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2. When Co layer was much thicker, the multilayer diffraction overwhelmed the PdCo alloy diffraction and the relative height of these two peaks reversed.

In conclusion, we have found the PdCo alloy diffraction at PdCo multilayers. And the appearance of PdCo alloy did not destroy the perpendicular magnetic anisotropy which is believed to be mainly induced by interface anisotropy, the influence of interface atoms on the anisotropy can be further studied.

PS-11.02.16 THE STRUCTURE AND MAGNETIC ANISOTROPY OF Pd/Co MULTILAYERS By Zhi-hong Jiang,1,2 Chang-lin Kuo,2 De-fang Shen,1 Rong-fa Guo1, Tian-sheng Shi1. 1) Shanghai Institute of Metalurgy, Chinese Academy of Sciences, Shanghai, P.R.China. 2) Shanghai Institute of Ceramics, Chinese Academy of Sciences, Shanghai, P.R.China

Recently, Pd/Co multilayer has stimulated the interests of many researchers due to its potential as a high-density magneto-optical storage material. Generally, such a candidate material must have a large Faraday or Kerr effect at short wavelength, a perpendicular anisotropy and a relatively large coercivity at room temperature. Pd/Co multilayers happen to satisfy all these conditions.

In our experiments, Pd/Co multilayers were prepared using dc magnetron sputtering on silicon substrates. The structures were determined by X-ray diffraction and the magnetic properties were measured by Kerr angle hysteresis loops. In Table 1 are listed the sample parameters and their magnetic properties (omitted).

The low angle X-ray diffraction pattern, as shown in Fig. 1, clearly confirmed the existence of multilayer structure of sample 1. The bilayer thickness deduced from Bragg's formula agreed well with the sample parameter. A simple simulation of high angle x-ray diffraction pattern was made. At any circumstances, the n=1 satellite peak was higher than the n=+1 satellite peak, which is in contradiction to the real pattern (shown in Fig. 2). We contribute this phenomena to the appearance of Co/Pd alloy at the interfaces, whose (111) peak overlaps with the Bragg peak of multilayers and (200) peak is at the same position of n=+1 satellite peak (C.-T. Lin and G.L. Gorman, Appl. Phys. Lett., 1992, 61(13), 1600). In sample

PS-11.02.17 CROSS-HATCHED SURFACE MORPHOLOGY IN InGaAs/InAs SUPERLATTICES. By S. F. Cai,1 Z. Y. Mei, G. M. Wang, W. Peng, L. S. Wu, C. R. Li, J. H. Li, D. Y. Du and J. M. Zhou, Institute of Physics, Chinese Academy of Sciences, Beijing 100080, China

The cross-hatched morphology (CHM) has been commonly noticed in strained III-V semiconductors films (K. H. Chang et al., J. Appl. Phys., 1999, 67, 4093-4098). The CHM has been observed by means of Nomarski interference, X-ray topography, TEM, channeling and photo luminescence but for results about the CHM were presented for InGaAs/InAs strained-layer superlattices (SLS). In the present letter we report the x-ray topographic examinations of InGaAs/InAs SLS. The specimens used in the experiments were grown by molecular beam epitaxy (MBE) on GaAs substrates. The structural properties of the SLS samples were 100 periods of 70 A In0.5Ga0.5As and 250 A InAs with about a 1 μm GaAs buffer layer and a 3 μm capping layer, respectively. In order to improve the influence of the capping layer on the reflection topography a sample (denoted A) was etched to remove its capping layer. The synchrotron radiation experiments on sample A were performed at 4W1A beam line of the Beijing Synchrotron Radiation Facility (BSRF).

The actual structure of the specimens were determined by the simulations of experimentally measured rocking curves based on the dynamic diffraction theory for deformed crystals (Z. Y. Mei, S. F. Cai and C. C. He, Phys. Rev. B, 1999, 41, 930-9304). Percentage relaxations of the two component layers of SLS were particularly found from the simulations.

24 reflection topographs were taken at the zero order peak of the SLS and the substrate peak, respectively. They were characterized as orthogonal striations parallel to the [110] and [100] directions, respectively. X-ray topographs were also taken under incident transmission conditions using Cu Kα radiation (μ=17, where μ is the linear absorption constant and t the sample thickness). In 22° or 22° anomalous transmission topographs shown in Fig. 1 the striations parallel to [110] or [110] disappeared, respectively. According to the indiscretion criteria of dislocations, both the striations parallel to [110] or [100] were edge-type dislocations with Burger's vectors in [110] or [100] direction in the (111) growth plane.

It is interesting to see that in addition to the striations in the [001] growth plane other striations (see region C of Fig. 1) which obeyed the extinction law were observed on the cleavage planes of sample A. The stereographic topograph provides us with evidence that the misfit dislocations distribute over the SLS and...