

Influence of the existence of nanocrystals to magnetic properties $\text{Hf}_2\text{Co}_{11}\text{B}$ alloys

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The $\text{Hf}_2\text{Co}_{11}\text{B}$ can be an example for rare earth free compound with T_C about 500°C and orthorhombic hard magnetic phase HfCo_7 which is characterize by anisotropy constant K_1 above 10 Mergs/cm^3 [1]. Melt-spinning under argon atmosphere was used to produce amorphous Hf-Co-B alloy. X-ray diffraction confirmed fully amorphous or partially crystalline structure of the melt-spun ribbons. Two main irreversible exothermic peaks were observed. Crystallization temperatures T_{x1} and T_{x2} of amorphous $\text{Hf}_2\text{Co}_{11}\text{B}$ measured with heating rate $q = 10 \text{ K/min}$ are equal 567°C and 633°C , respectively. The coercivity field in partially or fully crystal samples change from 1.2 kOe about 3 kOe and is higher than in amorphous one.

References:

[1] B. Balamurugan, et al. IEEE Trans. Magn. 49 (2013) 3330-3333

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