

Formation of the solid solution in the system $\text{Ag}_2\text{O-Sb}_2\text{O}_3\text{-MoO}_3$ on heating

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Abstract

In this paper, it consider compounds based on silver antimonate, which are formed by partial replacement of pentavalent antimony ions with hexavalent molybdenum ions, synthesized by the solid-phase reaction method. The features of thermolysis of compositions with different molar ratios in the $\text{AgNO}_3\text{-Sb}_2\text{O}_3\text{-MoO}_3$ system were studied by heating in air under conditions of temperature changes in wide range from 300 to 1023 K. The gross compositions of solid phase synthesis products are determined by methods of derivatography combined with qualitative X-ray phase analysis. The homogeneous region of the formation of solid solutions $\text{Ag}_{2-x}\text{Sb}_{2-x}\text{Mo}_x\text{O}_6$ with the defect pyrochlore-type structure in the concentration range $0.0 \leq x \leq 2.0$ was detected for a final synthesis temperature 1023 K. In the spatial group $Fd\bar{3}m$ constraints, the Rietveld method was used to refine the structural parameters (the coordinates and the ion population over the crystallographic positions, the unit cell parameters), and the composition of the resulting pyrochlore phases with structural disorder. For ceramic samples sintered at 1173 K, the relative density and average particle size were determined.

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