

**Supplementary information**

**Structural and Electrochemical Studies of  
a New Tavorite Composition:  $\text{LiVPO}_4\text{OH}$**

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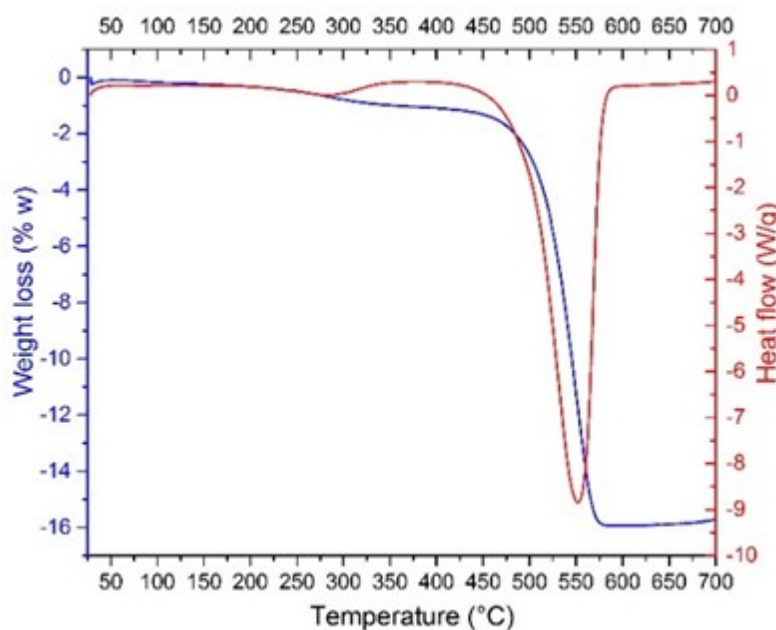
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The thermogravimetric analysis (TGA) of LVPH-b was performed on a STA 449C (ATG-DSC) **Netzsch** under air and over a temperature range between 20 and 700°C, with a continuous heating rate of 5°C/min. The results are given in figure S1 with in blue the weight loss and in red the heat flow.



2D EXSY-RFDR  $^7\text{Li}$  NMR experiments were carried out on samples b and c, using the pulse sequence described in ref (Messinger et al) in the following conditions:

Bruker Avance 300 spectrometer (7T magnet, 116 MHz for  $^7\text{Li}$  resonance).

Spinning speed: 30 kHz in standard Bruker MAS probe and 2.5 mm rotors.

(Synchronization thus allows a spectral width of 257 ppm in the indirect dimension.)

90 ° pulse duration: 2s

Mixing time: 10 ms (300 rotor periods)

Recycle time: 0.5 microsecond

fp-RFDR pulse train: 64 180° pulses (reintroduces the homonuclear dipolar interaction suppressed by MAS)

States quadrature detection in indirect dimension

For details of the pulse sequence, see ref (Messinger et al).

Figure S2 shows the 2D map thus obtained for sample c: the spectrum is clearly only seen in the diagonal. No cross peak that would indicate dipolar correlation between the Li species corresponding to the two peaks is observed. One can therefore conclude that these two Li species are over 5 Å apart, and thus do not belong to the same material.

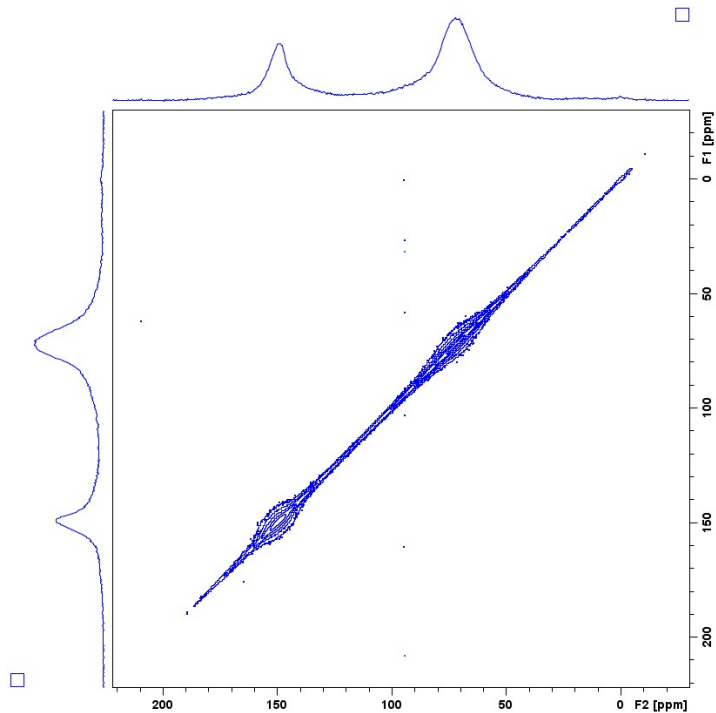


Figure S3 shows the 2D map obtained for sample b. The same conclusion applies although the weaker magnitude of the additional signals in this sample would obviously make it more

difficult to observe possibly very weak cross-peaks.

