Supplementary Information

Comparison of two approaches for $LiFePO_4$ EV battery packs discharging and comprehensive analysis of recovered cathodes for direct recycling purposes

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Figure S1: XRD pattern of the residue formed on the modules using the brine discharge. The diffraction lines are from NaCl (PDF: 04-009-2091)

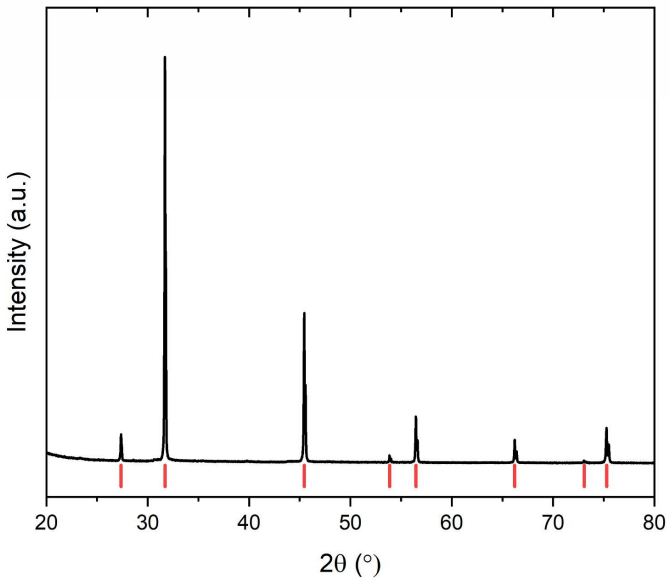

Figure S2: ICP characterization of the salt residue

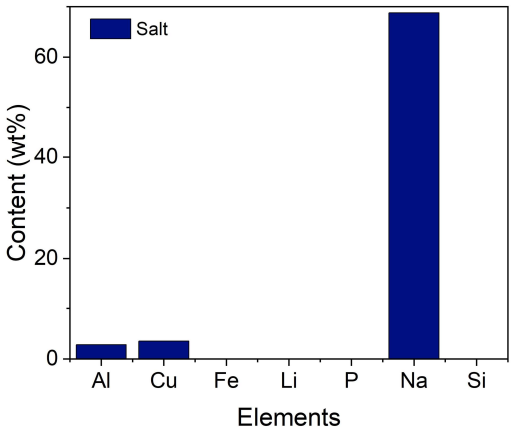

Figure S3: (a) XRD of the resistor discharged samples after washing with acetonitrile. It has to be noted that the (200) reflection of the FP phase, visible at 18° 2θ, is more pronounced in the acetonitrile washed sample in comparison to the unwashed one. Each powder sample is obtained from a different battery cell in the module, so it is possible that some heterogeneities in the LFP/FP ratio can arise since the quantity of FP is influenced by the state of health of the individual battery cell.

(b) Zoom of the 40-47° 2θ region, showing the decrease of the diffraction peaks of the unknown impurity phase. The concerned diffraction peaks are marked with a box.

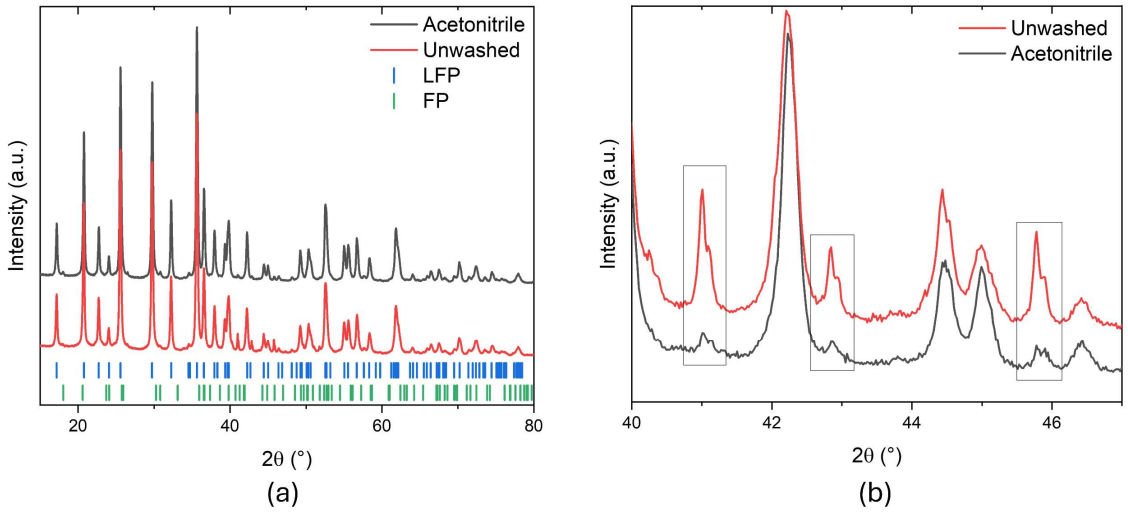

Figure S4: SEM-EDX analysis of the residue deposited on the battery after the brine discharging with the EDX mapping area highlighted in the SEM image (a), the map of Na, Cl, O and Al in (b), and the EDX spectrum in (c).

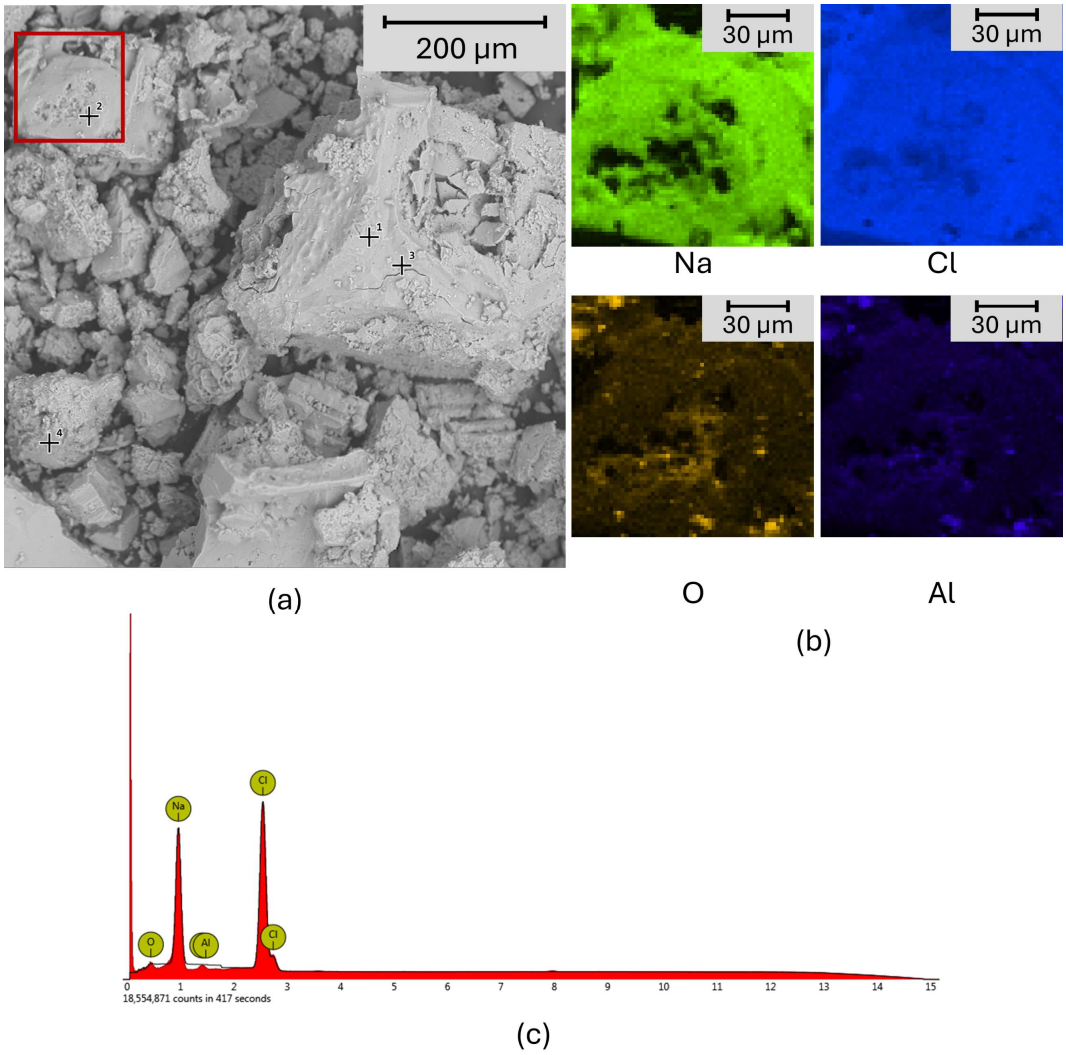

Figure S5: SEM-EDX analysis of the cathode active material from the resistor discharged sample (a; c-d) and the saline brine discharged sample (b; e-f) with the order of elemental maps being P, Fe, O, Al and V.