

## Supplementary information for

### How $\text{Li}_3\text{PO}_4$ affects Sintering Behavior, Microstructure and Electrical Properties of the ceramic LATP Electrolyte

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#### S1: SEM images of synthesized LATP powder

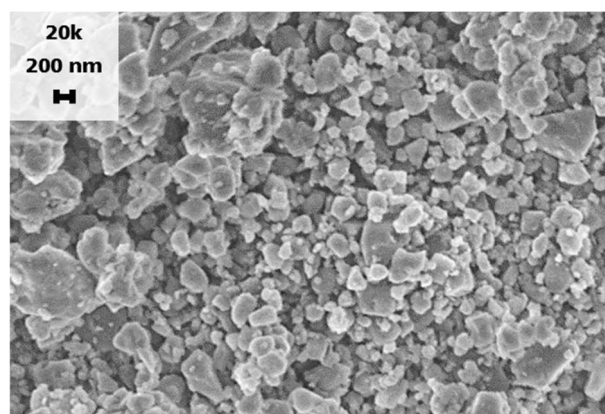


Fig. S1 LATP powder after crystallization at 800 °C for 5 h and ball milling. The particle size distribution is 200 nm - 600 nm.

## S2: Data of thermal-optical measurements

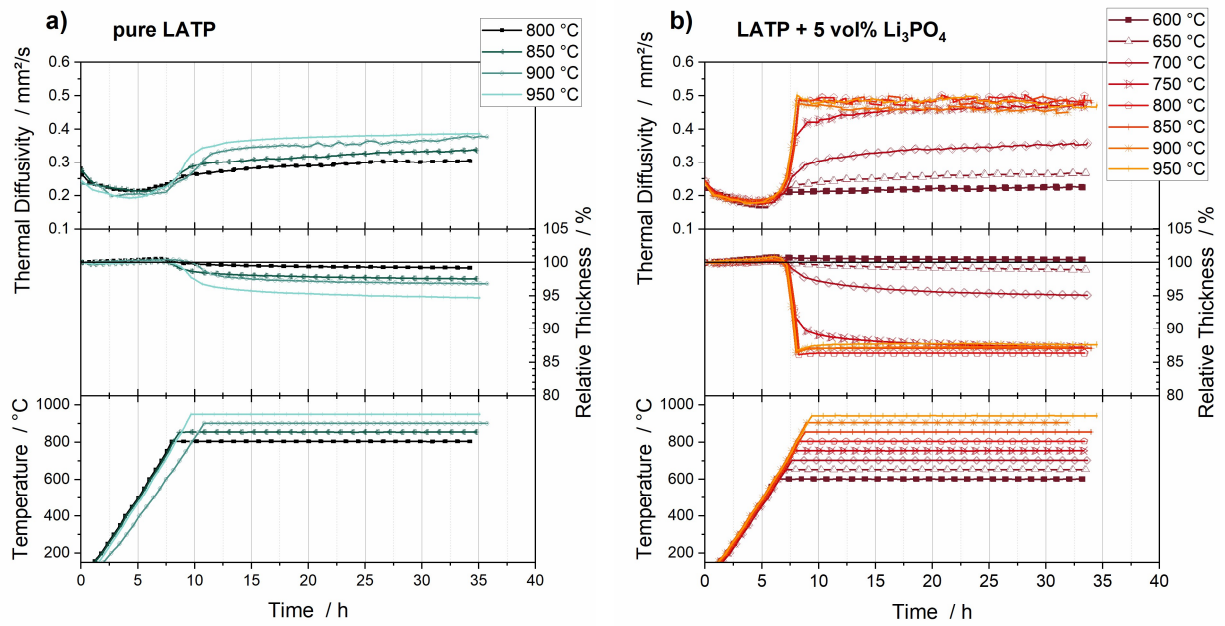


Fig. S2 Thermal diffusivities, relative densities and temperature profile as function of time of a) the pure LAMP samples sintered between 800 °C and 950 °C and b) the LAMP + 5 vol% Li<sub>3</sub>PO<sub>4</sub> samples sintered between 600 °C and 950 °C.

**S3: Arrhenius plots obtained by temperature-dependent electrical impedance spectroscopy**

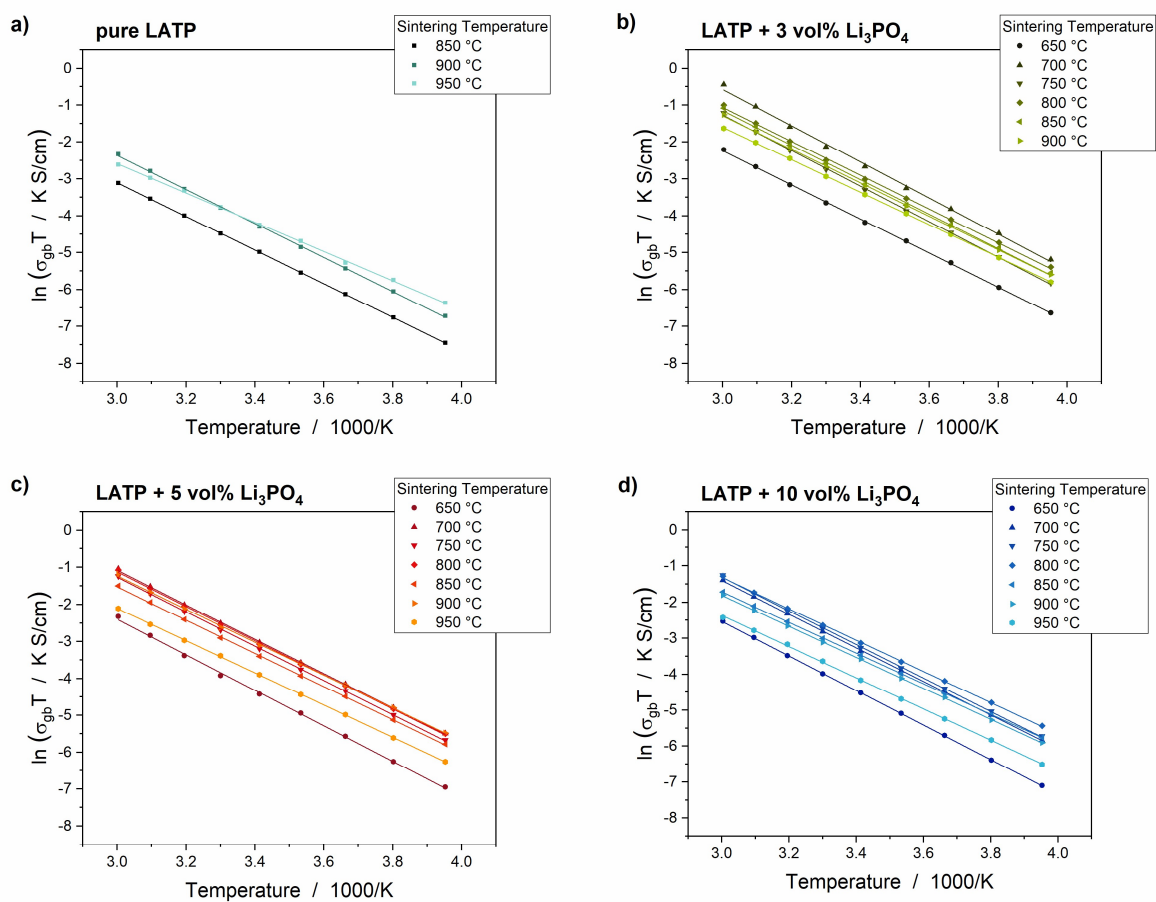


Fig S3 Arrhenius plots obtained from the temperature-dependent EIS measurements of a) pure LTP, b) LTP + 3 vol%  $\text{Li}_3\text{PO}_4$ , c) LTP + 5 vol%  $\text{Li}_3\text{PO}_4$  and d) LTP + 10 vol%  $\text{Li}_3\text{PO}_4$ . The solid lines represent the linear fits.