Supporting Information

# Residual Li$_2$O degrades PVdF during the preparation of NMC811 slurries for Li-ion batteries

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**Table S1. Parameters from ^{7}Li MAS-NMR signal features for Sample 1, 2 and 3 and corresponding quantification. All the spectra were calibrated with respect to LiCl. Surface diamagnetic lithium amounts evaluated by ^{7}Li MAS-NMR given in μmolLi/g$_{AM}$ with an error of ±10%*.**

| | δ (ppm) | | FWHM (ppm) | | Amount (μmol/g$_{AM}$) | |
|---|---|---|---|---|---|---|
| | **Sample 1** | | | | | |
| | powder | slurry | powder | slurry | powder | slurry |
| **Li$_2$O** | 4.6 | 4.6 | 13 | 13 | 46 | 59 |
| **Li$_2$SO$_4$** | -0.6 | -0.6 | 16 | 13 | 10 | 19 |
| **LiOH** | 2.4 | 2.6 | 3 | 4 | 3 | 2 |
| **Li$_2$CO$_3$** | 1.0 | 1.0 | 3 | 3 | 0.3 | 1 |
| **LiF** | --- | 0.2 | --- | 3 | --- | 2 |
| **Total Li** | | | | | 115.6 | 162 |
| | **Sample 2** | | | | | |
| **Li$_2$O** | 4.7 | 4.7 | 12 | 12 | 63 | 76 |
| **Li$_2$SO$_4$** | -0.8 | -0.4 | 14 | 11 | 15 | 18 |
| **LiOH** | 2.4 | 2.4 | 2 | 2 | 2 | 3 |
| **Li$_2$CO$_3$** | 1.0 | 1.1 | 2 | 2 | 1 | 2 |
| **LiF** | --- | 0.2 | --- | 3 | --- | 3 |
| **Total Li** | | | | | 160 | 198 |
| | **Sample 3** | | | | | |
| **Li$_2$O** | 4.7 | 4.6 | 14 | 13 | 43 | 46 |
| **Li$_2$SO$_4$** | -0.6 | -0.9 | 15 | 11 | 6 | 22 |
| **LiOH** | 2.4 | 2.4 | 2 | 4 | 0.3 | 6 |
| **Li$_2$CO$_3$** | 1.2 | 1.1 | 1 | 3 | 0.1 | 4 |
| **LiF** | --- | 0.2 | --- | 5 | --- | 13 |
| **Total Li** | | | | | 98.5 | 163 |

*: The 10% error comes from the reliability factor of the dmfit program used to fit the MAS NMR data. It is an error on the integrated intensity (arbitrary unit) absolute value and depends

only on the quality of the NMR spectrum and not directly on the measured amount of lithium nuclei in $\mu mol.g^{-1}$



(a)
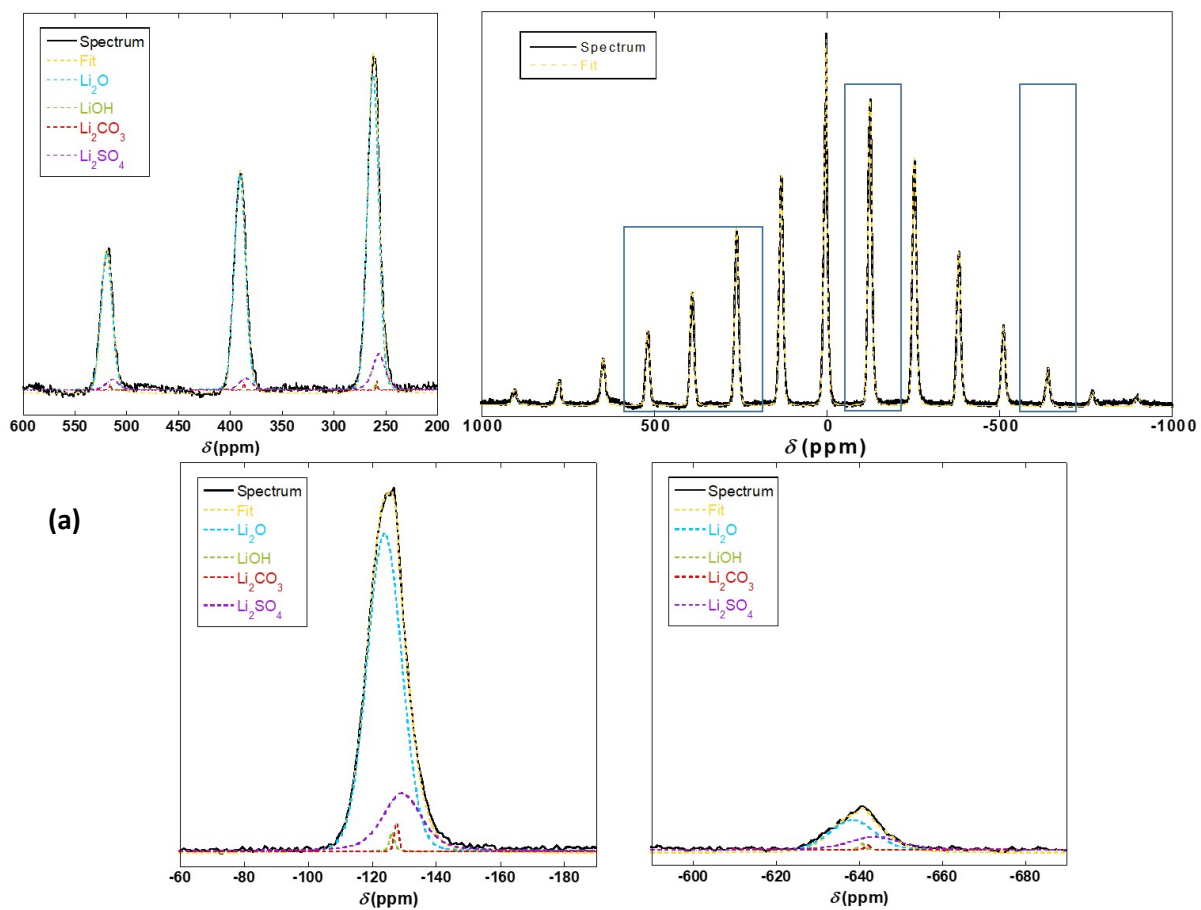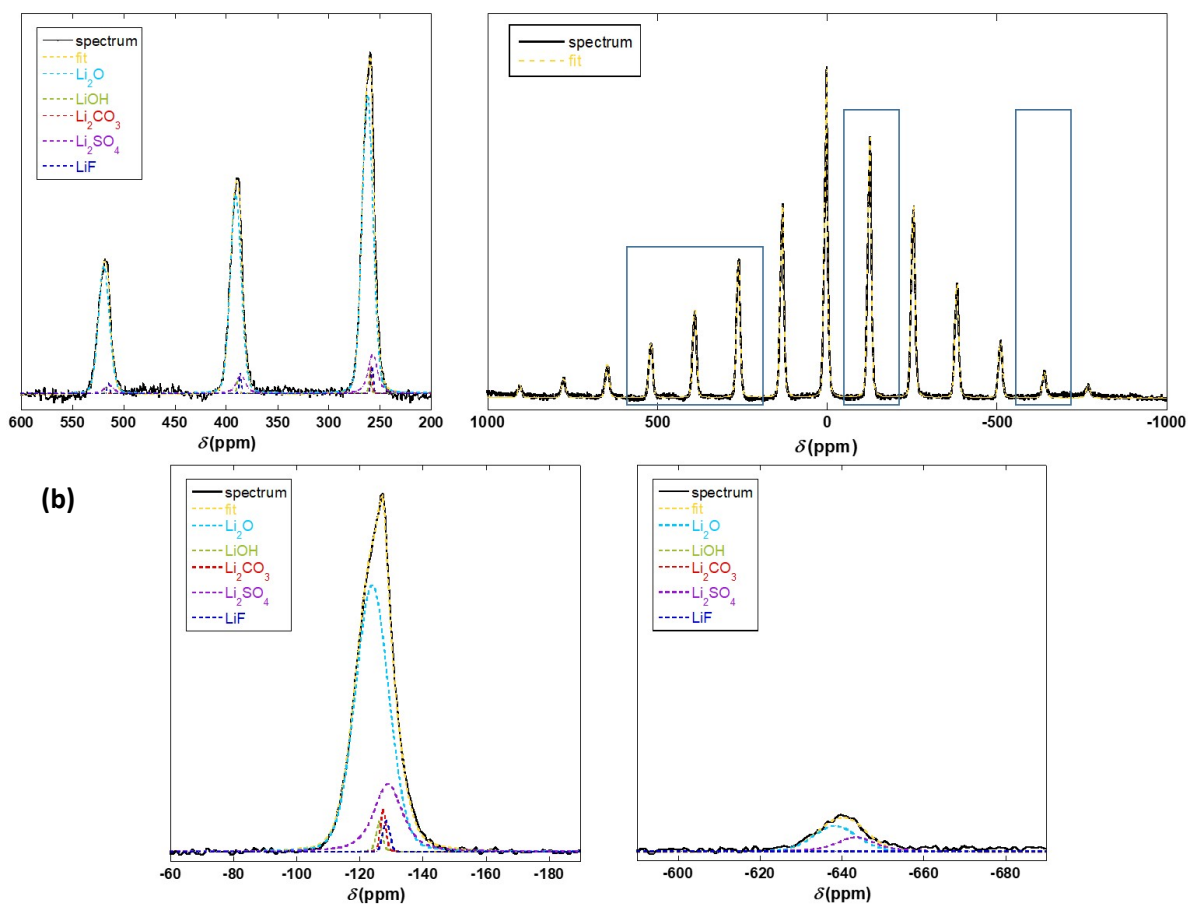
**Figure S1 : Deconvolution of $^7$Li MAS NMR spectra of NMC811 pristine powder (a) and dried slurry (b). Complete spectra are shown with the simulation obtained from the fitting process. Regions in blue rectangles are enlarged as examples.**