

Eddy current characterization of nanomaterials

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Abstract : NDT Magnetic measurements as impedance in Eddy currents, remanence and corectif in hysteresis loop are used to study the different stages of mechanical alloying in the Fe-Co system. In this paper, we want to change the electromagnetic properties of Fe-Co, by developing their metallurgical parameters such as grain size. For this we are used a planetary ball mill, we are milled the Fe-Co alloy for different milling times until to obtain nanostructure, the lamellar structure with some small particles embedded in them was observed during the first stage of mechanical alloying. The characterization by X-ray diffraction shows after 10 h of milling the formation of a disordered solid solution having a body-centered cubic (bcc) structure. After 40h of milling, morphological studies indicated that the average crystallites size is around 15 nm.

Keywords : nanostructure materials powder metallurgy, NDT, Eddy Current, Magnetic measurement.