

Depth-resolved XMCD and XPS study of ultrathin Mo/Co/Au films

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9.7 cm

Ultrathin Mo/Co/Au shows a rich variety of magnetic anisotropy, including in-plane/out-of-plane spin reorientation transition (SRT) and change in the in-plane anisotropy depending on the thickness of Co film and Mo overlayer, as confirmed by MOKE measurements[1]. In this paper we study the effect of Mo overlayer on the magnetism of Co layers by means of soft x-ray magnetic circular dichroism (XMCD). In particular, we report on the structure and magnetism at the Mo/Co interface studied by depth resolved XMCD[2] and x-ray photoemission spectroscopy (XPS). Depth-resolved XMCD shows that the magnetic moment of Co near Mo/Co interface is reduced compared to the inside of the film for the samples which have in-plane anisotropy. Moreover this effect is more prominent in the case of rougher Mo overlayer. Angular dependence of Co 2*p* and Mo 3*d* XPS shows systematic change which reflects the Mo/Co interface structure.

[1] Z. Kurant *et al.*, J. Magn. Magn. Mater. **316** (2007) e511

[2] K. Amemiya *et al.*, Phys. Rev. B **70** (2004) 190554

13.4 cm

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