Magnetic and Structural Properties of Electron Irradiated Fe(Co)SnB Alloys

Beata Butvinová[1, a)], Jozef Sitek[2, b)], Katarína Sedlačková[2], Július Dekan[2], Andrea Šagátová[2], Irena Janotová[1] and Peter Švec Sr.[1]

[1]*Institute of Physics, Slovak Academy of Sciences, Dúbravská cesta 9, 845 11 Bratislava, Slovakia*
[2]*Institute of Nuclear and Physical Engineering, Faculty of Electrical Engineering and Information Technology, Slovak University of Technology, Ilkovičova 3, 812 19 Bratislava, Slovakia*

[a)] Corresponding author: beata.butvinova@savba.sk
[b)] jozef.sitek@stuba.sk

Abstract. Rapidly quenched alloys of composition $Fe_{83}Sn_5B_{12}$ and $Fe_{78}Co_5Sn_5B_{12}$ were irradiated by electron beam with 4 MGy dose. The aim of the presented study is examination of the influence of irradiation on magnetic properties and microstructure in as-cast and nanocrystallized ribbons. Amorphous samples after irradiation retained their soft magnetic properties and the hysteresis loops obtained a more upright shape with a higher value of saturation magnetic polarization. The Co-containing ribbon is superior in terms of magnetic softness and even after irradiation its saturation polarization is significantly higher with the value of 1.79 T.