Neue Barium-Oxoantimonate(III): Darstellung und Kristallstruktur von $Ba_3[SbO_3]_2$ und $Ba_2[Sb_2O_5]$

New Barium Oxoantimonates(III): Synthesis and Crystal Structures of $Ba_3[SbO_3]_2$ and $Ba_2[Sb_2O_5]$

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The barium oxoantimonates(III) $Ba_3[SbO_3]_2$ (triclinic, $P\bar{1}$, $a = 615.2(8)$, $b = 981.4(3)$, $c = 1215.4(5)$ pm, $\alpha = 74.683(9)$, $\beta = 89.710(6)$, $\gamma = 71.464(7)^\circ$, $Z = 2$, $R1 = 0.0802$) and $Ba_2[Sb_2O_5]$ (orthorhombic, *Cmcm*, $a = 401.0(3)$, $b = 1450.6(7)$, $c = 636.6(6)$ pm, $Z = 4$, $R1 = 0.0589$) have been synthesized from melts of elemental barium and antimony oxide Sb_2O_3 at a temperature of 800 °C. Their oxoantimonate building units are strongly influenced by the stereochemically active lone pair electrons of the pentele element: In the Ba rich compound $Ba_3[SbO_3]_2$, isolated ψ tetrahedra $[SbO_3]^{3-}$ are present, in $Ba_2[Sb_2O_5]$, which crystallizes with the $Sr_2Bi_2O_5$ structure type, two of these ψ tetrahedra are condensed to form nucelar units $[Sb_2O_5]^{4-}$. The two compounds are compared in terms of structure and bonding with the alkali antimonates on one hand and with the alkaline earth bismutates on the other.

Key words: Antimonates, Barium, Oxopentelates