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The structure directing effect of hydrogen bonding in the novel polymeric thioantimonate $Mn_2(H_2N(CH_2)_2NH_2)_2Sb_2S_5$

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Abstract:

A new transition metal thioantimonate(III) with composition Mn-2(H2N(CH2)(2)NH2)Sb2S5 has been synthesised under solvothermal conditions. Two trigonal SbSb3 pyramids and two octahedrally coordinated Mn atoms are interconnected to form Mn2Sb2S4 heterocubanes as secondary building units (SBU's). The SBU's are covalently linked into linear infinite one-dimensional rods. Long Sb-S bonds connect the rods to form layers. The two N atoms of the ethylenediamine molecule (en) are chelating one Mn(II) ion. The amino hydrogen atoms of the on ligand are engaged in hydrogen bonding which is responsible for the different structure pattern of the title compound compared to a previously reported series of Mn-amino-thioantimonates(III) with analogous stoichiometry built up from different amino ligands.