

Influence of annealing atmosphere on formation of nanoscale films Co-Sb – functional elements thermoelectric

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The effect of substrate temperature and annealing atmosphere (vacuum or a nitrogen atmosphere) for forming the phase composition and structure in a nanoscale CoSb_x films (30 nm) at a concentration from 65 at.% to 81 at.% Sb is investigated.

It is established that CoSb_3 films are thermally stable up to $\sim 300^\circ\text{C}$. The annealings of Co-Sb films both in vacuum and in nitrogen atmosphere, at temperatures higher 300°C lead to a sublimation as to over antimony and antimony with CoSb_3 crystal phase. It is shown that the influence of the annealing atmosphere in Co-Sb films displayed more intense sublimation of the antimony at the annealing in vacuum. It is established that a more intensive process of Sb sublimation at annealing of X-ray amorphous films in both a vacuum and a nitrogen atmosphere, connected with lower activation energy of Sb sublimation in comparison with crystalline films.

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