

T_CSUH Bi-Weekly Seminar

Texas Center for Superconductivity at the University of Houston

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Effect of Additive Incorporation on Magnetic, Corrosion and Mechanical Properties of 2.4 T CoFe Alloys

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Room 102, University of Houston Science Center
12:00 Noon – 1:00 p.m.

Abstract

The recent trends in magnetic recording technology demonstrate that electrodeposited high moment alloys will be the material of choice for fabrication of future magnetic recording heads. The current research in electrodeposition of soft magnetic alloys is driven by the need for ultimately soft magnetic alloys with 2.4 T magnetic moment, good corrosion resistance and low stress levels. In order to achieve these properties it is essential that our understanding of additive incorporation into magnetic deposit is improved and its benefits and drawbacks quantified. In this talk, results demonstrating two separate mechanisms, (1) molecular incorporation and (2) electroreduction, for saccharine (additive) incorporation into CoFe alloys are presented. These results are supported with analytical model describing the sulfur incorporation into magnetic deposit. The effect and importance of each incorporation mechanism on magnetic softness and corrosion potential of CoFe alloys is discussed with intention to identify the dominant one. The analytical model describing the effect of saccharine concentration on corrosion potential of CoFe alloys is discussed as well. In the last part of the talk, results from in-situ stress measurements during electrodeposition of CoFe alloys are presented. The effect of saccharine concentration on stress evolution/level in CoFe deposit is discussed through the scope of the saccharine incorporation mechanisms and overall sulfur incorporation rate in magnetic deposit.

Bio

Dr. Brankovic holds Ph.D. in Science and Engineering of Materials from Arizona State University (1999). He has authored 30+ publications, two book chapters and several patents and trade secrets. Dr. Brankovic joined faculty of ECE department at UH in September 2005. His prior appointments include; Research Staff Member at Seagate Research Center in Pittsburgh, 2001-2005, and Postdoctoral Research Associate at Brookhaven National Laboratory, 1999-2001. More information on Dr. Brankovic research interests, research group and outreach activities can be found at www2.egr.uh.edu/~ecnfg.

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