# Suplementary Information

**Supplementary Information (SI) for the manuscript with title**

*Insights into the interplay between molecular structure and diffusional motion in 1-alkyl-3-methylimidazolium ionic liquids. A combined PFG NMR and X-ray scattering study.*

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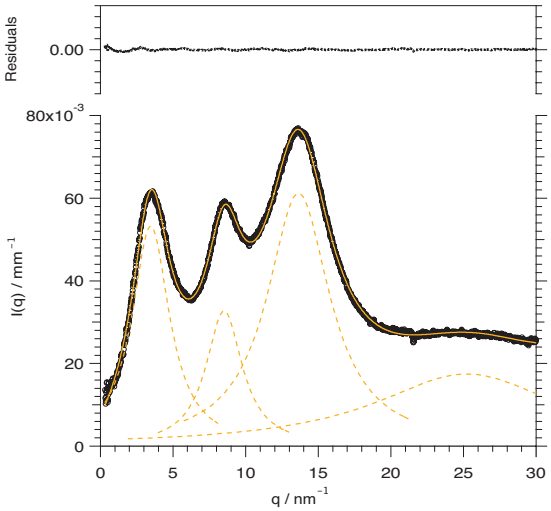


Figure 1: Deconvolution of the SAXS diffraction pattern for the ionic liquid $C_1C_8$TFSI at 50 °C with three Lorentzian functions.

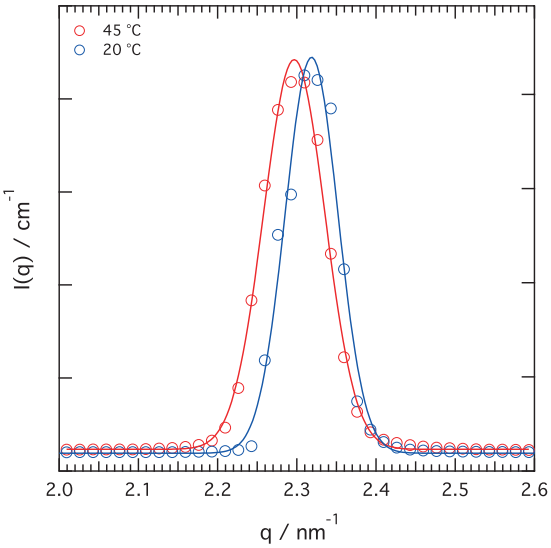


Figure 2: SAXS diffraction patterns for the ionic liquid $C_1C_{16}$TFSI at 25 and 45 °C, respectively.

Table 1: Physical properties (at 30 °C) related to the *ionicity* of the 1-alkyl-3-methylimidazolium ionic liquids.

| $n$ (chain length) | density [$gcm^{-3}$] | MW [$gmol^{-1}$] | $\Lambda_{imp}$ [$Scm^2mol^{-1}$] | $D_+$ [$10^{-7}cm^2s^{-1}$] | $D_-$ [$10^{-7}cm^2s^{-1}$] | $\Lambda_{NMR}$ [$Scm^2mol^{-1}$] | $\Lambda_{imp}/\Lambda_{NMR}$ |
|---|---|---|---|---|---|---|---|
| *2* | 1.51 | 390.18 | 2.71 | 6.70 | 3.80 | 3.87 | 0.701 |
| *4* | 1.43 | 418.00 | 1.39 | 3.68 | 2.68 | 2.34 | 0.593 |
| *6* | 1.37 | 449.18 | 0.829 | 2.32 | 1.99 | 1.59 | 0.522 |
| *8* | 1.31 | 472.92 | 0.538 | 1.62 | 1.55 | 1.17 | 0.460 |
| *10* | 1.28 | 503.53 | 0.400 | 1.17 | 1.21 | 0.877 | 0.457 |
| *12* | 1.27 | 531.58 | 0.318 | 0.92 | 1.00 | 0.708 | 0.450 |