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Highly elastic and flexible solid-state polymer electrolyte based on ionic liquid-decorated PMMA nanoparticles for lithium batteries

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Supplementary Information

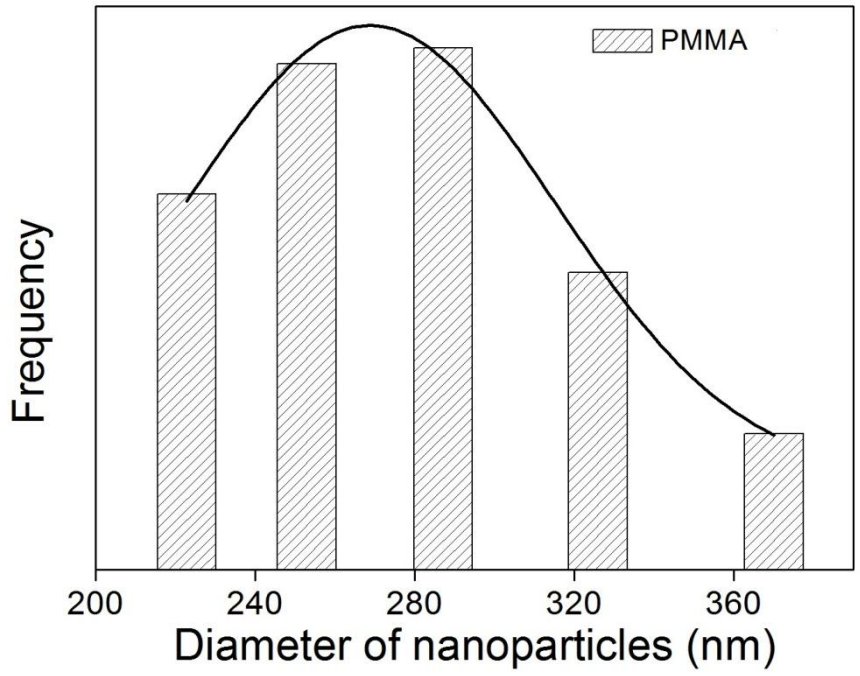

Figure S1. Relative size distribution of PMMA nanoparticles.

Table S1. VFT fitting parameters of ionic conductivities and lithium ion transference number (t_{Li}^{+}) for PMMA-IL-TFSI/IL-TFSI SPEs.

Weight fraction (wt%)	**VFT Fitting Parameters**			$\mathbf{t_{Li}^{+}}$
	A (S cm^{-1})	B (K)	T_0 (K)	
PMMA-IL-TFSI/IL-TFSI				
65	3.43	153	295	0.51
70	2.22	156	292	0.43
75	0.64	132	294	0.36
100	0.051	216	285	-

Table S2. Summary of properties of current SPEs.

Electrolyte	Ionic conductivity (S cm^{-1})	t_{Li}^{+}	Elongation-at-break (%)	Ref.
PMMA-IL-TFSI/IL-TFSI	5.12×10^{-4}	0.51	1600	This work
PSF-PEO35+LiTFSI+SN	1.6×10^{-4}	-	2400	32
TMPEG-NPEG-LiTFSI	1.1×10^{-4}	0.27	1076	33
PEO-LAGP-LiTFSI	2.5×10^{-5}	0.385	140	34
PEO+Mg-BTC MOF/LiTFSI	10^{-5}	0.4	117	35
PEO+GELPEO	10^{-4}	-	80	36
PEO/PEGDA/DVB/LiTFSI	10^{-6}	0.21	-	37
PEGMEM-co-MA-POSS	1.13×10^{-4}	0.35	-	38
PEGMEM-co-SMA/LiTFSI	2.54×10^{-5}	0.202	-	39
PVDF/PVA/MMT/ LiTFSI	4.31×10^{-4}	0.4	-	40
PEO+LiTFSI+MIL53	3.39×10^{-4}	0.8	-	41
MOMHS-PVDF-LiTFSI	8.7×10^{-4}	0.47	-	42
PSiP/IL/LiTFSI	1.7×10^{-3}	-	-	43