Effect of Cu/Ni Ratio on the Chemical composition, Magnetic behaviour, and Structural properties of a FeCuNi based alloy

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Abstract: The aim of this project is to study and understand the influence of copper and nickel concentration on the magnetic, morphological and structural properties of the Fe70Cu30-xNixalloy. The alloy was elaborated by mixing iron, nickel and copper powders by the mechanicalalloying technique for 10 hours of milling. The elements were characterised by different techniques: X-ray diffraction (XRD), Scanning Electron Microscope (SEM) and Vibrating Sample Magnetometer (VSM). The X-ray diffraction study shows that the crystallite size decreases with increasing Ni. When it come to the magnetic properties, the coercivityHc and the saturation moment Ms rise from 83 Oe, 121.5 emu/g to 156 Oe, 140 emu/g respectively.

Keywords : Fe70Cu30-xNix, Scanning Electron Microscope (SEM), X-ray diffraction