Perpendicular magnetic anisotropy in Co/Pd multilayer grown by MBE technique
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Since discovery of high perpendicular magnetic anisotropy (PMA) in Co/Pd multilayer [1], they have attracted much attention for application to high density magnetic recording media. In order to achieve the high density recording, it is important to control the PMA energy in Co/Pd multilayer. It has been reported that the PMA energy in the Co/Pd multilayer depend on Pd layer thickness [2,3]. However the origin of these phenomena is unclear. The interface of the multilayer may affect the PMA energy. In this study we compare the two Co/Pd multilayers with smooth and rough interface.

A Co(1.5nm)/Pd(2.6nm) multilayer was grown on SiN membrane by using effusion-cell of MBE technique. The deposition rates of Co and Pd were 0.5nm/min and 2nm/min, respectively. The experimental results are as follows. (1) Sum of the spin and orbital moment of Pd₃Co₈ by the XMD is 3.1μB, which is consistent with the magnetic moment 3.16μB observed by the magnetization measurement. (2) The estimated spin moment of Pd₃Co₈ by the MCB is 2.36μB, which in agreement with that of the above XMD result. (3) For FePt the orbital moment is almost quenched and the spin moment is 6.8μB, which is corresponding to the value 6.68μB by the magnetization measurement. (4) Directional anisotropy is observed for the three MCPs of Pd₃Co₈. These results are compared with the other experimental results such as polarized neutron diffraction [2] and the MCS. [3,4]


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Growth and characterization of selectively doped surface modified ZnO nanocrystals
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ZnO nanocrystals find extensive application potential in modern technology for the fabrication of UV-diode laser and ZnO light emitting structures because of its wide and direct bandgap (3.37 eV) and with a large exciton binding energy (60 meV). ZnO has already been widely used in piezoelectric transducers, gas sensors, optical wave guides, transparent conductive films, varistors, solar cell windows, bulk acoustic wave devices, heterogeneous photocatalyst, etc. There are several methods employed popularly in the synthesis of ZnO nanocrystals. However, the hydrothermal method has been proved to be the most

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