Organic-inorganic hybrids: $(R\text{-}NH_3)_m(SnX_6)X_n$

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Due to their two-dimensional structure and interesting organic and magnetic properties, organic-inorganic hybrid materials have attracted a great deal of attention in terms of crystallographic investigation. However, the structural characteristics of organic-inorganic hybrid materials of the formula $(R\text{-}NH_3)_2SnX_6$ and $(R\text{-}NH_3)_4(SnX_6)X_2$, where X is a halide, have not been investigated extensively. Structures of these compounds with arylammonium cations will be reported, and the structural characteristics highlighted.

These structures consist of alternating organic and inorganic layers. The organic layer is comprised of the organic cations, often interacting via π-π stacking interactions. In the inorganic layer, isolated, distorted SnX_6^{2-} octahedra interact with ammonium groups via N-H…X hydrogen bonds. In certain structures, displaying an unexpected combination of anions and cations, isolated halide anions have been found to be incorporated into the inorganic layer. In these double salts, the isolated halide anion also participate in hydrogen bonding, resulting in the formation of a complex hydrogen bonding network in the inorganic layer. Specific structural characteristics of these organic-inorganic hybrid compounds will be discussed.

SIG 35: Molecular structure, packing interactions and chemical properties