Electronic Supplementary Material (ESI) for Materials Advances.

Towards N-rich solid polymer electrolytes for Li-ion batteries?

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Supplementary Information

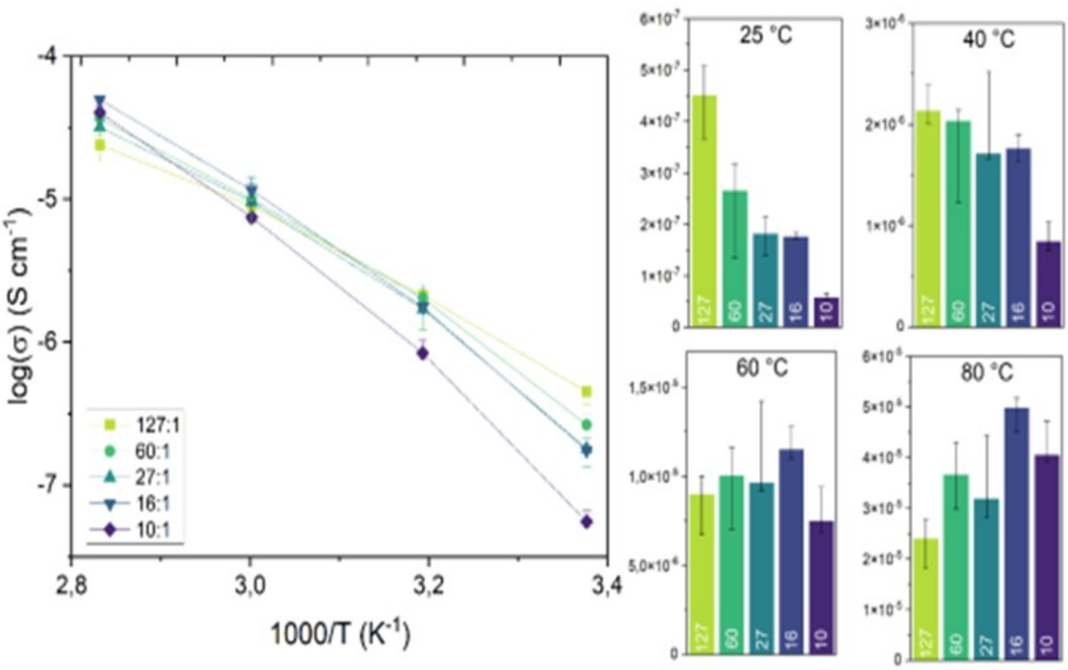

Figure SI1: Ionic conductivity of BPEI mixed at different salt concentrations

Figure SI1 shows the ionic conductivity measurements of BPEI based electrolyte for different salt concentrations and over the temperature range from 25 to 80 °C. Curves do not follow the linear Arrhenius law but rather the VTF model. The mobility of lithium ions is therefore activated by the segmental movement of the polymer chains.

Depending on the temperature, the best conductivities are not obtained with the same LiTFSI concentration. For example, at 25°C, it is the 127:1 ratio which makes it possible to reach the optimum of $4.5.10^{-7}$ $S.cm^{-1}$ or at 40°C it is the ratios 127:1 and 60 :1 which make it possible to obtain a conductivity of around 2.10^{-6} $S.cm^{-1}$. The N:Li ratio = 60, which corresponds to a concentration of 10% by weight presents a good compromise between the number of charged species present in the polymer and chain mobility correlated to a slightly increased Tg.

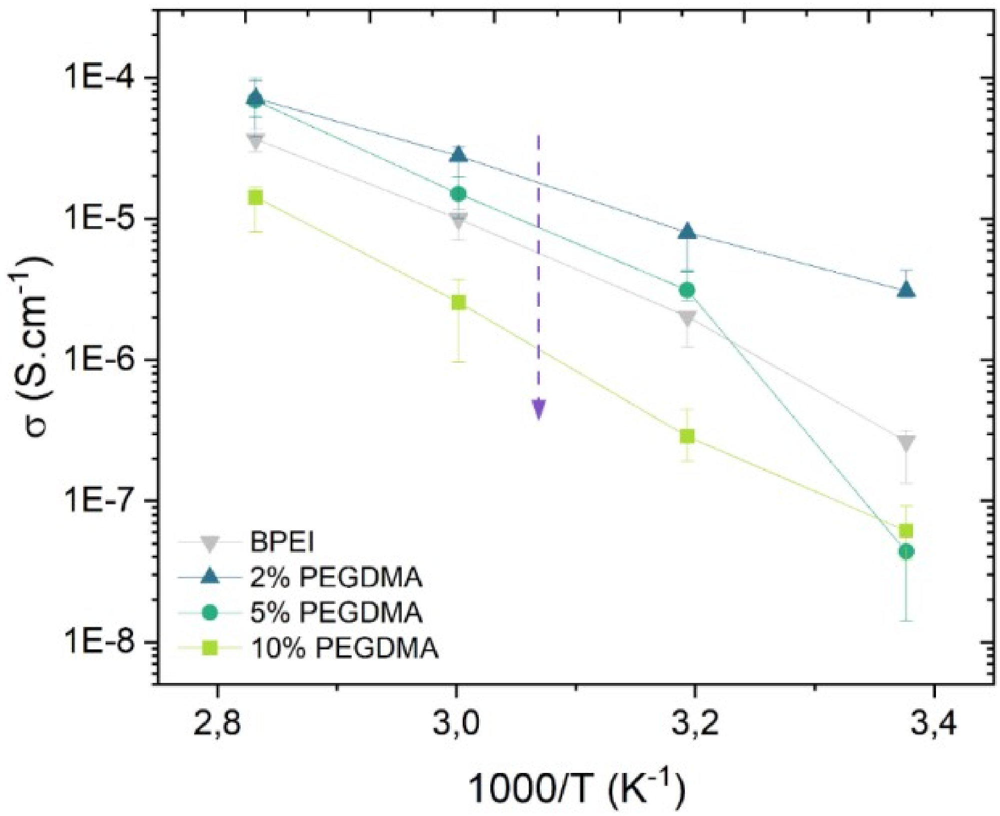

Figure SI2: Evolution of ionic conductivity as a function of temperature and PEGDMA content

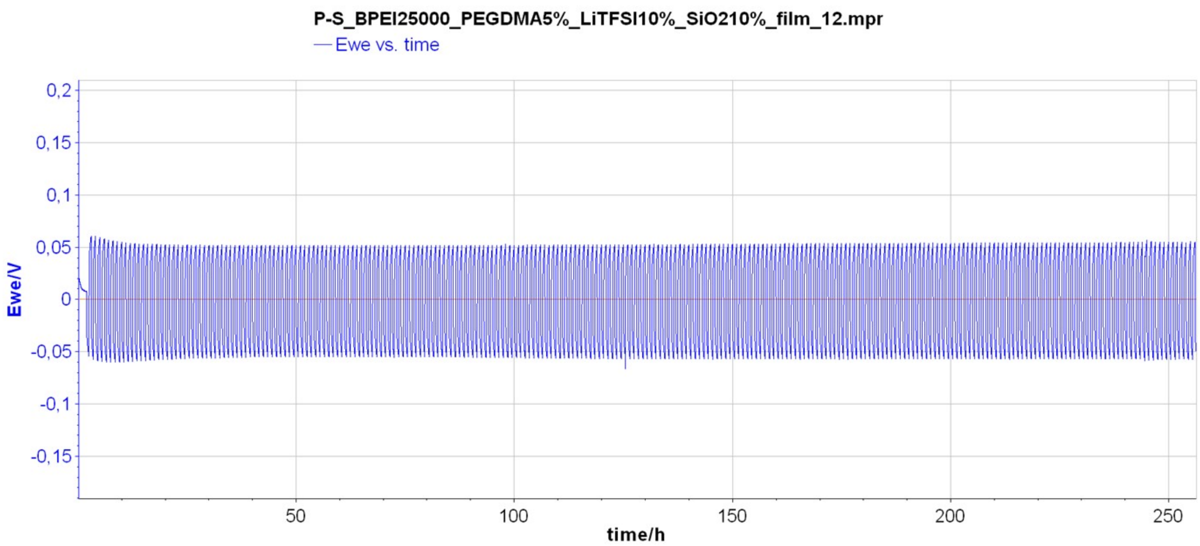

Figure SI3: Polarization test of SiO_2-IPN