APPENDIX A

Data used to calculate the number densities of PEMA/PVdF–HFP–HFP–LiTf system

The density for PEMA, PVdF–HFP and LiTf = 1.11, 1.78 and 1.90 g cm^{-1} respectively. The density for PEMA/PVdF–HFP (70:30) is taken to be 1.311 g cm^{-1}. The molecular weight of LiTf is 156.01 g mol^{-1}. The number density, n of the total number of free ions is obtained by multiplying the number density calculated for Tf^{-} ions by a factor of two. This is because the amount of Li^{+} ions equal to the amount of Tf^{-} ions present in each sample. Table below lists the parameters used to calculate the number densities of Li^{+} and Tf^{-} ions.

Sample	No. of mole of LiTf	FI (%)	σ (S cm^{-1})	$V_{PEMA/PVdF-HFP}$ (70:30) (cm^3)	V_{LiTf} (cm^3)	V_{Total} (cm^3)	n of free Tf^{-} ions (cm^{-3})	n of free Li^{+} and Tf^{-} ions (cm^{-3})
S–10	7.12×10^{-4}	76.11	1.14×10^{-11}	1.311	0.211	1.522	2.14×10^{22}	4.29×10^{22}
S–20	1.60×10^{-3}	41.88	1.25×10^{-7}	1.311	0.475	1.786	2.26×10^{22}	4.53×10^{22}
S–30	2.75×10^{-3}	65.13	2.87×10^{-7}	1.311	0.814	2.125	5.07×10^{22}	1.01×10^{23}
S–40	4.27×10^{-3}	46.80	4.13×10^{-7}	1.311	1.267	2.578	4.67×10^{22}	9.34×10^{22}