

GMI effect in nanocrystalline $\text{Fe}_{73.5}\text{Cu}_1\text{Nb}_3\text{Si}_{13.5}\text{B}_9$ bilayer and trilayer ribbons

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A modified double-nozzle and triple-nozzle planar flow casting method was used for preparation of amorphous $\text{Fe}_{73.5}\text{Cu}_1\text{Nb}_3\text{Si}_{13.5}\text{B}_9$ bilayer and trilayer ribbons. This method offers a possibility to prepare amorphous ribbons with increased thickness. The single-layer ribbon was also prepared for the sake of comparison. In order to modify soft magnetic characteristics, all ribbons were nanocrystallized at 823 K in presence of longitudinal (LF) or transverse (TF) magnetic field. The impedance measurements were performed over a frequency range 0.1-100 MHz. The position of GMI maxima ratio was progressively moved to lower frequency with an increase of sample thickness. The highest percentage change of magnetoimpedance of about 177 % and sensitivity of 65 %/Oe was achieved for bilayer ribbon after TF-annealing. These GMI characteristics are of potential interest for applications in sensing elements.

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