

*Kinetics and Mechanism of the Transformation in Antimony Trioxide from Orthorhombic Valentinite to Cubic Senarmonite.* P. S. GOPALAKRISHNAN AND H. MANOHAR. Department of Inorganic and Physical Chemistry, Indian Institute of Science, Bangalore-12, India. The kinetics of the polymorphic transformation in antimony trioxide from metastable orthorhombic valentinite to cubic senarmonite has been studied in polycrystalline material between 490 and 530°C. Quantitative analysis of the mixtures was done using infrared spectrophotometry. The kinetic data was analysed and the activation energy for the process obtained (i) on the basis of Avrami's equation, which is derived on the basis of a nucleation and growth mechanism, and (ii) also from the time required for a constant fraction of the transformation to take place. The values obtained were 50.8 and 46.0 kcal/mole, respectively. Observations have also been made on partly transformed single crystals of valentinite using a polarizing microscope. The latter studies and the value of the activation energy suggest that a better understanding of the transformation could be obtained on the basis of a vapour phase mechanism.