Preparation, Structure and Optical Properties of 
$[\text{CH}_3\text{SC(NH}_2\text{)_2}]_3\text{SnI}_5$, $[\text{CH}_3\text{SC(NH}_2\text{)_2}][\text{HSC(NH}_2\text{)_2}]\text{SnBr}_4$, 
$(\text{CH}_3\text{C}_5\text{H}_4\text{NCH}_3)\text{PbBr}_3$, and $[\text{C}_6\text{H}_5\text{CH}_2\text{SC(NH}_2\text{)_2}]_4\text{Pb}_3\text{I}_{10}$

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Metal Halides, Excitonic Spectra, Optical Properties

The preparation, crystal structure and optical absorption spectra of $[\text{CH}_3\text{SC(NH}_2\text{)_2}]_3\text{SnI}_5$ (1), $[\text{CH}_3\text{SC(NH}_2\text{)_2}][\text{HSC(NH}_2\text{)_2}]\text{SnBr}_4$ (2), $(\text{CH}_3\text{C}_5\text{H}_4\text{NCH}_3)\text{PbBr}_3$ (3), and $[\text{C}_6\text{H}_5\text{CH}_2\text{SC(NH}_2\text{)_2}]_4\text{Pb}_3\text{I}_{10}$ (4) are reported. The compounds 1, 2, 3 consist of MX$_6$-octahedra (M = Sn, Pb, X = I, Br) forming one-dimensional single chains (compounds 1, 3) or double chains (compound 2). The compound 4 forms a two-dimensional inorganic network via corner sharing of three face sharing octahedral units. Because of their low-dimensional character, a blue shift of the excitonic absorption bands, in comparison to those of higher dimensionality systems, is observed.