9.7 cm

THE HALL EFFECT IN AMORPHOUS AND NANOCRYSTALLINE $Fe_{73.5-x}Cr_xCu_1Nb_3Si_{13.5}B_9$ RIBBONS

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The aim of this paper is to study the Hall effect in $Fe_{73.5-x}Cr_xCu_1Nb_3Si_{13.5}B_9$ (x=0-3) ribbons prepared by rapid solidification from the melt. The nanocrystalline structure was achieved by 1 hour annealing at various temperatures between 425 and 600^0C. The saturation magnetostriction and the Hall voltage were investigated for samples in the amorphous and nanocrystalline state. The Hall voltage measurements were performed at room temperature by the van der Pauw method. Cu contact pads with silver paint soldered wires, external magnetic induction up to 2 T and d.c. sample biasing currents between 5 and 50 mA were used [1,2]. The experimental results show a good linearity of the Hall voltage on the magnetic induction up to 0.87 T for all analyzed samples. The Hall coefficient of amorphous state increases about 10 % when the chromium content increases up to x=3. For the nanocrystalline samples the saturation magnetostriction decreases up to about 85 %, the carrier concentration increases up to about three times and the Hall coefficient decreases about of 45 %.

[1] H. Chiriac et al., Sensors and Actuators, A 67 (1-3) 1998, 170.
[2] H. Chiriac, M. Lozovan, M. Neagu, Acta Physica Slovaca, **48** (1998) 695.

13.4 cm

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