

Magnetic annealing effect of Fe-based amorphous ribbon

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1. Introduction

There has been an increasing interest in Iron-based (Fe-based) ferromagnetic amorphous materials due to their soft magnetic properties such as high saturation magnetization, low coercivity and high permeability. We studied Fe-based materials, and published paper about Fe-Co-Ti-Zr-B alloys. The results of this paper are that Fe-based amorphous ribbons exhibited soft magnetic properties with a low coercivity and a high saturation magnetization. In this work, we investigated the magnetic annealing effect of Fe-based alloys.

2. Experiment

The ingots of a new collection of Fe-based soft magnetic alloy were prepared by arc-melting. By using a melt-spinning technique, we fabricated thin ribbons of amorphous alloys. Also we used a x-ray diffraction to characterize the glassy structure of our ribbons. The thermal characterization was carried out by using a differential scanning calorimeter. The soft magnetic properties including the saturation magnetization and the coercivity were measured by using a vibrating sample magnetometer.

3. Result and discussion

After annealing process, the amorphous phase of the melt-spun ribbons changed to a nanocomposite structure consisting and residual amorphous phases. The nanocomposite alloys exhibited improved values of the saturation magnetization.

4. Reference

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