

Supplementary information

Table S1: A comparison table of ionic conductivity based on PEO solid-state electrolyte.

Polymer electrolyte	Ionic conductivity (S/cm)	Ref.
PEO/LiTFSI/LAGP	6.76×10^{-4} (25°C)	[S1]
PEO/LiTFSI /LLZO nanowires	2.39×10^{-4} (25°C)	[S2]
PEO/LiTFSI/LLTO-nanowires	5.53×10^{-5} (25°C)	[S3]
PEO/LiTFSI/LATP	2.08×10^{-4} (25°C)	This work
PEO/LiTFSI/LLZTO	1.64×10^{-4} (25°C)	This work

PEO: polyethylene oxide; LiTFSI: lithium bis(trifluoromethane) sulfonimide; LAGP: $\text{Li}_{1.5}\text{Al}_{0.5}\text{Ge}_{1.5}(\text{PO}_4)_3$; LLZO: $\text{Li}_7\text{La}_3\text{Zr}_2\text{O}_{12}$; LLTO: $\text{Li}_{0.33}\text{La}_{0.557}\text{TiO}_3$; LATP: $\text{Li}_{1.5}\text{Al}_{0.5}\text{Ti}_{1.5}(\text{PO}_4)_3$; LLZTO: $\text{Li}_{6.4}\text{La}_3\text{Zr}_{1.4}\text{Ta}_{0.6}\text{O}_{12}$

References

- [S1] Y Zhao, Z Huang, S Chen et al, A promising PEO/LAGP hybrid electrolyte prepared by a simple method for all-solid-state lithium batteries. *Solid State Ionics* 295 (2016) 65–71.
- [S2] Wan Z, Lei D, Yang W et al, Low resistance–integrated all-solid-state battery achieved by $\text{Li}_7\text{La}_3\text{Zr}_2\text{O}_{12}$ nanowire upgrading polyethylene oxide (PEO) composite electrolyte and PEO cathode binder, *Adv. Funct. Mater* 29 (2019) 1–10.
- [S3] L. Zhu, P.H. Zhu, Q.X. Fang, M.X. Jing, X.Q. Shen, L.Z. Yang, A novel solid PEO/LLTO-nanowires polymer composite electrolyte for solid-state lithium-ion battery, *Electrochim. Acta* 292 (2018) 718-726.