

**The origin of temperature dependence of magnetic anisotropy in
Co/Cu(111) superlattices**

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The temperature dependence of FMR spectra of superlattices *Co/Cu* was studied for determination of magnetic anisotropy mechanism. We have investigated the series of samples [*Co*(8Å)/*Cu*(*d_{Cu}*)(111)]₂₀ with thicknesses of nonmagnetic copper layers *d_{Cu}* = 7-22 Å . The measurements of FMR spectra were made in 3-cm wavelength range in temperature interval from 300 to 360 K.

The temperature dependence of anisotropy constant *K*₁ is close to linear behavior for all samples of series. Such temperature dependence *K*₁ can be considered with magnetoelastic mechanism and the contribution of crystal anisotropy. In this work the calculation estimations of both contributions are made.

For given temperature interval the variations of magnetoelastic contribution to the anisotropy constant are about 4·10³ erg/cm³, while in experiment the value Δ*K*₁ ≈ 0,9·10⁶ erg/cm³ is observed. Whereas the axial part of the crystal anisotropy makes about ≈ 10⁶ erg/cm³.

So, the magnetoelastic contribution is not an appreciable source of temperature dependence of anisotropy in multilayered system under consideration. The main contribution to this dependence is given by the axial component of crystal anisotropy.

9.7 cm

13.4 cm

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