Influence of Alloy Composition on GMI Effect in Amorphous Ribbons

Piotr Gazda^{1, a)}, Michał Nowicki^{1, b)}, Roman Szewczyk^{1,2, c)}

¹Instutute of Metrology and Biomedical Engineering, Warsaw University of Technology, ul. Sw. A. Boboli 8, 02-525 Warsaw, Poland.

²Industrial Research Institute for Automation and Measurements PIAP al. Jerozolimskie 202, 02-486 Warsaw, Poland

^{a)}Corresponding authors: p.gazda@mchtr.pw.edu.pl, ^{b)}m.nowicki@mchtr.pw.edu.pl, ^{c)}r.szewczyk@mchtr.pw.edu.pl

Abstract. The paper presents the comparative study of Giant Magneto Impedance (GMI) effect in amorphous ribbons of different composition. In paper fundamental aspects of GMI effect, designed measuring stand and obtained results were described. Ribbons with dimension: 1 mm wide, 50 mm long, 22 µm thick in as-cast state, have been investigated with exciting frequency in range from 10 kHz to 20 MHZ, in the presence of 0 to 8 kA/m external field. It was shown that ribbons with near zero magnetostriction show significantly larger impedance changes from ribbon with high magnetostriction. The highest GMI ratio equal to 20.5% was obtained for 1.25 MHz excited signal frequency.