

2015

Effect of grain size of Nano composite in optical and magnetic proprieties

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Abstract : Iron–cobalt based alloys exhibit particularly interesting optical and magnetic properties, with high Curie temperatures, the highest saturation magnetizations, high permeability, and low losses and is relatively strong and optical proprieties. The cost of these alloys has confined them, since their discovery by Elmen in 1929, to applications where a small volume and high magnetic performances are critical. Sintering is the procedure of formation and compaction of a material. We have prepared the nano crystalline alloy by the mechanical milling process in a high energy planetary ball-mill PM 400. Morphological, micro-structural, magnetic and optical characterizations of the powders milled several times were investigated by scanning electron microscopy, X-ray diffraction, vibrating manometers sample and Raman spectroscopy. The coercivity value increase during milling time from 0.018 to 185.9 Oe and saturation magnetization value from 42.7 to 51.1 emu/g, respectively.

Keywords : materials nanostructured, Raman, VSM, Sintering