**Supporting information**

A facile two-step thermal process for producing dense phase pure cubic Ta-doped lithium lanthanum zirconium oxide electrolyte for upscaling

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**Fig. S1** Schematic representation of the experimental process of Ta:LLZO.



**Fig. S2(a-d)** TG and DTA of wet milled La2O3, Ta2O5, ZrO2 and Li2CO3 ­powder.