

Study of the Nanostructured Fe₅₀Cr₃₅Ni₁₅ Powder Alloy Developed by Mechanical Alloying

Authors : Salim Triaa, Fella Kali-Ali

Abstract : Nanostructured Fe₅₀Cr₃₅Ni₁₅ alloys were prepared from pure elemental powders using high energy mechanical alloying. The mixture powders obtained are characterized by several techniques. X-ray diffraction analysis revealed the formation of the Fe₁Cr₁ compound with BCC structure after one hour of milling. A second compound Fe₃Ni₂ with FCC structure was observed after 12 hours of milling. The size of crystallite determined by Williamson Hall method was about 5.1 nm after 48h of mill. SEM observations confirmed the growth of crushed particles as a function of milling time, while the homogenization of our powders into different constituent elements was verified by the EDX analysis.

Keywords : Fe-Cr-Ni alloy, mechanical alloying, nanostructure, SEM, XRD

Conference Title : ICNMS 2018 : International Conference on Nanomaterials and Materials Science

Conference Location : Dublin, Ireland

Conference Dates : December 20-21, 2018