

## Hysteresis Behavior and Microstructure in Nanostructured Alloys Cu-Fe and Cu-Fe-Co

**Authors :** Laslouni Warda, M. Azzaz

**Abstract :** The intermetallic-based on transition metal compounds present interesting magnetic properties for the technological applications (permanent magnets, magnetic recording...). Cu<sub>70</sub> Fe<sub>18</sub>Co<sub>12</sub> and Cu<sub>70</sub> Fe<sub>30</sub> nanostructured with crystallite size vary from 10 a 12 nanometers have been developed by a mechanical milling method. For Cu-Fe samples, the iron and copper distribution was clear. The distribution showed a homogeneous distribution of iron and copper in a Cu-Fe obtained after 36 h milling. The structural properties have been performed with X-ray diffraction. With increasing milling times, Fe and Co diffuse into the Cu matrix, which accelerates the formation of the magnetic nanostructure Cu- Fe-Co and Cu-Fe alloys. The magnetic behavior is investigated using Vibrating Sample Magnetometer (VSM). The two alloys nanocrystals possess ferromagnetic character at room temperature

**Keywords :** Cu-Fe-Co, Cu-Fe, nanocrystals, SEM, hysteresis loops, VSM, anisotropy theory

**Conference Title :** ICSRD 2020 : International Conference on Scientific Research and Development

**Conference Location :** Chicago, United States

**Conference Dates :** December 12-13, 2020