INVESTIGATION OF THE MAGNETIZATION REVERSAL PROCESS OF HIGHT REMANENCE $Nd_{10}Fe_{83}Zr_1B_6$ ALLOY IN THE AS-CAST STATE

A.E.Ceglarek, D. Płusa, M. Dośpiał, M. Nabiałek, P. Pietrusiewicz
Institute of Physics
Czestochowa University of Technology
Al. Armii Krajowej 19, 42-200 Częstochowa, Poland

9.7 cm

In this work the $Nd_{10}Fe_{83}Zr_1B_6$ alloy in the form of ribbons obtained using the melt-spinning method was studied. On the basis of X-ray diffraction patterns the phase composition was determined. It was found, that investigated alloy was composed from α-Fe and 2/14/1 phases. Using the Bragg equation the moderate grain sizes and peak broadening originating from strain was evaluated. The moderate grain size of α-Fe and 2/14/1 phases was lesser then 20nm and 40nm, respectively. The magnetic measurements were performed using VSM with maximum applied magnetic field up to 2T. The magnetization reversal process was studied by measurement of recoil curves, which were used to determine reversible and irreversible parts of magnetization. On the basis of irreversible magnetization changes and its differential susceptibility it was found that the pinning of domain walls on structural defects and grain boundaries is the main magnetization reversal process. Further studies of interactions between grains was determined from δm plots. It was found that short range exchange interaction between grains of hard and soft phases are dominant and results in enhancement of remanence.

13.4 cm

Subject category :
6. Soft and Hard Magnetic Materials

Presentation mode :
poster

Corresponding author :
Agnieszka Ceglarek

Address for correspondence :
Instytut Fizyki, Politechnika Częstochowska
Al. Armii Krajowej 19
42-200 Częstochowa, Poland

Email address :
a.ceglarek@go2.pl