Synthesis and Crystal Structure of $Mn_2(C_2H_5NH_2)_2Sb_2S_5$ Exhibiting a Reversible Phase Transition

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The reaction of elemental manganese, antimony and sulfur with ethylamine under mild solvothermal conditions yielded a thioantimonate(III) with composition $Mn_2(EA)_2Sb_2S_5$ (EA = $C_2H_5NH_2$) that is a new member of a series of polymeric manganese thioantimonates(III). The structure of the title compound consists of layers of a neutral mesh-like $Mn_2Sb_2S_5$ framework. The ethylamino ligands coordinated to the Mn centres separate the sheets and fill the voids within the layers formed by the interconnection of $Mn_2Sb_2S_4$ heterocubane like building blocks. Below 273 K a reversible phase transition occurs, which is accompanied by a doubling of the crystallographic *a*-axis.