SM-P001

Correlation between Ferromagnetic State and Thermally Stable Layer of Fe on the W(001) Surface

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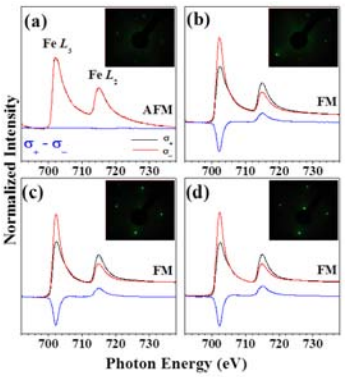
The variations of electronic and magnetic properties of ultrathin Fe overlayers on a W(001) surface as a function of Fe film thickness (1.0～4.0 ML) has been investigated using x-ray magnetic circular dichroism (XMCD) in conjunction with ultraviolet photoelectron spectroscopy (UPS) and low energy electron diffraction (LEED). We found that the ferromagnetic property of Fe film started to build up over 2.0 ML, as we confirmed the spin and angular moment contribution to the magnetic moment using XMCD experiments. We will systematically demonstrate that the occurrence of ferromagnetic property of Fe film on a W(001) surface is closely correlated to a themally stable layer of Fe film on a W(001) surface.



Keywords: XMCD, UPS, LEED, Ferromagnetic state, thermally stable layer

SM-P002

Synthesis and Characterization of Tin Nitride Thin Films Deposited by Low Nitrogen Gas Ratio

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Thin nitride thin films were synthesized by reactive radio-frequency magnetron sputtering in the ultra high vacuum (UHV) chamber. To control the characteristics of thin films, tin nitride thin films were obtained various argon and nitrogen gas mixtures, especially low nitrogen gas ratios. Tin nitride thin films were analyzed with alpha step, scanning electron microscopy (SEM), X-ray diffraction (XRD), X-ray photoelectron spectroscopy (XPS), and 4 point probe measurement. The result of alpha step and SEM showed that the thickness of thin nitride thin films were decreased with increasing nitrogen gas ratios. The metallic tin structure was decreased and the amorphous tin nitride structure were observed by XRD with higher nitrogen gas ratios. The oxidation state of tin and nitride were studied with high resolution Sn 3d and N 1s XP spectra.

Keywords: tin nitride, film, sputtering