

SOFT NANOMETER HEIGHT STANDARDS FOR CALIBRATION

A. Nolvi^{1,3}, M. Järvinen¹, A. García-Peréz¹, T. Viitala², I. Kassamakov¹, N. Sandler³ and E. Hægström¹

¹ Electronics Research Laboratory, Department of Physics, University of Helsinki, Helsinki, Finland

² Centre for Drug Research at the Division of Pharmaceutical Biosciences Faculty of Pharmacy, University of Helsinki, Helsinki, Finland

³ Pharmaceutical Sciences Laboratory, Faculty of Science and Engineering, Åbo Akademi University, Turku, Finland

email: miikka.jarvinen@helsinki.fi

Accurate calibration is key for reliable measurements. A valid calibration standard should closely mimic material properties of the actual measurement sample. Novel microscopic methods capable of measuring nanometer heights currently lack a proper soft calibration standard. We introduce soft nanometer height standards for bio measurement calibration. Our standards, feature accurate nanometer steps that form soft height structures: the Nanoruler with a stair of eight steps for height calibration, and the Nanostar with stepped star for combined height and spatial calibration. We show optical microscope measurements of our standards conducted by different users in different laboratories. Measurement data shows that our standards perform reliably with optical microscopes and that they provide calibration at the nanoscale.