Electronic Supplementary Information

Synthesis and Characterisation of Ionic Liquids based on 1-butyl-3-methylimidazolium chloride and MCl₄, M = Hf and Zr

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Electrospray Ionisation Spectra

Figure 3

Full spectrum - [C₄C₁Im]₂HfCl₆
Zoom on [(C₄C₄Im)₃HfCl₆]⁺ region showing isotopic peaks

Theoretical simulation of [C₄C₄Im₃HfCl₆]⁺ isotopic peaks for comparison
**Full spectrum - [C₄C₄Im]₂ZrCl₆**

**Zoom on [(C₄C₄Im)₃ZrCl₆]⁺ region showing isotopic peaks**
Theoretical simulation of [C_{1}C_{4}Im_{3}ZrCl_{6}]^{+} isotopic peaks for comparison

**Figure 5**

Full ESI- mass spectra of R = 0.67, Hf
Zoom on [Hf₂Cl₉]⁻ region showing isotopic peaks

Theoretical simulation of [Hf₂Cl₉]⁻ isotopic peaks for comparison
Full ESI- mass spectra of R = 0.67, Zr

Zoom on \([\text{Zr}_2\text{Cl}_9]\) region showing isotopic peaks
Theoretical simulation of $[\text{Zr}_2\text{Cl}_9]$ isotopic peaks for comparison