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Magnetic anisotropy of CoO/Fe films grown on vicinal Ag(001)

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CoO/Fe films were grown epitaxially on Ag(001) vicinal surfaces with the steps parallel to Ag [110] axis. Magnetic hysteresis loop measurement at room temperature shows that as the CoO thickness increases to establish the antiferromagnetic order, it introduces a magnetic anisotropy to the Fe ferromagnetic layer to enhance the Co coercivity. However, we find that the step-induced uniaxial magnetic anisotropy in the Fe film is not affected by the CoO antiferromagnetic order. This result shows that the CoO only imprints a 4-fold magnetic anisotropy to the Fe film.

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