



Synthesis and Characterization of Electrodeposited Fe – Co alloys on Cu substrate

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Abstract : *The paper reports on synthesis and characterization of Fe-Co alloy films. These thin films were deposited on Cu-substrate by using electrodeposition technique. The morphology and crystalline characteristics of films have demonstrated dependence on deposition parameters. The electrolyte temperature has shown to have the most influence on the crystallographic structure of the film. The microstructure and crystallographic texture are studied by varying the substrate pretreatment and deposition parameters. The crystal structure and composition of the thin film samples*

have been investigated by employing X-ray diffraction (XRD) and X-ray fluorescence (XRF). XRD analyses have revealed the polycrystalline nature of the films, the average crystal size and the crystal orientation. The XRF analyses have revealed uniform composition of the films.

Keywords: *electrodeposition, Fe-Co binary alloy, BCC structure, thin-films.*

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Introduction :

Electrodeposition is the process of depositing material onto a conducting surface from a solution containing ionic species. This fabrication technique is commonly used to apply thin film of material to the surface of an object to change its external properties such as to increase corrosion protection and to improve decorative quality (Suryanarayana and Koch, 2000). It is a viable, low cost process in synthesizing the nanomaterials. It can be used on metals, alloys, polymers and composites (Gurappa and Binder, 2008). It can also produce coatings on various substrate requiring higher rates (Mohanty, 2011).