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Filed Fluctuations -- 4.2.2. The Temperature Dependence of the Switching Field -- 4.2.3. Domain Walls Propagation -- 4.3. GIANT MAGNETO-IMPEDANCE EFFECT AND ENHANCED MAGNETIC SOFTNESS. TAILORING OF MAGNETIC PROPERTIES AND GMI -- 4.3.1. Magnetostriction -- 4.3.2. GMI Effect in Different Families of Wires -- 4.3.3. Tailoring of Hysteretic Properties and GMI Effect in Thin Glass-coated Microwires Using Heat Treatment. Induce Magnetic Anisotropy. Stress Sensitive Microwires -- 4.3.4. Tailoring of the GMI Effect -- 4.3.5. Development of Extremely Thin Microwires with GMI Effect. Off-diagonal GMI. 4.3.6. Development of Temperature Sensitive Microwires with GMI Effect -- 4.4. OTHER WAYS OF TAILORING OF MAGNETIC PROPERTIES -- 4.4.1. Interaction between Microwires -- 4.4.2. Multi-layered Microwires -- 4.4.3. Microwires with Mixed Structure -- 4.5. EFFECT OF PARTIAL CRYSTALLIZATION AND NANOCRYSTALLIZATION -- 4.5.1. Nanocrystalline Fe-Cu-Nb-Si-B Glass-coated Microwires -- 4.5.1.1 Magnetically Soft Nanocrystalline Microwires -- 4.5.1.2. Semihard Magnetic Nanocrystalline Microwires -- 4.5.2. Nanocrystalline Structure in FeHfBSi Glass-coated Microwire -- NON -MAGNETICALLY SOFT MICROWIRES -- 5.1. MICROWIRES WITH GRANULAR STRUCTURE. MAGNETO-RESISTANCE EFFECT -- 5.2. MAGNETO-CALORIC EFFECT IN GLASS-COATED MICROWIRES -- FREQUENCY DEPENDENCE OF COERCIVITY. EFFECT OF MAGNETIC STRUCTURE -- APPLICATIONS -- REFERENCES -- INDEX.

Sommario/riassunto

Recent advances in technology involving magnetic materials require development of novel advanced magnetic materials with improved magnetic and magneto-transport properties. Additionally the tendency on miniaturization of the modern magnetic sensors and devices stimulates development of such magnetic materials with reduced dimensionality. Certain progress has been recently achieved in fabrication of novel magnetic nano-materials (thin films, nanowires, nano-dots...), but at the same time quite sophisticated technology should be used but in many occasions the magnetic properties of these materials are rather poorer than such properties of bulk magnetic materials (amorphous ribbons, wires, sintered materials...) and the fabrication process is much more expensive and complex. On the other hand certain industrial sectors, like magnetic sensors, microelectronics, security etc, need cheap materials with reduced dimensionality but still with high magnetic properties (particularly enhanced magnetic softness). Therefore magnetic materials with outstanding magnetic characteristics and reduced dimensionality recently gained much attention. The aim of this book is to present the most relevant aspects concerning the fabrication process following by sections devoted to present significant results on the remagnetization process, compositional dependence and processing of glass-coated microwires with amorphous, nanocrystalline and granular character in order to design their magnetic properties.
