

# Supplementary Materials

## for

### Solute Diffusivity and Local Free Volume in Cross-Linked Polymer Network: Implication of Optimizing the Conductivity of Polymer Electrolyte

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Table S1. Rigidity independent correlations and coefficients

Correlations	Fitting coefficients
$\ln D_0 = mE_a + n$ (Eq. 2)	$m = 1.069, n = 1.324$
$T_0 = m'/E_a + c_3/L^{p'} + c_4$ (Eq. 18)	$m' = 0.453, c_3 = 0.327, p' = 0.677,$ $c_4 = 0.0685$

Table S2. Rigidity dependent correlations and coefficients

**Correlation:**  $T_0 = c_1/L^p + c_2 - \Delta T$  (Eq. 17 in main text)

$k_\theta$	$c_1$	$c_2$	$p$	$\Delta T$
0	0.126	0.451	0.295	0.191
0.2	0.088	0.460	0.230	0.191
1.0	0.125	0.479	0.322	0.191
2.0	0.112	0.494	0.250	0.191
4.0	0.384	0.295	0.087	0.261
6.0	0.524	0.236	0.087	0.327