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Ultrafast high temperature sintering and synthesis of high entropy electrolytes

High-entropy oxides are opening a new set of opportunities to tailor material properties. Such high entropy concept can be extended to the design of new electrolytes for solid-state lithium-ion batteries.
Herein, we investigate the synthesis of new perovskite structures based on lithium-lanthanum titanate (LLTO) chemistry. Different solid solutions have been attempted by doping the A and B sites of the perovskite structure and manufacturing a new electrolyte composition. The use of an ultrafast high-temperature sintering (UHS) facility hugely accelerates material discovery by allowing multiple thermal treatments in a short time. This further contributes to the reduction of Li volatilization or its poisoning (e.g., the reaction with silica impurities in conventional muffle furnaces). In this regard, UHS is a promising tool to engineer new material compositions and tailor their properties and microstructures.

Professional Status of the Speaker

Senior Scientist

Interest in submitting a paper in a special issue of

No interest

Invitation letter for visa

No

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