

# ***6<sup>th</sup> INTERNATIONAL WORKSHOP ON ELECTRODEPOSITED NANOSTRUCTURES***

Title: Surface roughness of electrodeposited NiFeMo thin films

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Abstract:

Surface roughness has been widely studied in many systems. Here we present a roughness study of NiFeMo magnetic films, of interest for their good soft magnetic properties which can be used in magnetic storage applications. NiFeMo magnetic alloy films, 30nm to 5  $\mu$ m thick, were electrodeposited on Au (250nm)/Cr (85nm)/glass substrates under galvanostatic control. We have used atomic force microscopy (AFM) to measure the roughness of these electrodeposited NiFeMo films as a function of length scale and film thickness. In contrast to the power-law scaling dependence on the film thickness observed in other systems, the roughness of NiFeMo increases with increasing film thickness from 30nm to 100nm, then decreases with increasing film thickness from 100nm to 2  $\mu$ m. Films of thickness from 2  $\mu$ m to 5  $\mu$ m have a saturation roughness of  $\sim 2.4 \text{ nm} \pm 0.5 \text{ nm}$ .