NanoScale 2013

Seminar on Quantitative Microscopy and Nanoscale Calibration Standards and Methods

Posters

General Infrastructure

G 1.1 Metrological support for measurement instruments in the nanometer range in the Russian Federation

G 1.2 Establishing Traceability for Nanoscale Measurements in Thailand

G 1.3 Nanoscale Metrology at SOLEIL synchrotron

G 2.1 Tactile and Optical confocal measurements of both optical V-grooved and optical aspherical artefacts in dimensional metrology

G 2.2 Intercomparison of lateral scales of SEM and AFM microscopes in research institutes in Northern Europe

G.2.3 COOMET comparison of SEM length standards in the nanometer range

Calibration

C 1.1 Fabricating nanoscale 2D refarence sample fabricated from multilayer thin films

C 1.2 In-situ nondestructive characterization of the normal spring constant of AFM cantilevers

C 1.3 Study of the sensitivity and the thermomechanical noise in cantilever arrays with thermal actuation and piezoresistive readout

C 1.4 Utilization of the calibration structures for determination the spring constant of the torsional oscillation cantilevers in terms of performing the quantitative forces and Young modulus mapping of the surface

C 1.5 Piezoresistive cantilever working in a shear force mode for in situ characterization of exposed micro- and nano-structures

C 2.1 New standards for high resolution 3D measurements with optical techniques

C 2.2 Characterization of novel active dynamic SPM standards

C 2.3 Application of 3D calibration standards for SPM drift and long term stability investigations

C 3.1 Standardization of data treatment and management of scanning probe microscopy

C 3.2 Long range scanning probe microscopy applications in mechanical studies of surfaces and interfaces

C 3.3 Large area and volume data treatment in Scanning Probe Microscopy

C 3.4 A novel pitch evaluation method based on a cross-correlation filter

C 3.5 Feature separation, robust filtering and multiple profile roughness analysis in SPIP™

C 3.6 Improvement of the surface's properties changes observation repeatability by utilization of the nanomarkers developed with scratching method

C 3.7 Method of scratches analysis by means of combination of Fourier and Hough transforms

C 4.1 Impact of line roughness on the reconstructed critical dimensions in scatterometry

C 4.2 Model-based CD Metrology using Scanning Electron Microscopy

C 4.3 Uncertainty analysis in the nano- and microscale with a virtual SEM

C 4.4 Virtual atomic force microscope for three-dimensional Measurements

Instrumentation and Methods

I 1.1 Design aspects and scanning results of the TriNano ultra precision 3D CMM

I 1.2 Multifunctional nanoanalytics and long-range SPM based on NPM machine

I 1.3 Recent advances in the development of the LNE metrological AFM

I 1.4 Development of a metrological AFM with tip-tilting mechanism toward true 3D measurements of nanoscale structure

I 1.5 Two-probe SPM based on MEMS structure for micro-measuring application

I 1.6 Reduction of the impact of the feedback loop dynamic response on morphology imaging quality by implementation of dynamic scanning speed control in atomic force microscopy.

I 1.7 A modified z-stage control of the metrological AFM at INRIM

I 2.1 Increasing of accuracy of linear measurements by displacement interferometer using the randomization method

I 2.2 Developments in X-ray interferometry for metrology

I 2.3 Distance metrology using a low-finesse fiber-optic Fabry-Pérot interferometer

I 2.4 Interferometry with CMOS image sensors and FPGA-based fringe analysis

I 2.5 The precise refractive index of air measuring unit suitable for metrological scanning probe microscope

I 2.6 Position sensing with standing wave detection within a passive Fabry-Perot cavity

I 2.7 Digital Approach to Fringe Interpolation with a Single Photodetector for Cost-Effective Displacement Measurement

I 2.8 Interferometry with suppression of the influence of refractive index of air for precision positioning

I 2.9 Short-range six-axis interferometer controlled positioning for local probe microscopy

I 3.1 A new AFM method for near field visualization of laser generation modes

I 3.2 New probe calibration methodology of the scanning probe microscopy

I 3.3 Scanning Thermal Microscopy for quantitative thermal measurements

I 3.4 Large area Scanning Thermal Microscopy

I 3.5 Calibration issues in scanning thermal microscopy

I 3.6 High Resolution Quantitative Kelvin Probe Force Microscopy-Principles and Applications

I 4.1 Calibration and testing of an optical profilometer

I 4.2 Metrological characterization of the main error sources of optical confocal probes measurements

I 4.3 Evaluation of roundness error with nanometer level of accuracy by using the small displacement screw and Chebyshev best-fit methods

I 4.4 Optical mirror referenced capacitive flatness measurement and straightness evaluation of translation stages

I 5.1 Performance of PTB´s Nanonewton Force Facility

I 5.2 Establishing standards in nanoindentation metrology: the NANOINDENT and NANOINDENT-plus EU FP7 projects

I 5.3 Consideration on the accuracy of area function determination in nanoindentation

Application

A 1.1 Traceable measurements of nanoparticles size by atomic force microscopy

A 1.2 Diameter Measurement of Nanoparticle based on Atomic Force Microscopy

A 1.3 Characterization of pectin nanocoatings at polystyrene and titanium surfaces

A 1.4 Research for Calibration of Condensation Particle Number Counters

A 1.5 Array-Dependent Deformation of Poly Styrene Nanoparticles

A 2.1 Industrial standardization of analysis procedure for carrier concentration estimation in semiconductor devices using electric SPM

A 2.2 Preparation of cross section of high efficiency CIGS thin film solar cells for characterization of carrier concentration using SCM

A 3.1 Preparation and measurement procedure of evaluating liposome-diameter distribution using AFM for industrial standardization

A 3.2 Metrological characterization of micro-vesicles from body fluids as non-invasive diagnostic biomarkers

Organized and supported by:

LNE Sharing a passion for progress

EURAMET European Association of National Metrology Institutes

PTB