

Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

A method for correcting out-of-plane, fast time scale positional drift in atomic force microscopy¹ JOHN P. WHEELER, PARDEEP S. BANWAIT, ISAAC D. ROHRER, GREG A. HAMILTON, KELLY A. SHAW, MICHAEL C. LEOPOLD, MATTHEW L. TRAWICK, University of Richmond — We describe a method for correcting atomic force microscopy images that have been affected by random fluctuations (fast time scale positional drift) in measurements along the axis perpendicular to the sample plane. These fluctuations, typically manifested as random horizontal streaks or bands across the image, have several sources, including electrostatic charging and the transfer of material between the sample and the tip. Our correction method involves scanning a second, partial image after each full image scan, and applying an offset correction to each individual scan line in both images in order to minimize the statistical discrepancy between them. This method supersedes the widely used “flattening” algorithm, which can destroy valid height information and can create additional image artifacts.

¹This material is based upon work supported by the National Science Foundation under grant number 1213606

John P. Wheeler
University of Richmond

Date submitted: 17 Nov 2014

Electronic form version 1.4