MAGNETIC AND SPECTROSCOPIC MAGNETO-OPTICAL PROPERTIES OF Fe/Tb MULTILAYERS

L. Uba[a], S. Uba[a] and R. Gontarz[b]

[a]Institute of Physics, University of Białystok, Lipowa 41, PL-15-424 Białystok, Poland
[b] Institute of Molecular Physics, PAS, Smoluchowskiego 17, PL-60-179 Poznań, Poland

Magnetic properties and magneto-optical spectra have been studied for a series of Fe/Tb multilayers (MLS) prepared by dc- sputtering on Si(111) substrates with constant Tb sublayer thickness and Fe sublayer thickness changing in the range 1-3 nm. The investigation of the hysteresis loops in the Fe/Tb MLS studied reveals complex magnetic structures connected with structural heterogeneity of the MLS that can be interpreted as a superposition coming from Fe-Tb interface alloy region with perpendicular anisotropy and a modified Fe volume. The change of orientation of Fe magnetic moments with respect to the applied field was observed for Fe sublayer thickness above 2 nm. The complex Kerr rotation spectra of the Fe/Tb MLS were measured in both remanence and saturation states of the samples and the contributions coming from Fe-Tb interface volume and modified Fe region in wide spectral range 0.8-5.8eV have been evaluated. The strong influence of protective Au layer on the effective optical and magneto-optical properties of the Fe/Tb MLS has been studied experimentally and quantitatively modeled.

9.7 cm

13.4 cm

Subject category :

2. Magnetic Films, Surfaces and Multilayers

Presentation mode :
poster

Corresponding author :
L. Uba

Address for correspondence :
Institute of Experimental Physics
University of Białystok
Lipowa 41
PL-15-424 Białystok
Poland

Email address :
ubaluba@venus.uwb.edu.pl; ubaluba@alpha.uwb.edu.pl