THE IMPROVEMENT OF ATOMIC FORCE MICROSCOPE SUITABLE FOR MAGNETIC DOMAIN STRUCTURE MEASUREMENTS

J. Swieklo, W. Dobrogowski, M. Kisielewski, A. Maziewski
Institute of Physics University at Bialystok, Lipowa 41, Bialystok, 15-424, Poland

9.7 cm

Magnetic force microscope (MFM) allows us to obtain magnetic structure images with resolution greater than achieved by optical methods. The principal scheme of MFM is the further development of atomic force microscope (AFM). Differing from forces traditionally used for AFM work, magnetic forces are significantly smaller. To obtain maximum sensitivity and exclude the influence of shorter-range van der Waals forces the magnetic probe-must be scanned over the sample at stable distance about 50 nm and probe deflection must be measured. Based on commercial AFM Burligh METRISTM-2000 two methods were supposed. 'Lift mode' - in first frame we received sample topography and next we used these data to keep constant probe sample distance. Second - to compensate inclination of the sample/scanning plane, the linear combination of X and Y channels voltage was added to Z channel during scanning. Developed system was applied for study of magnetic structure of YIG-garnet and CoNi/Pt magneto-optic multilayers.

This work was partially supported by ESF NANOMAG Programme and Polish Grant Nb 2P03B06515.

13.4 cm

Subject category :

2. Magnetic Films, Surfaces and Multilayers

Presentation mode :
poster

Corresponding author :
J. Swieklo

Address for correspondence :
Institute of Physics, University at Bialystok
15-424 Bialystok
Lipowa 41, Poland

Email address :
kisiel@cksr.ac.bialystok.pl