UD03

Investigation of the magnetic properties of electrodeposited Co films on polycrystalline copper in sulfate containing solution

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The formation of Co films on polycrystalline copper in diluted sulphuric acid was investigated by cyclic voltammetry (CV) and *in-situ* magneto-optic Kerr effect (MOKE) measurements. We present the design of our home-built cell for these measurements. The sample preparation was controlled by *ex-situ* atomic force microscopy (AFM) measurements, where we can observe a strong dependence between surface roughness and the duration of the electropolishing procedure for the sample preparation. By comparing CV measurements in the pure supporting electrolyte 11 mM K_2SO_4/1 mM H_2SO_4 and the cobalt sulphate solution (10 mM K_2SO_4/1 mM H_2SO_4/1 mM $CoSO_4$) we can identify peaks for Co bulk deposition E = -1050 mV vs Ag/Ag_2SO_4 and desorption at E = -600 mV. By observing the MOKE signal for a very long time at different sample potentials a reasonable deposition rate was found for a value of E = -1050 mV. The preparation of Co films through different waiting times at E = -1080 mV shows a linear increase of the remanent Kerr intensity MR and the waiting time.

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UD04

Analysis of electroplating technique for Permalloy and Cobalt thin films

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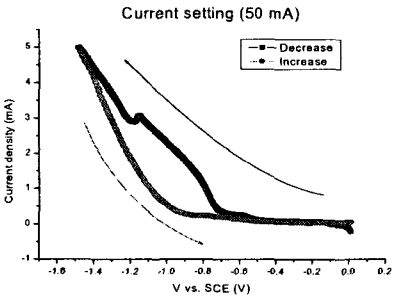
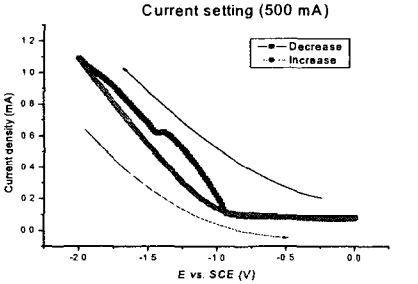
Investigations of Ni-Fe alloy deposition using electroplating to optimize the deposition conditions. The aim of this work is to get deposit NiFe alloy thin films to exhibit stable, beneficial magnetic properties at room temperature. The Ni-Fe deposits are used in the electronic industry for memory, recording and storage devices in computers for various applications. The composition for NiFe are $NiSO_4.6H_2O$ is 52.57 g/l , $FeSO_4.7H_2O$ is 2.7802 g/l , Na_2SO_4 is 92 g/l, H_3BO_3 is 0.4638 g/l. and the composition for Cobalt is $CoSO_4$ is 50 g/l, Na_2SO_4 is 80 g/l, H_3BO_3 is 40g/l. Fig.1 and Fig.2 shows the typical cyclic voltammogram for the various deposition conditions of NiFe at 500 mA and 50 mA at 50 mV/s and 12.5 mV/s. The characterizations were carried out in this work by vibrating sample magnetometer (VSM) and by XRD.



Cyclic voltammograms for deposition of NiFe with current 500 mA and potential 50 mV/s



Cyclic voltammogram for deposition of NiFe with current 50 mA and potential 12.5 mV/s

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