

Supporting Information for

The Nanostructure of Water-in-Salt Electrolytes Revisited: Effect of the Anion Size

Gabriela Horwitz,^{a*}Eneli Häkki,^b Paula Y. Steinberg,^c Leide P. Cavalcanti,^d Sebastian Risse^b
and Horacio R. Corti^{a,e}

^a*Departamento de Física de la Materia Condensada and Instituto de Nanociencia y
Nanotecnología (INN-CONICET), Comisión Nacional de Energía Atómica, Avda. General
Paz 1499, B1650, San Martín, Buenos Aires, Argentina.*

^b*Helmholtz-Zentrum Berlin, Department for Electrochemical Energy Storage, Hahn-
Meitner-Platz 1, 14109 Berlin, Germany*

^c*Gerencia Química, Comisión Nacional de Energía Atómica, Avda. General Paz 1499, B1650,
San Martín, Buenos Aires, Argentina.*

^d*Rutherford Appleton Laboratory, ISIS Neutron and Muon Source, OX110QX Didcot, United
Kingdom*

^e*CONICET-Universidad de Buenos Aires, INQUIMAE, Intendente Güiraldes 2160,
C1428EGA Buenos Aires, Argentina.*

*corresponding author: ga.horwitz@gmail.com(G. Horwitz)

S1. Dependence of WiS nanostructure with concentration

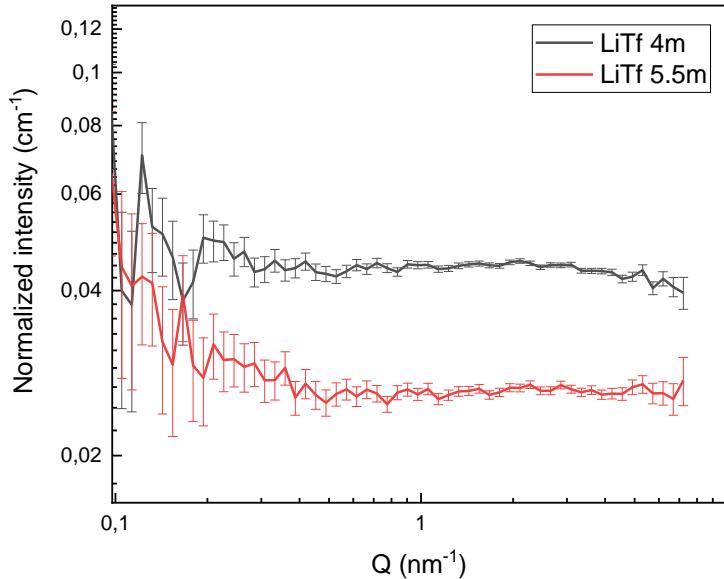


Figure S1: Normalized neutron dispersed intensity for 4 m and 5.5 m solutions of LiTf.

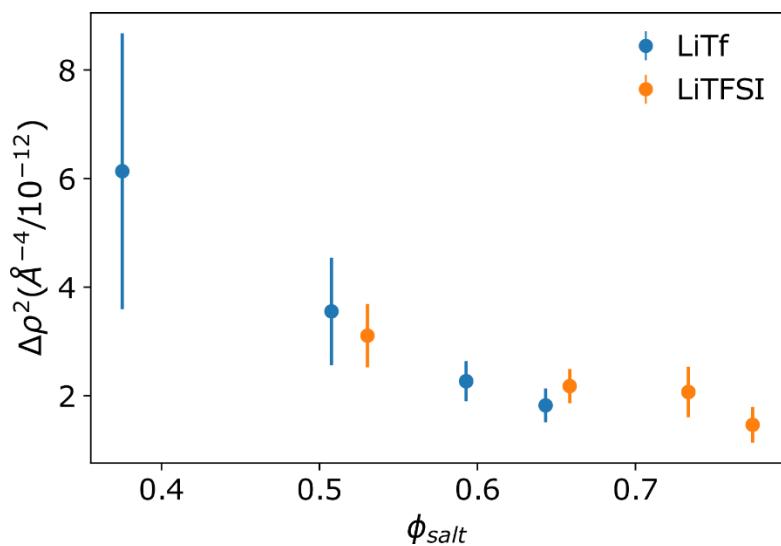


Figure S2: Squared difference in SLD between both phases obtained from the TS fitting for LiTf and LiTFSI solutions. Only the data that were obtained in the same SANS instrument are shown.

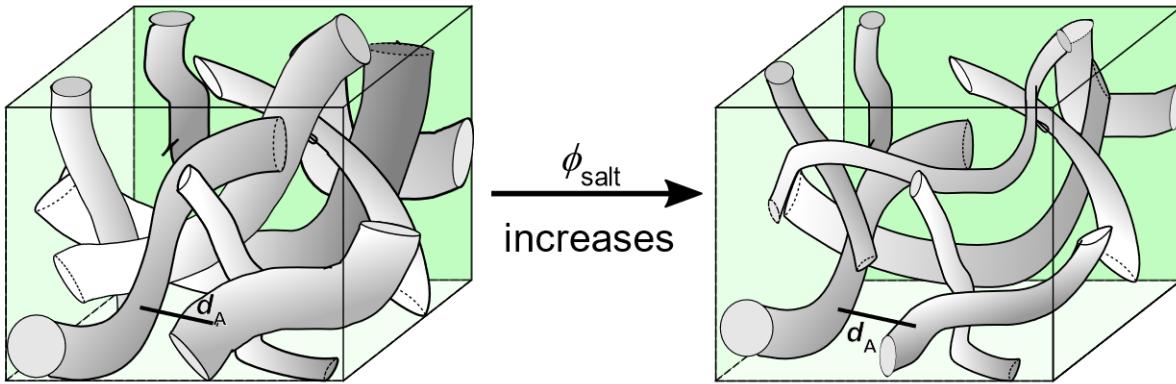


Figure S3: Scheme of the disordered water channels (grey) in an anion-rich matrix (green) indicating that, as concentration (or volume fraction, ϕ_{salt}) increases, water channels become narrower. In these figures, the distances between the centres of the channels are kept constant as concentration increases, as proposed for the LiTf salt.

S2. Dependence of WiS's scattering pattern with temperature

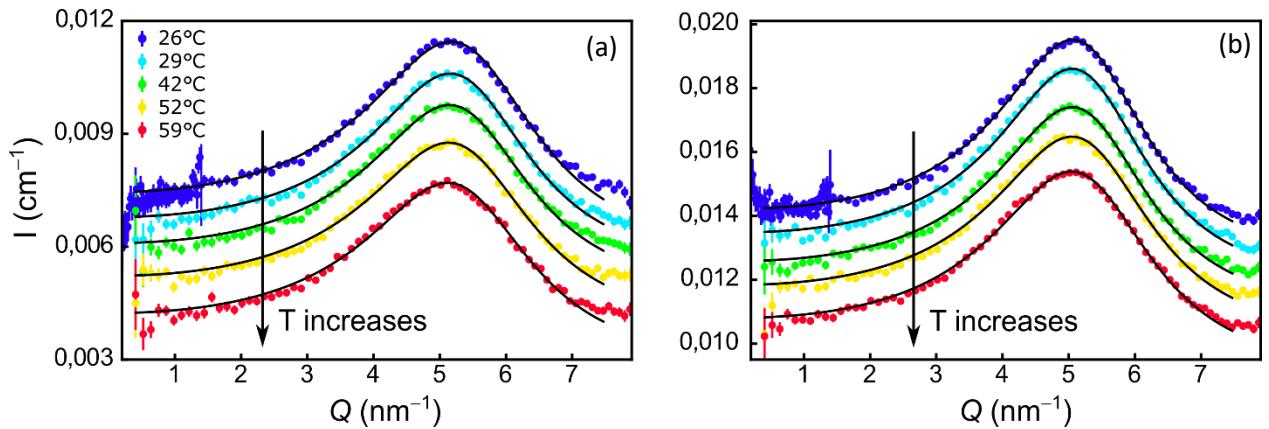


Figure S4:SANS patterns for 21 m solutions of (a) LiTf and (b) LiTFSI at different temperatures. The solid lines represent the resulting fitting for the TS model.