

ELECTRONIC AND TRANSPORT PROPERTIES OF THIN GdCo₄B ALLOY FILMS

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GdCo₄B thin films were prepared onto liquid nitrogen (LN) cooled or heated glass substrates by an UHV flash evaporation technique. Structural studies have shown that the samples deposited onto the LN cooled or non-cooled glass substrates are amorphous and crystallize after an UHV annealing at 770 K. The resistance of the amorphous thin films increases with temperature decreasing from RT down to 0.3 K. The crystallization process was observed by resistivity measurements in the temperature range varied from RT to 863 K at a rate of 10 K/min. Results of the XPS studies reveal that the surface composition of the GdCo₄B thin films is practically the same as the average volume composition determined by XRF method. On the other hand, we have observed a systematic change in the shape and peaks position of the XPS valence band after *in-situ* annealing of the 'as-prepared' amorphous GdCo₄B thin films. The above behavior could be explained by a structural transition and/or relaxation of the flash-evaporated thin films after UHV annealing. XPS spectra measured for the thin films will be compared with those determined for the bulk polycrystalline GdCo₄B compound.

9.7 cm

13.4 cm

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