Structural features of selected protic ionic liquids based on a super-strong base.

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Density of [DBUH][IM14]. Experimental data have been modelled with a linear trend (continuous line):

\[ \rho \text{ [g/cc]} = a \times T[K] + b, \text{ with } a = 0.001047 \times 10^{-6} \text{ K}^{-1} \text{ and } b = 1.891 \times 10^{-3} \text{ (R}^2=0.99994) \]
Viscosity.

Viscosity of [DBUH][IM14]. Experimental data have been modelled with the trend (continuous line):

\[ \eta(\text{mPa s}) = \eta_0 \exp \left[ \frac{B}{(T-T_0)} \right] \]

with \( \eta_0 = 0.070 \ (0.001) \ \text{mPa s} \), \( B=1172 \ (1) \ \text{K}^{-1} \), \( T_0=197 \ (1) \ \text{K} \).

\( (R^2=0.99992) \)
Molar conductance of [DBUH][IM14]. Experimental data have been modelled with the trend (continuous line):

\[ \Lambda (\text{S cm}^2 \text{mol}^{-1}) = \Lambda_o \exp \left[ -\frac{B}{(T-T_0)} \right] \]

with \( \Lambda_o = 139 \) (3) S cm\(^2\) mol\(^{-1}\), \( B = 890 \) (2) K\(^{-1}\), \( T_0 = 208 \) (2) K. (\( R^2 = 0.99985 \))
Combined Distribution Function obtained from the MD study of an aprotic IL based on the [IM14] anion and the 1-octyl,3-methylimidazolium cation ([C8mim][IM14]), highlighting the structural features of the hydrogen bonding interactions therein between the anion and the acidic H atom between the two imidazolium Nitrogen atoms.

Figure SI-1