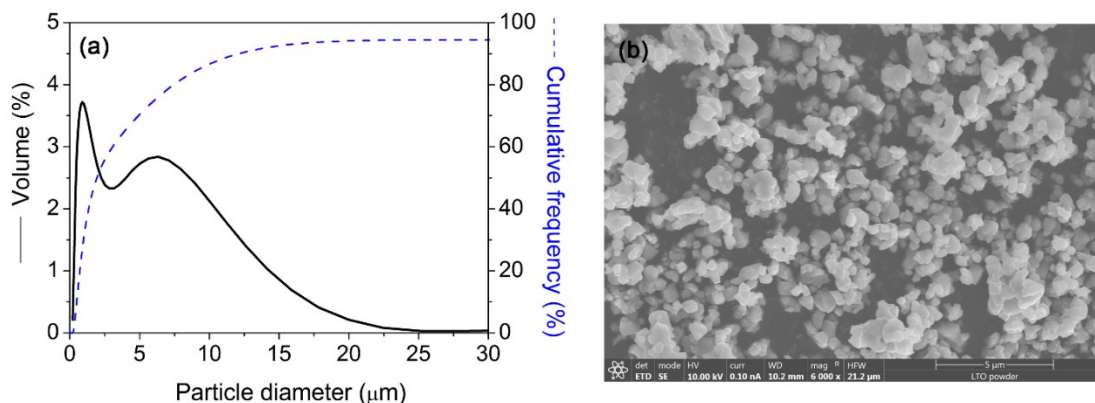
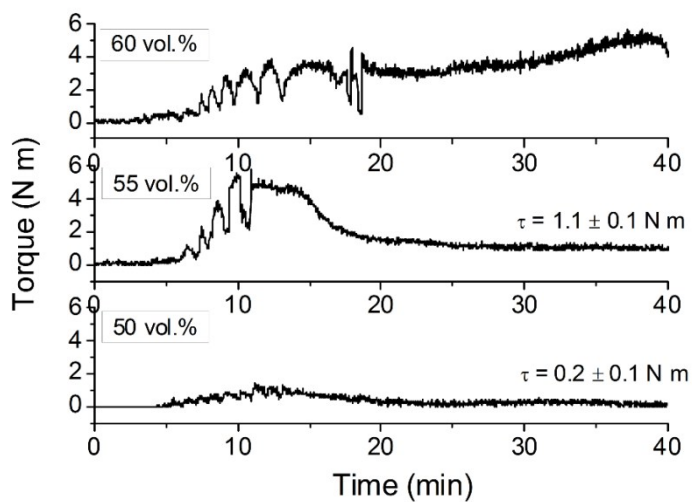


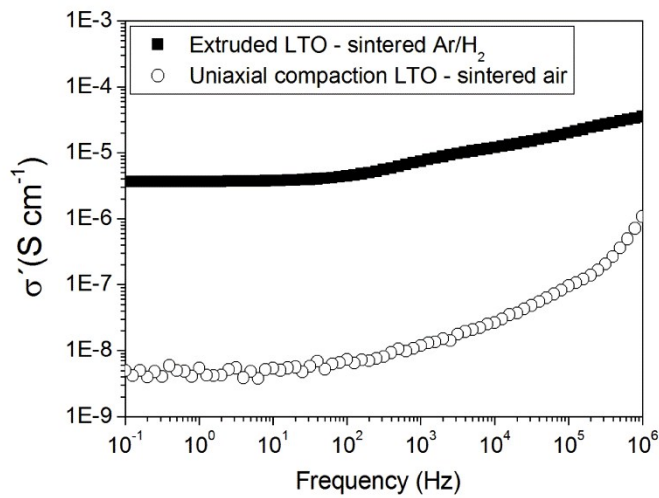
## ELECTRONIC SUPPLEMENTARY INFORMATION



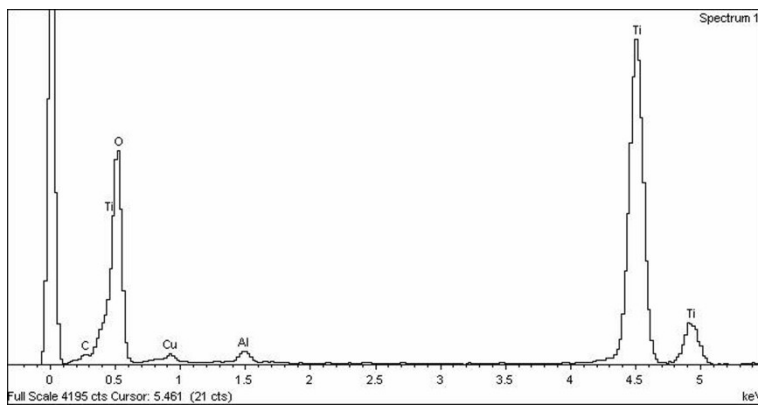
**Figure S1.** (a) Particle size distribution and (b) scanning electron micrograph of  $\text{Li}_4\text{Ti}_5\text{O}_{12}$  commercial powder.



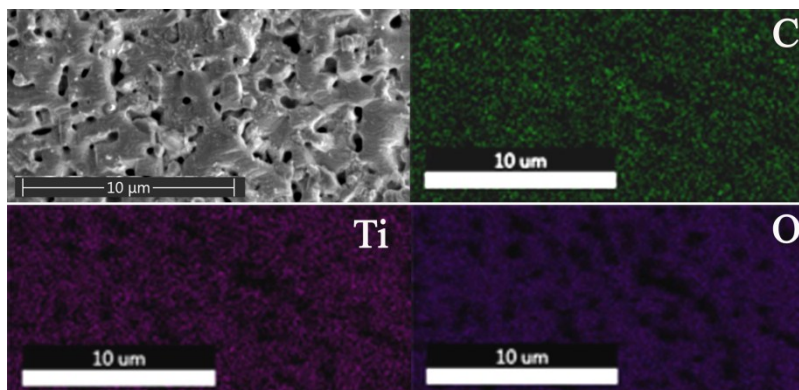
**Figure S2.** Torque against mixing time of feedstocks with powder loadings of 50, 55 and 60 vol.%.



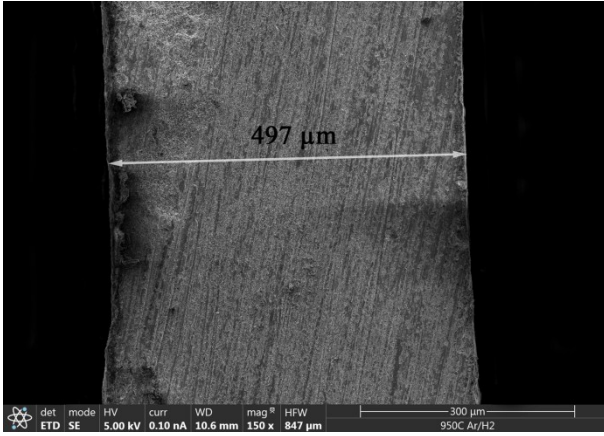
**Figure S3.** Evolution of the conductivity at room temperature with the frequency of extruded and uniaxial compaction LTO samples sintered in Ar/H<sub>2</sub> and air, respectively. An increase of 3 orders of magnitude can be observed.



**Figure S4.** EDS spectrum of LTO extruded samples.



**Figure S5.** EDS mapping of C, Ti and O of LTO extruded samples.



**Figure S6.** Thickness of the LTO layer prepared by PEM.