Contribution ID: **86** Type: **Talk**

Exploring the synthetic effects on disorder in fast ionic conducting materials using neutron diffraction

Tuesday 7 December 2021 13:15 (25 minutes)

The advent of solid-state batteries has spawned a recent increase in interest in lithium conducting solid electrolytes, especially in the lithium thiophosphates. However, many open questions remain when trying to optimize electrolytes and understand solid state battery chemistries.
In this presentation, we will show how an understanding of the structure-transport properties of the lithium argyrodites Li6PS5X can help tailor the ionic conductivity. We show that an anion site-disorder and anionic charge inhomogeneities are important and that and that tailoring dis disorder leads to improvements of the conductivity.

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Session Classification: Structure Research

Track Classification: Structure Research