Élaboration et caractérisation des matériaux nanostructures à base de Fe et Ni

S. BOUTAREG, A. TOUNSI DJALLEL

Soutenue en: 2019

Abstract: The aims of this work is to understand the influence of the elaboration method , mill type, milling time and concentration on the structural, microstructural and magnetic properties of Fe80Ni20 nanostructured alloy. The production of the Fe80Ni20nanostructured alloy was carried out by the mechanical alloying technique of iron and nickel powders mixture. The elements produced (elaborated) were characterized by X-ray diffraction techniques (DRX), Scanning Electron Microscope (SEM) and Vibrating Sample Magnetometer (VSM). The X-ray diffraction study confirmed the formation of the Fe-Ni alloy after 600 min of milling with an average crystallite size of 13 nm, while the analysis of the magnetization curves of the Fe-Ni alloys, revealed original magnetic properties: super paramagnetic behavior, and especially saturation magnetization and significant coercitivity.

Keywords : elaboration method, properties of Fe80Ni20, nanostructured alloy