Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Mapping Elasticity at the Nanoscale GHEORGHE STAN, WILLIAM PRICE, National Institute of Standards and Technology, MSEL/Ceramics Division, 100 Bureau Drive 217/B107, Gaithersburg, MD 20899 — In the last few years Atomic Force Acoustic Microscopy has been developed to investigate the elastic response of materials at the nanoscale [1],[2]. We have extended this technique to the real-time mapping of nanomechanical properties of material surfaces. This mapping allows us to investigate the local variation of elastic properties with nanometer resolution and to reduce the uncertainties that arise from single measurements. Quantitative measurements are acquired by first performing an accurate calibration of the elastic properties of the Atomic Force Microscopes probes with respect to single crystal reference materials. A wide variety of surfaces with different mechanical properties have been investigated to illustrate the applicability of this technique.

[1] U. Rabe *et al.*, Surf. Interface Anal. **33**, 65 (2002)
[2] D.C. Hurley *et al.*, J. Appl. Phys. **94**, 2347 (2003)

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Date submitted: 23 Nov 2005 Electronic form version 1.4