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Sputter Yield Measurement of Ferrous Metals & Alloys KIERAN DENIEFFE, C.M.O. MAHONY, P.D. MAGUIRE, NIBEC, A. BABY, Seagate Technology — Sputter yield measurements for bulk Co, Fe & Ni are published [1]; however no values are available for ferrous metal alloys. Here we present the results of a study of the sputter yields of thin film ferromagnetic alloys CoFe & NiFe. We also investigate the sputtering of polyamide, used for masking in microelectronics, but with no published sputter yields to our knowledge. We used a 13.56 MHz plasma ion source to bombard biased samples with 50 eV to 1k eV Ar^+ ions. The ion flux was measured by a Faraday cup & the etch rate with a sensitive quartz crystal microbalance (QCM) modified for rf use, allowing multiple real-time measurements without breaking vacuum. The QCM was calibrated via profilometry & weight loss measurements; flux values were validated using a retarding field analyzer. A mass/energy analyser was used to measure ion energy distributions, showed the FWHM spread of beam energy to be 4eV. Measurements show that although Y values & threshold energies of the thin film alloys differ to those published for bulk ferrous metals, they do exhibit similar Y v ion energy trends.

[1] Laegreid N, Wehner G. 1961 *J Appl Phys* 32 p365

K. Denieffe

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