

Supporting Information

Thermophysical Properties of Five Acetate-Based Ionic Liquids

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Thermogravimetric analysis

Aiming at assessing the thermal stability of the studied ionic liquids, thermogravimetric analysis (TGA) assays were carried out using a Shimadzu thermogravimetric analysis balance TGA-50 WSI, under a nitrogen atmosphere, in the temperature range from (293 to 473) K with a heating rate of $5 \text{ K}\cdot\text{min}^{-1}$. The results obtained are depicted in Figure S1.

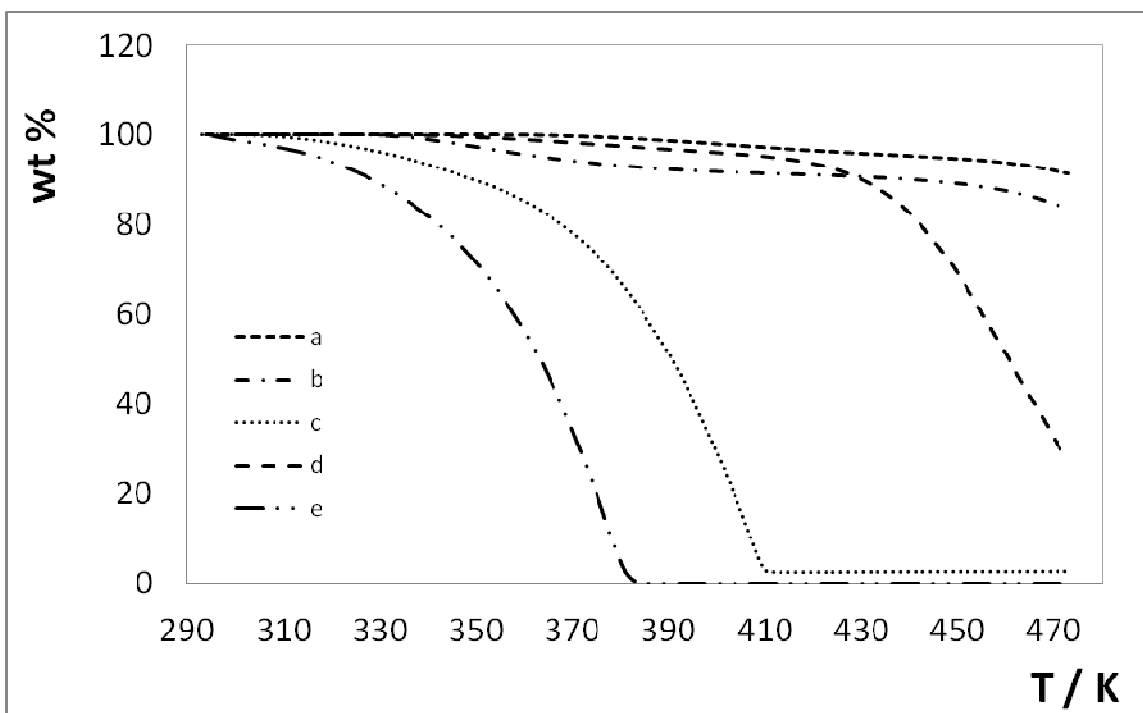


Figure S1. Thermogravimetric analysis of ionic liquids: a, $[\text{C}_2\text{mim}][\text{CH}_3\text{CO}_2]$; b, $[\text{C}_4\text{mim}][\text{CH}_3\text{CO}_2]$; c, $[\text{C}_2\text{im}][\text{CH}_3\text{CO}_2]$; d, $[\text{C}_4\text{mpyr}][\text{CH}_3\text{CO}_2]$; e, $[\text{N}_{0211}][\text{CH}_3\text{CO}_2]$.

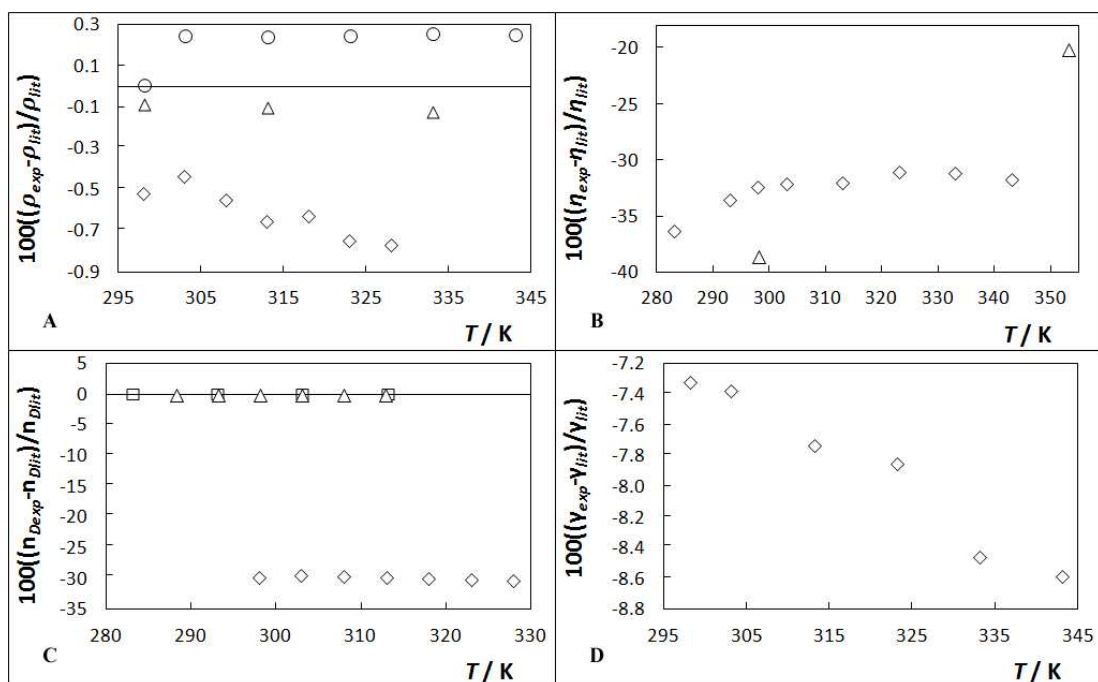


Figure S2. **A)** Relative deviations between the experimental densities (ρ_{exp}) and literature (ρ_{lit}): \diamond , [C₄mim][CH₃CO₂];¹ \triangle , [C₄mim][CH₃CO₂];² \circ , [C₄mim][CH₃CO₂];³ **B)** Relative deviations between the experimental viscosities (η_{exp}) and literature (η_{lit}): \diamond , [C₄mim][CH₃CO₃];⁴ \triangle , [C₄mim][CH₃CO₃];⁵ **C)** Relative deviations between the experimental refractive index (n_{Dexp}) and literature (n_{Dlit}): \diamond , [C₄mim][CH₃CO₂];¹ \square , [C₂mim][CH₃CO₂];⁶ \triangle , [C₂mim][CH₃CO₂];⁷ **D)** Relative deviations between the experimental surface tension (γ_{exp}) and literature (γ_{lit}): \diamond , [C₄mim][CH₃CO₂].³

Electrospray ionization tandem mass spectra (ESI-MS-MS)

ESI-MS-MS were acquired with a Micromass Q-ToF 2 (Micromass, Manchester, UK), operating in the positive ion mode, equipped with a Z-spray source. Source and desolvation temperatures were 353 K and 373 K, respectively. Ionic liquid solutions in methanol, at concentrations of $\sim 10^{-4}$ mol·dm⁻³, were introduced at a 10 $\mu\text{L}\cdot\text{min}^{-1}$ flow rate. The capillary and the cone voltage were 2600V and 30 V, respectively. Nitrogen was used as nebulisation gas and argon as collision gas.

ESI-MS-MS spectra were acquired by selecting the precursor ion with the quadrupole and performing collisions with argon in the hexapole.

The results obtained are presented in Table S1.

Table S1. Relative abundance of the neutral species identified in the ESI-MS-MS spectra.

Precursor ion	Neutral losses (% of total fragment ion abundance)	
	$[(\text{C}_4\text{mim})_2\text{CH}_3\text{CO}_2]^+$	CH_3COOH 40
$[(\text{C}_2\text{mim})_2\text{CH}_3\text{CO}_2]^+$	CH_3COOH 75	$[\text{C}_2\text{mim}][\text{CH}_3\text{CO}_2]$ 25
$[(\text{C}_4\text{mpyr})_2\text{CH}_3\text{CO}_2]^+$	-	$[\text{C}_4\text{mpyr}][\text{CH}_3\text{CO}_2]$ 100

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