

Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Relative humidity control for atomic force microscopes OLEG STUKALOV, CHRIS MURRAY, AMY JACINA, JOHN DUTCHER, University of Guelph — A cell for the control of relative humidity (RH) has been designed for use with atomic force microscopes (AFM) in which the tip is scanned across the stationary sample. The cell consists of a chamber with a small volume (4 cm^3) for accommodating the sample, the cantilever holder and a commercial humidity/temperature sensor. The RH is controlled by passing a controlled ratio of dry and humid nitrogen gas across the sample. This unique design prevents exposure of the AFM scanner assembly to humid air. Using this system, the RH at the sample position can be varied between 10% and 90% and controlled to within $\pm 0.2\%$ during the course of an AFM measurement. A study of the swelling of thin chitosan films as a function of RH is presented as a demonstration of the performance of the cell.

John Dutcher
University of Guelph

Date submitted: 01 Dec 2004

Electronic form version 1.4