

UD03

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

T. Mangan, H.S. Pai, and J.S. Tsay

Department of Physics, National Taiwan Normal University, 88 Ting-Chou Rd Sec. 4, Taipei 116, Taiwan.

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 K₂SO₄/1 mM H₂SO₄ and the cobalt sulphate solution (10 mM K₂SO₄/1 mM H₂SO₄/1 mM CoSO₄) we can identify peaks for Co bulk deposition E = -1050 mV vs Ag/Ag₂SO₄ 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

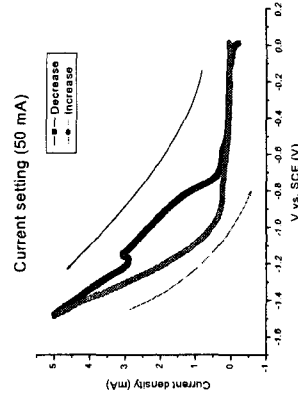
Kim Kunwoo¹, V.Sudha Rani¹, S.S. Yoon², C.G. Kim^{1*}

¹Department of Materials Science and Engineering, Chungnam National University, 220 Chung-Dong, Yu-Seong Gu, Daejeon, 305-764, South Korea

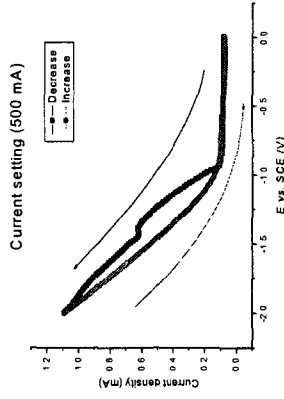
² Department of Physics, Andong National University, Andong 760-749, South Korea.

Corresponding author: cgkim@anu.ac.kr, Phone: +82 42 821 6632, Fax: +82 42 822 6272

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 NiSO₄·6H₂O is 52.57 g/l, FeSO₄·7H₂O is 2.7802 g/l, Na₂SO₄ is 92 g/l, H₃BO₃ is 0.4638 g/l, and the composition for Cobalt is CoSO₄ is 50 g/l, Na₂SO₄ is 80 g/l, H₃BO₃ 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

REFERENCES

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