Supporting information

Selective Blockage of Li ion diffusion pathways in $Li_{10}SnP_2S_{12}$: Insight from Nuclear Magnetic Resonance

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KEYWORDS: Fast ionic conductors, Solid-state NMR, Microstructure, Ion diffusion, Conductive mechanism

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1. Variable temperature static ^{7}Li NMR spectra at 116.5 MHz for $Li_{10}SnP_2S_{12}$

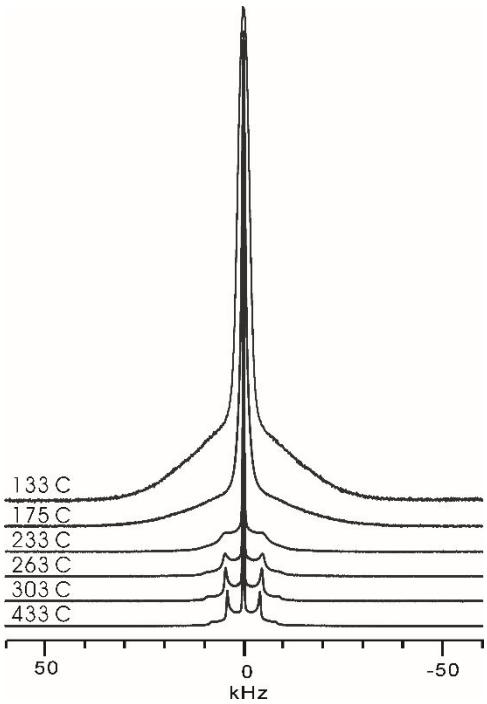

Figure S1. Variable temperature static ^{7}Li NMR spectra at 116.5 MHz for $Li_{10}SnP_2S_{12}$.

2. ^{7}Li Spin-Alignment Echo (SAE) NMR decay curve

The τ_{SAE} in equation S1 denotes the decay time constant associated with the motional correlation time of Li ion migration, and T_{1Q} is a relaxation time of quadrupolar order, as well as γ_c is a stretched exponential factor.[1, 2]

$$S_2(t_m, t_p) = \left\{ A \exp(-\frac{t_m}{\tau_{SAE}})^{\gamma_c} + B \right\} \exp(-\frac{t_m}{T_{1Q}}) \qquad \text{(S1)}$$

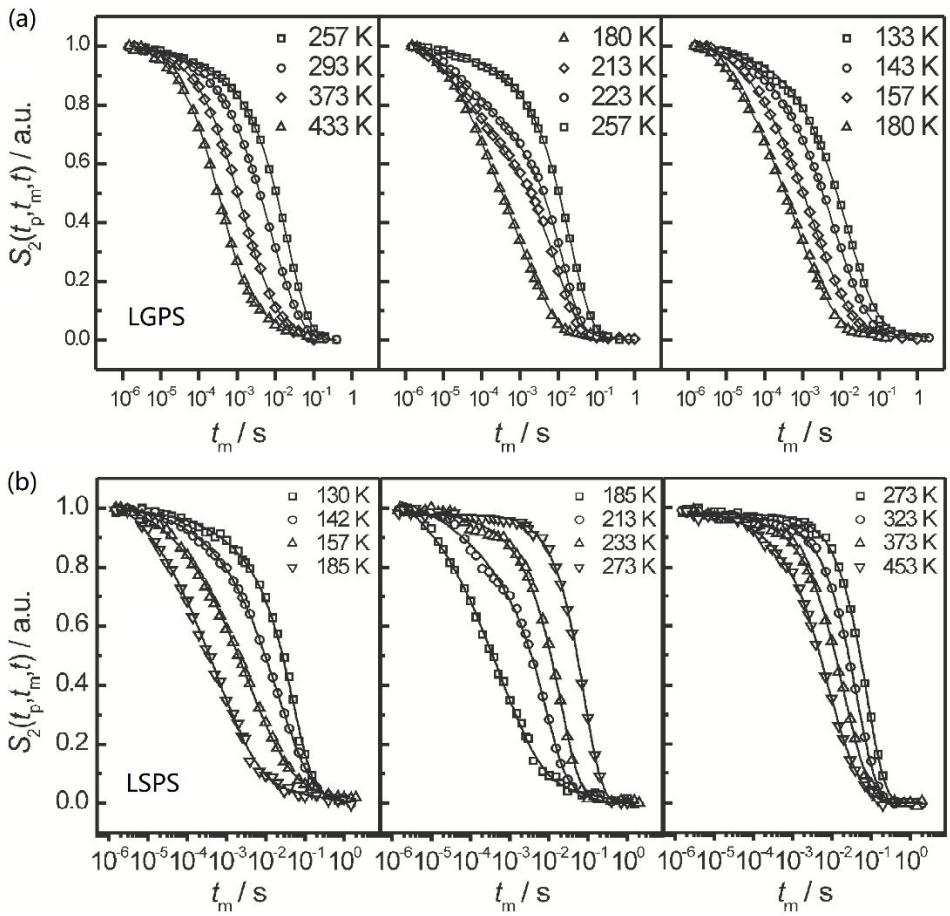

Figure S2. ^{7}Li SAE NMR correlation functions of (a) $Li_{10}GeP_2S_{12}$ and (b) $Li_{10}SnP_2S_{12}$ recorded at 116.5 MHz and t_p = 20 μs at variable temperature.

3. Distances and numbers of ^{31}P-^{7}Li spin pairs for $Li_{10}SnP_2S_{12}$ compared to $Li_{10}GeP_2S_{12}$

Table S1. Distances and numbers of ^{31}P-$^{7}Li(4)$ spin pairs for LSPS and LGPS

	Li4-LGPS[3]		Li4-LSPS[4]	
	Distance(Å)	Number	Distance(Å)	Number
P(1)	4.413	2	4.439	2
	4.397	2	4.430	2
P(2)	3.204	2	3.163	2

References

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