# HIGH-FREQUENCY MAGNETOIMPEDANCE ON ANNEALED AMORPHOUS MAGNETIC WIRES WITH DIFFERENT MAGNETOSTRICTION CONSTANTS

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Amorphous Co-based and Fe-based magnetic wires having three different magnetostriction constants have been submitted to different thermal treatments (dc Joule Heating and furnace annealing) to relax internal stresses produced during fabrication and to possibly induce different magnetic anisotropy. Magnetostriction constants range from nearly zero positive values to large positive values. High-frequency (up to 6 GHz) magnetoimpedance response has been studied as a function of frequency and thermal treatment by means of a vectorial network analyzer: samples are the inner conductor of a coaxial line whose characteristic impedance is measured as a function of frequency and of a static, longitudinally applied, magnetic field. Results at lower frequencies confirm that larger magnetostriction constants are detrimental to the magnetoimpedance effect, while at higher frequencies alloys with a larger amount of Fe (thus having larger magnetostriction constants) improve their magnetotransport properties. Thermal treatments improve magnetoimpedance response when performed at moderate temperatures or current intensities, with the exception of the highly magnetostrictive material where stronger annealing with the Joule Heating technique is necessary to improve magnetotransport properties. In all cases, excessive current and conventional annealing, leading to crystallization of the sample, deteriorates magnetoimpedance response.