

X-ray diffraction evidence for a monoclinic form of stibnite, Sb_2S_3 , below 290 K

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ABSTRACT

The nature of the symmetry changes associated with phase transitions in stibnite, Sb_2S_3 , has been investigated by powder and single crystal X-ray diffraction. Above 420 K stibnite (I) is centrosymmetric $Pbnm$. Stibnite (II) is stable between 290 and 420 K and is acentric $P2_1nm$. Below 290 K stibnite (III) is stable and systematic absences indicates that this phase is monoclinic with space group $P2_1$ or Pm , or triclinic $P1$, but the cell dimensions remain geometrically orthorhombic. These findings are in agreement with variations in physical and electrical properties reported in the literature.