

**Synthesis, Structure, and Photoluminescence of the Chloridoaluminates
[BMIm][Sn(AlCl₄)₃], [BMPyr][Sn(AlCl₄)₃], and [BMIm][Pb(AlCl₄)₃]**

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– SUPPORTING INFORMATION –

Content

- Unit cells of [BMIm][Sn(AlCl₄)₃] (**1**), [BMPyr][Sn(AlCl₄)₃] (**2**), and [BMIm][Pb(AlCl₄)₃] (**3**)
- Asymmetric unit of the title compounds **1**, **2**, and **3**
- Disorder of the [BMIm]⁺ cation in **1** and **3**

The unit cells of [BMIm][Sn(AlCl₄)₃] (**1**), [BMPyr][Sn(AlCl₄)₃] (**2**), and [BMIm][Pb(AlCl₄)₃] (**3**) are displayed in Figure S1. The structural similarity of the three title compounds is obvious.

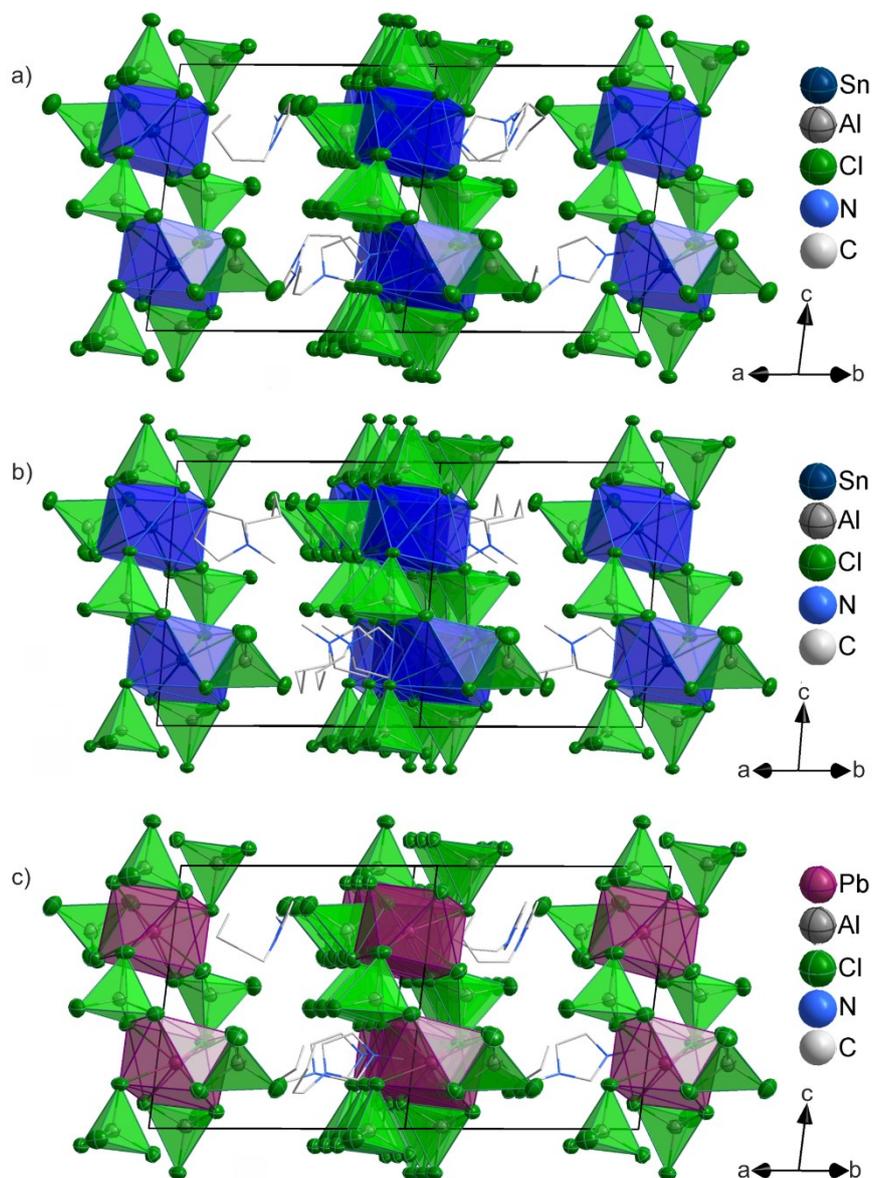


Figure S1. Unit cells of (a) [BMIm][Sn(AlCl₄)₃] (**1**), (b) [BMPyr][Sn(AlCl₄)₃] (**2**), and (c) [BMIm][Pb(AlCl₄)₃] (**3**) with coordination polyhedra around Sn²⁺ (blue) and Pb²⁺ (magenta), [AlCl₄]⁻ tetrahedra in green and cations ([BMIm]⁺, [BMPyr]⁺) in grey (for [BMIm]⁺ with only one of two dislocated positions).

The asymmetric unit of the title compounds **1**, **2**, and **3** is shown in Figure S2. Finally, the disorder of the [BMIm]⁺ cation in **1** and **3** with two more-or-less rotated (180 °) sites is exemplarily shown (Figure S3). This situation was tackled by split positions for all atoms of the [BMIm]⁺ cation with a probability of finding of 50% for each position.

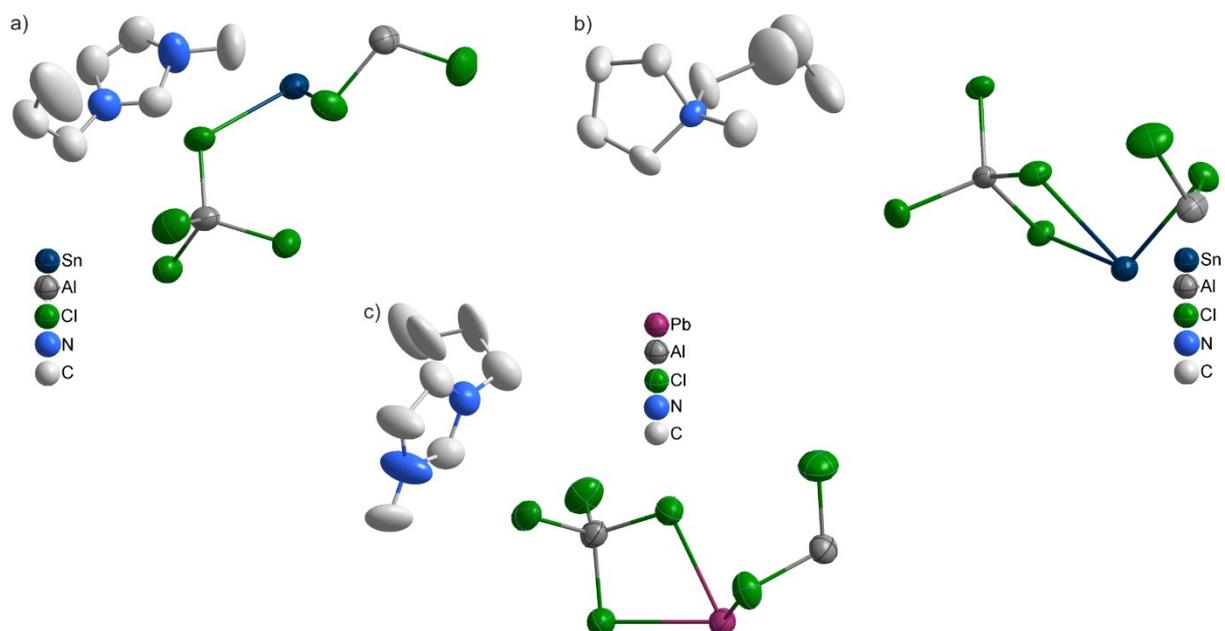


Figure S2. Asymmetric unit of (a) [BMIm][Sn(AlCl₄)₃] (**1**), (b) [BMPyr][Sn(AlCl₄)₃] (**2**), and (c) [BMIm][Pb(AlCl₄)₃] (**3**).



Figure S3. Disorder of the [BMIm]⁺ cation in **1** and **3** with two more-or-less rotated (180°) positions.