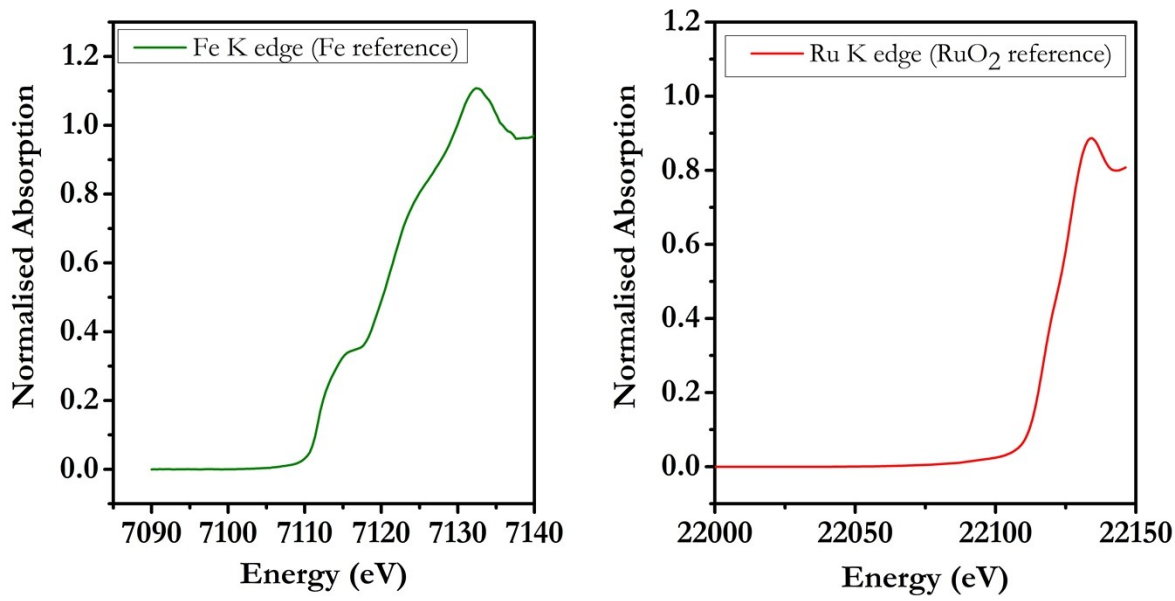

Figure S3. Reference XANES profiles collected for pure Iron powder and Ru in a RuO_2 complex

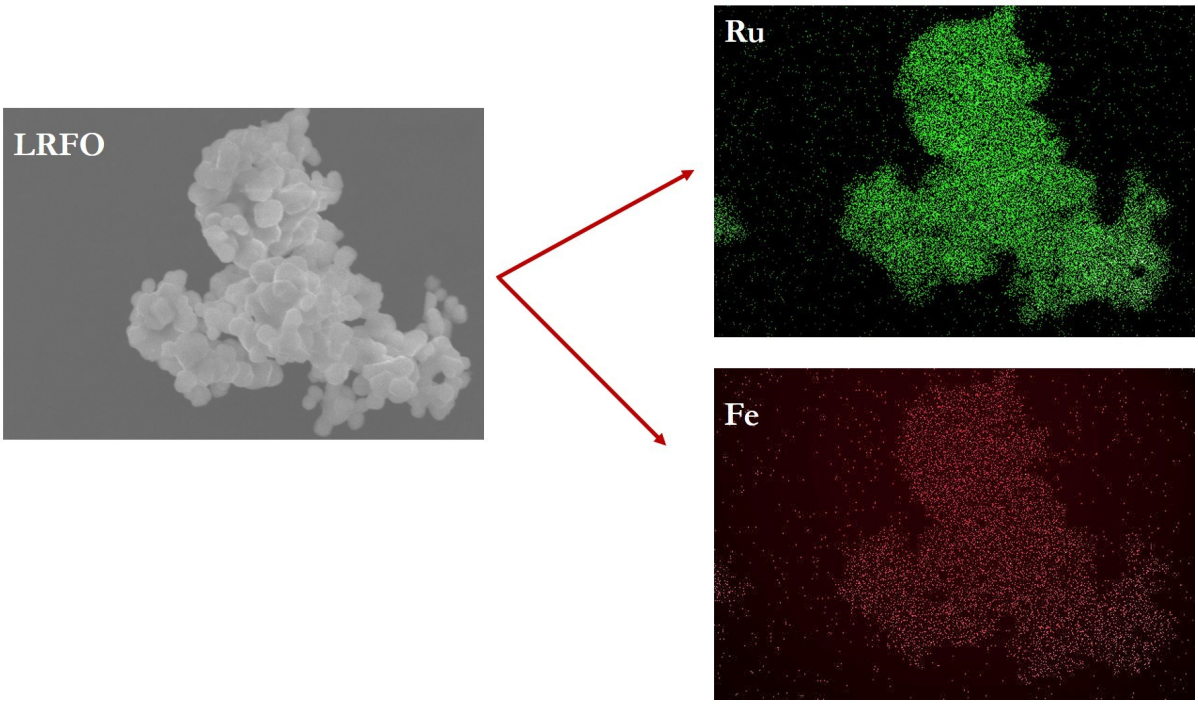

Figure S4. EDX map collected for LRFO indicating a uniform distribution of Ru and Fe in agglomerate without any hotspots.

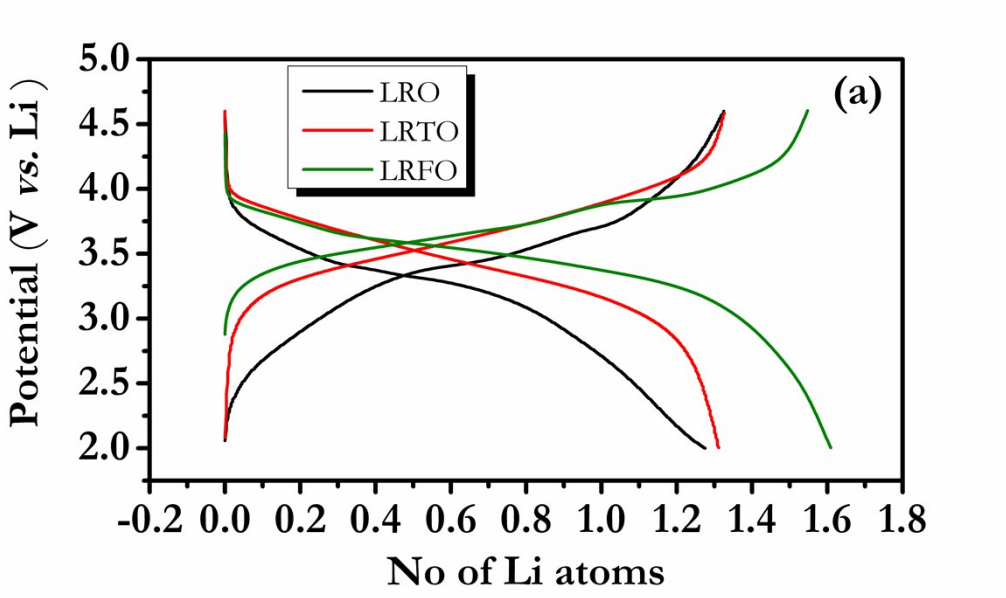

Figure S5. (a) Galvanostatic charge discharge profiles of LRO, LRTO and LRFO indicating the number of Li atoms that can be stored by each. Theoretical capacity for 1 Li atom was calculated by using their individual molecular weights.