

A study of antiferromagnetic/ferromagnetic systems using X-ray magnetic dichroism

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Using XMCD and CMLD to do element-specific measurement, we studied CoO/Fe(001) systems. Spectroscopy study shows that there exists two types of CoO spins: rotatable and frozen spins. With a determination of all the anisotropy terms as a function of CoO thickness, we explore how the CoO frozen spins induce the magnetic anisotropies in the Fe film. Then by patterning sample into microstructures, we explored directly the vortex states imprinted from the Fe disks into the CoO disks.