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**Design of a variable temperature scanning force microscope** E. NAZARETSKI, K. S. GRAHAM, J. D. THOMPSON, J. K. BALDWIN, Los Alamos National Laboratory, J. A. WRIGHT, University of California Los Angeles, D. V. PELEKHOV, P. C. HAMMEL, Ohio State University, R. MOVSHOVICH, Los Alamos National Laboratory — We have developed the variable temperature scanning force microscope capable of performing both magnetic resonance force microscopy (MRFM) and magnetic force microscopy (MFM) measurements in the temperature range between 5 and 300 K. Modular design, large scanning area, and interferometric detection of the cantilever deflection make it a sensitive, easy to operate and reliable instrument suitable for studies of the dynamic and static magnetization in various systems. We have verified the performance of the microscope by imaging microfabricated permalloy dots and vortices in Nb thin film in the MFM mode of operation. MRFM spectra in a diphenyl-picryl-hydrazyl film were recorded to evaluate the MRFM mode of operation.

Evgueni Nazaretski

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