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PROGRAMME

Address: National Physical Laboratory, Hampton Rd, Teddington, Middlesex, TW11 0LW, ENGLAND

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Such ID checks are required whenever you enter NPL (again), so also on the 2nd and 3rd day: Please arrive early around 08.30 on the 2nd and 3rd day, maybe enjoy a coffee or tea, have a chat with colleagues, stroll around the posters – and be sure not to miss the beginning of the sessions.

The Book of Abstract is digital at NanoScale 2026. Participants will be invited to download it as pdf-file shortly before the conference, and QR-codes will be provided at the conference to easily access the Book of Abstracts (WiFi available)

British time is WEST (West-European Summer Time, i. e. UTC+1), Central Europe is 1 hour ahead (UTC+2) of Britain

Tuesday, 2026-10-20

Check-In		
10:00		Check-In opens. Please have your passport ready handout of name badges, poster boards are ready Please remember that the poster format is A1 (not A0 as at previous conferences) <i>Get-together of the attendees. Have a relaxed start with a first chat with your colleagues, enjoy a cup of tea of coffee and stroll around the POSTERS</i>
12:00		Lunch <i>in the reception area. Lunch is included in the conference fee.</i>
1 st Session – Opening		
Chaired by Andrew Yacoot		
13:00		Welcome and opening remarks by Andrew Yacoot (NPL) and Thorsten Dziomba (PTB)
13:10	A1	Commemorative keynote lecture – in memoriam Teodor Gotszalk Lab-in-SEM as a platform for experiments in nanoscale 1) T. Piasecki*, B. Pruchnik, E.Gacka, K. Kwoka, K. Orłowska; 2) A. Sierakowski, P. Janus 1) Wrocław University of Science and Technology, 50-372 Wrocław, Poland 2) Łukasiewicz Research Network, Okulickiego 5E, 05-500 Piaseczno, Poland * tomasz.piasecki@pwr.edu.pl
13:40	A2	– Keynote lecture – Dimensional nano-metrology to enable world class science at synchrotron light facilities S.G. Alcock*, M. Bazan da Silva, R. Shurvinton, E. Meng, H. Patel, K. Sawhney Diamond Light Source Ltd, Harwell Science & Innovation Campus, Didcot, OX11 0DE, UK * simon.alcock@diamond.ac.uk

2nd Session – Algorithms, data evaluation, digitalisation Chaired by Petr Klapetek		
14:10	B1	Towards FAIR machine-readable metadata for dimensional AFM measurements 1) M. Romanchikova*, A. Yacoot, H. Strassburg, E. Heaps 2) P. Klapetek 3) D. Nečas 4) B. Torre 5) V. Korpelainen 1) National Physical Laboratory, Teddington, Middlesex TW11 0LW, United Kingdom 2) Czech Metrology Institute, Okružní 31, 638 00 Brno, Czech Republic 3) Brno University of Technology, Faculty of Mechanical Engineering, Brno, Czech Republic 4) Istituto Nazionale di Ricerca Metrologica, Torino, Italy 5) VTT Technical Research Centre of Finland Ltd, Espoo, Finland * marina.romanchikova(at)npl.co.uk
14:30	B2	Uncertainty Driven Data Selection for Targeted Nanometrology B. Babic* Nanometrology Section, National Measurement Institute Australia (NMIA), Lindfield, Australia * bakir.babic(at)measurement.gov.au
14:50	P	Group Photo POSTER SESSION with tea & coffee <i>Please have your posters ready on the A1 poster boards</i>
3rd Session – Semiconductor and ultrasmooth surfaces: Needs and Challenges Chaired by Harald Bosse		
16:40	C1	– Keynote lecture – Industrial Requirements for Calibration Standards in Wafer Manufacturing R. Haid, J. Wittmann, F. Lodermeier Siltronic AG, Johannes-Hess-Straße 24, 84489 Burghausen, Germany * richard.haid(at)siltronic.com
17:10	C2	Ultra-fast correlative CMP metrology with Active-Probe Scanning Probe Microscopy and Phase Shifting Interferometry 1) A.K. Bindu*, F. Dietrich, H.-G. Pietscher, J. Basseri, K. Ivanova, M.B. Kaimal, I.W. Rangelow 2) J. You, C.-S. Kim 3) J. Budnick, R. Subianto, T. Sattel 1) nano analytik GmbH, Ehrenbergstrasse 3, 98693 Ilmenau, Germany 2) nexensor Inc., 70 Yuseong-daero 1689 beon-gil, Yuseong-gu Daejeon, South Korea 3) Technische Universität Ilmenau, Mechatronics Group, 98693 Ilmenau, Germany * ak.bindu(at)nanoanalytik.net
17:30	C3	Finite-area bias in roughness measurement – do we now live happily ever after? 1) David Nečas* 2) Petr Klapetek, Miroslav Valtr 1) CEITEC, Brno University of Technology, Purkyňova 123, 61200 Brno, Czech Republic 2) Czech Metrology Institute, Okružní 31, 63800 Brno, Czech Republic * yeti(at)gyddion.net

17:50	C4	AFM 3D tip shape reconstruction using known tip characterizers with different shapes 1) Luigi Ribotta*, Andrea Giura, Lorenzo Giorio 2) Alessio Cimma 1) Istituto Nazionale di Ricerca Metrologica (INRiM), Strada delle Cacce 91, 10135, Turin, Italy 2) Chemistry Department, Università degli Studi di Torino, Via Pietro Giuria 7, 10125, Turin, Italy * l.ribotta(at)inrim.it
18:10		Joint walk to Bushy House <i>Please stay with the group for security reasons.</i>
18:30		Welcome reception at Bushy House Get-together with drinks & food (included) <i>relax and enjoy</i>
End: 21:00		

Wednesday, 2026-10-21

08:30		Check-in with passport <i>Enjoy a cup of tea of coffee, stroll around the POSTERS, chat with colleagues</i>
4th Session – Advanced optical- & X-ray-based nanoscale metrology Chaired by Gaoliang Dai		
09:00	D1	– Keynote lecture – High precision and stable ellipsometry for sub-nanometer films utilizing the Spin Hall effect of light with Laguerre-Gaussian beams 1) Y. Mizutani*, N. Zahra, T. Uenohara, Y. Takaya 2) N. Zahra 1) The University of Osaka, 2-1 Yamadaoka, Suita, 565-0871 Osaka, Japan 2) Institut Teknologi Bandung, Ganesa 10, Bandung, West Java 40132 Indonesia * mizutani(at)mech.eng.osaka-u.ac.jp
09:30	D2	Hybrid Soft X-ray Metrology for complex nanostructures 1) A. F. Herrero*, V. Truong, H. Kirschner, V. Soltwisch 1)2) P. Hönicke 1) Physikalisch-Technische Bundesanstalt (PTB), Abbestr. 2-12, 10587 Berlin, Germany 2) Helmholtz-Zentrum Berlin, Albert-Einstein Str. 15, 12489 Berlin, Germany * analia.fernandez.herrero(at)ptb.de
09:50	D3	Towards quantitative nanoscale carrier mapping by calibrated and subsampled hyperspectral s-SNOM 1) Dario Siebenkotten, Bernd Kästner*, Alex Strebel, Manuel Marschall 2) Shuhei Amakawa 1) Physikalisch-Technische Bundesanstalt (PTB), Abbestr. 2-12, 10587 Berlin, Germany 2) Graduate School of Advanced Science and Engineering, Hiroshima University, Japan * bernd.kaestner(at)ptb.de
10:10	D4	Performance evaluation of Hilbert transform and frequency-domain analysis reconstruction methods for coherence scanning interferometry 1) Helia Hooshmand*, Samanta Piano, Richard Leach 2) Han Haitjema 1) Manufacturing Metrology Team, University of Nottingham, Nottingham NG8 1BB, UK 2) Manufacturing Technology Section, KU Leuven, 3001 Leuven, Belgium * helia.hooshmand(at)nottingham.ac.uk
10:30		Break with Refreshments – please also take a look at the <i>posters</i> during the breaks

5th Session – Nanopositioning

Chaired by Alexandra Delvallee

11:00	E1	– Keynote lecture – Examples of collaboration between industry and National Metrology Institute and how their outcomes are being exploited in semiconductor manufacturing Craig Goodman Queensgate Instruments Limited, Electronics and Photonics Innovation Centre, Paignton, UK * cgoodman(at)prior.com
11:30	E2	Precision XY translation stage with three-axis interferometric feedback: design and characterization for optical metrology in ambient air S. Rerucha*, M. Hola, O. Cip, B. Mikel Institute of Scientific Instruments of the Czech Academy of Sciences (ISI Brno), Brno, Czech Rep. * res(at)isibrno.cz
11:50	E3	Homodyne interferometric metrology for high-performance 6-DOF positioning hexapods 1) C. Basa*, J-P. Wallerand, M.D. Plimmer, A. Vissière 2) P. Noiré 1) Laboratoire Commun de Métrologie, LNE-Cnam, LNE, Paris, France 2) Symétrie, 1 avenue Philippe Lamour, 30230, Bouillargues, France * camille.basa(at)lecnam.net
12:10	E4	High-speed Atomic Force Microscopy on samples changing in time 1) P. Klapetek*, M. Valtr, J. Martinek, V. Hortvík 2) M. Ruiz Ruiz, J. Rodríguez-Viejo 3) B. Kästner, M. Siebenkotten, M. Marschall 4) D. Nečas 1) Czech Metrology Institute, Okružní 31, 638 00 Brno, Czech Republic 2) Universidad Autónoma de Barcelona, 08193 Bellaterra, Spain 3) Physikalisch-Technische Bundesanstalt, Abbestraße 2–12, 10587 Berlin, Germany 4) CEITEC, Brno University of Technology, Purkyňova 123, 612 00 Brno, Czech Republic * pklapetek(at)cmi.cz
12:30		Lunch <i>in the reception area. Lunch is included in the conference fee. Please also take a look at the posters during the lunch break.</i>

6th Session – Quantum and nanoscale standards

Chaired by Jørgen Garnæs

13:30	F1	– Keynote lecture – Quest for Better Qubits: UHV Fabrication & Advanced Structural Metrology Sabbir Ahmed Khan* Danish Fundamental Metrology A/S (DFM), Kogle Allé 5, 2970 Hørsholm, Denmark * skh(at)dfm.dk
14:00	F2	AFM-based characterization of InAs quantum dot ensembles for deterministic quantum photonic devices 1) Jørgen Garnæs*, Oscar Danielsson, Emily Duggan, Henrik Guttesen, Astrid T. Rømer, Sabbir A. Khan 2) Laurits Moestrup Høgel and Peter Lodahl 1) Danish Fundamental Metrology A/S (DFM), Kogle Allé 5, 2970 Hørsholm, Denmark 2) Niels Bohr Institute, University of Copenhagen, Blegdamsvej 17, 2100 Copenhagen, Denmark * jg(at)dfm.dk
14:20	F3	Crystalline standards for easy and reliable sub-nm height calibration of SPM – Interlaboratory measurements on R&D samples for practical market application 1) I. Busch*, L. Daul, M. Fernandez-Scarioni 2) V. Heikkinen, V. Korpelainen 3) J. Adams 4) P. Klapetek 5) D. Nečas 6) A. Rauf 7) P. De Wolf 1) Physikalisch-Technische Bundesanstalt (PTB), Bundesallee 100, 38116 Braunschweig, Germany 2) VTT MIKES, Tekniikantie 1, Espoo, Finland 3) Nanosurf AG, Gräubernstrasse 12, CH-4410 Liestal, Switzerland 4) Czech Metrology Institute Okružní 31, 638 00 Brno, Czech Republic 5) CEITEC, Brno University of Technology, Purkyňova 123, Brno, 612 00, Czech Republic 6) Park Systems Europe, Schildkrötstraße 15, D-68199 Mannheim, Germany 7) Bruker Nano Surfaces, CA-93117 Santa Barbara, USA * Ingo.Busch(at)ptb.de
14:40	F4	Investigation of STED Resolution Using Fabricated Structures on an Artificial Diamond Substrate with Embedded Nitrogen-Vacancy Centers 1)2) Mohammad Nouri* 1)2) Stefanie Kroker 3) Pietro Aprà 4) Paolo Olivero 1) Bernd Bodermann 1) Physikalisch-Technische Bundesanstalt (PTB), Bundesallee 100, 38116 Braunschweig, Germany 2) Institut für Halbleitertechnik, LENA, Technische Universität Braunschweig, Germany 3) National Institute of Nuclear Physics (INFN) -Torino section-, Torino, Italy 4) Physics Department, University of Torino, via P. Giuria 1, 10125 Torino, Italy * mohammad.nouri(at)ptb.de
15:00	F5	Development of improved and digitally localized active calibration standards for correlative atomic force microscope (AFM) measurements 1) B. Pruchnik*, W. Kopczyński, K. Kwoka, D. Badura, W. Godlewski, T. Piasecki 2) A. Sierakowski, M. Kucharska 3) A. Yacoot 1) Nanometrology Department, Wrocław University of Science and Technology, Wrocław, Poland 2) Institute of Microelectronics and Photonics Łukasiewicz Network, 02-668 Warszawa, Poland 3) National Physical Laboratory, Hampton Road, Teddington, Middlesex, TW11 0LW, UK * bartosz.pruchnik(at)pwr.edu.pl
15:10	P	Poster Session <i>With tea & coffee. Please keep your poster on the board until the end of the conference.</i>

Excursion with Conference Dinner on Wednesday		
16:00		End of poster session and departure from NPL by coaches
17:00		Arrival of the coaches at the excursion venue
17:05		Guided tour <i>in two groups, walk of approx. 45 min</i>
17:45		Reception & Drinks <i>at the dinner venue</i>
19:00		Conference Dinner Incl. awarding of the <i>Dr.-Ing. Siegfried Werth Prize</i> of the Dr.-Ing. Siegfried Werth Foundation to Jan Thiesler and possibly some further after-dinner talks
22:00		Departure from the dinner venue back to Teddington by coaches
22:45		Arrival back in Teddington, drop-off near NPL and hotels

Thursday, 2026-10-22

08:30		Check-in with passport <i>Enjoy a cup of tea of coffee, stroll around the POSTERS, chat with colleagues</i>
7 th Session – Sensors and instrumentation Chaired by Rainer Tutsch		
09:00	G1	A true 3D-AFM head Jan Thiesler Physikalisch-Technische Bundesanstalt (PTB), Bundesallee 100, 38116 Braunschweig, Germany * Jan.Thiesler@ptb.de
09:30	G2	Influence of the surrounding medium on quantitative thermal conductivity measurements by SThM S. Douri*, N. Fleurence, A. Dévallée, J. Morán-Meza, J. Hameury, N. Feltin, B. Hay Laboratoire national de métrologie et d'essais (LNE), 78190 Trappes, France * sarah.douri@lne.fr
09:50	G3	Development of a metrological scanning tunneling microscope for crystal lattice spacing measurement: Instrument design R. Kizu*, Y. Hori, I. Misumi, S. Gonda National Metrology Institute of Japan / National Institute of Advanced Industrial Science and Technology (NMIJ/AIST) 1-1-1 Higashi, Tsukuba, 305-8565 Ibaraki, Japan * r-kizu@aist.go.jp
10:10	G4	Novel grating interferometer self-traceable to Cr atomic transition frequency Xiao Deng*, Jingtong Feng, Zhijun Yin, Zhikun Chang School of Physics Science and Engineering, Tongji University, Shanghai 200092, China * 18135@tongji.edu.cn
10:30	G5	Real-Time Multi-Axis Heydemann Correction via a Single FPGA Unit P. Köchert*, Ch. Weichert, J. Flügge Physikalisch-Technische Bundesanstalt (PTB), Bundesallee 100, 38116 Braunschweig, Germany * paul.koechert@ptb.de
10.50		Tea, coffee & biscuits – please also take a look at the posters during the breaks

8th Session – Nanoscale metrology for advanced materials; advanced materials for nanoscale metrology

Chaired by Luigi Ribotta

11:20	H1	– Keynote lecture – Advanced Nanomaterials: Current Synthesis Trends and Characterization Challenges S. Okeil, G. Garnweitner* Technische Universität Braunschweig, Institute for Particle Technology, Braunschweig, Germany * g.garnweitner@tu-braunschweig.de
11:50	H2	Digital-Twin-Enabled Optical Metrology for In-Process Quality Control of Additive Manufacturing 1) Samanta Piano, Xiangjun Kong, Tibebe Yalew, Mingda Yang, Osman Ali 2) Gerardo Adesso 1) Manufacturing Metrology Team, Faculty of Engineering, University of Nottingham, UK 2) Centre for the Mathematical and Theoretical Physics of Quantum Non-Equilibrium Systems and School of Mathematical Sciences, University of Nottingham, UK * samanta.piano@nottingham.ac.uk
12:10	H3	Diblock Copolymers' Periodicity as a Universal Measurand for Traceable Nanoscale Dimensional Metrology Luca Boarino* <i>et al.</i> Istituto Nazionale di Ricerca Metrologica (INRiM), Strada delle Cacce 91, 10135 Torino, Italy with 44 co-authors from 20 institutions worldwide (please see abstract for details on authorship) * l.boarino@inrim.it
12:30		Lunch <i>in the reception area. Lunch is included in the conference fee. Please also take a look at the posters during the lunch break.</i>
8th Session (continued)		
13:30	H4	Nanomechanical Tissue Phenotyping for Clinical Translation: Metrology Challenges and the Artidis Approach Ramin Omidvar*, Philipp Oertle, Maria Antonella Sforazzini, Martin King, Marko Loparic, Marija Plodenic ARTIDIS AG, Hochbergerstrasse 60C, 4057 Basel, Switzerland
	H5	Traceable Calibration of Mechanical Stiffness from Ultra-Soft AFM Cantilevers to Force Transfer Standards Radovan Popadic**, Dorothee Hüser Physikalisch-Technische Bundesanstalt (PTB), Bundesallee 100, 38116 Braunschweig, Germany * ramin.omidvar@artidis.com ** radovan.popadic@ptb.de
14:00	H6	New SI-traceable stiffness calibration device for soft AFM cantilevers C. Darteville*, S. Noviant, M. Plimmer, Z. Silvestri, A. Vissière Laboratoire Commun de Métrologie (LNE-Cnam), 1 rue Gaston Boissier, 75015 Paris, France * colin.darteville@lecnam.net
14:20		Closing remarks and explanation of lab tour arrangements Andrew Yacoot and colleagues
14:30		Start of lab tours with tour guides (end of lab tours: 17:00)

NPL lab tours on Thursday afternoon

Formation of six groups 1 to 6 (probably already in Tuesday)

- We will form 6 groups (Group 1 to Group 6)
- Attendees need to be assigned to the groups early at NanoScale, as NPL security needs to be informed about the members and itinerary of each group well in advance of the actual tours
- If you need to cancel the lab tour, please inform the organizers on the first day so that free places can be given to colleagues on the waiting list
- Please stay with the group throughout the tour

The following six labs A to F are included in the guided tour:

- A - Laser and metre Realisation (Andrew Lancaster, G3-L1)
- B - Surface texture (Henk Potgieter, G3-L21)
- C - MAFM and stage rig (Ed Heaps, G3-L10)
- D - Kibble balance (Ian Robinson, B1-R16)
- E - X-ray Interferometer (Andrew Yacoot, B1-B8)
- F - Scientific museum: metre and tea and coffee (Andrew Lewis, B1)

Tentative schedule of the **Groups 1 to 6**:

14:30	Start in reception					
Group	1	2	3	4	5	6
Guides:						
14:45	A	B	C	Walk to Bushy House	Walk to Bushy House	Walk to Bushy House
15:00	B	C	A	D	E	F
15:15	C	A	D	E	F	D
15:30	Assemble outside Mod 1 Walk to BH	Assemble outside Mod 1 Walk to BH	Assemble outside Mod 1 Walk to BH	F	D	E
15:45	D	E	F	Walk to Mod 3	Walk to mod 3	Walk to mod 3
16:00	E	F	D	A	B	C
16:15	F	D	E	B	C	A
16:30	Walk to reception	Walk to reception	Walk to reception	C	A	B
16:45	Depart from reception - please do not forget your poster and other belongings					

Please follow the instructions given at the conference.

Posters

Posters Part I SPM Instrumentation	
P01	Development of Nanometrology at the Central Office of Measures (GUM), Poland 1) D. Czulek, P. Sosinowski, M. Nawotka 2) P. Jagodziński, K. Gałczyńska, S. Wąsik 1) Central Office of Measures (GUM), Elektoralna 2, 00-139 Warsaw, Poland 2) Świętokrzyski Laboratory Campus of the Central Office of Measures (GUM), 25-211 Kielce, Poland * dariusz.czulek(at)gum.gov.pl
P02	Large area high-speed AFM with arbitrary scan path playback 1) Edward Heaps*, Andrew Yacoot 2) Graham Bartlett, Jayesh Patel, Craig Goodman, Alison Raby 3) Petr Klapetek 1) National Physical Laboratory, Hampton Road, Teddington, Middlesex, TW11 0LW, UK 2) Queensgate Instruments, Fulbourn, Cambridge, CB21 5ET UK 3) Czech Metrology Institute, Okružní 31, 638 00 Brno, Czech Republic * edward.heaps(at)npl.co.uk
P03	A high-speed and large-range metrological AFM based on a magnetic levitation stage 1) Jan Thiesler*, Christian Kuhlmann, Gaoliang Dai 2) Qinghua Ye 1) Physikalisch-Technische Bundesanstalt (PTB), Bundesallee 100, 38116 Braunschweig, Germany 2) Technische Universität Braunschweig, Universitätsplatz 2, 38106 Braunschweig, Germany * jan.thiesler(at)ptb.de
P04	Hardware considerations when obtaining accurate and reliable data with Atomic Force Microscopy J. Kerfoot, J. Moffat* Park Systems UK, Thane Road, Nottingham, UK * jonathan.moffat(at)parksystems.com
P05	Closed-Loop Nanometric Positioning of a Piezoelectric Stack Actuator with Dual Capacitive Feedback 1) R. Bouquinet* 3) S. Krut 5) F. Pierrot 2) O. Company 4) P. Noire 6) A. Vissiere 1) LCM (LNE-CNAM), 1 rue Gaston Boissier, 75724 Paris Cedex 15, France 2) LIRMM, 161 rue Ada, 34095 Montpellier Cedex 5, France 3) LIRMM, 161 rue Ada, 34095 Montpellier Cedex 5, France 4) Symetrie, 1 Av. Philippe Lamour, 30230 Bouillargues, France 5) LIRMM, 161 rue Ada, 34095 Montpellier Cedex 5, France 6) LCM (LNE-CNAM), 1 rue Gaston Boissier, 75724 Paris Cedex 15, France * romaric.bouquinet(at)lecnam.net

P06	Propagation of positioning and motion errors into the calculation of measurement uncertainty of a metrological atomic force microscope 1) Alistair Forbes, Andrew Yacoot*, Edward Heaps 2) Petr Klapetek, Petr Grolich 3) David Nečas 1) National Physical Laboratory, Teddington, Middlesex TW11 0LW, UK 2) Czech Metrology Institute, Okružní 31, 638 00 Brno, Czech Republic 3) CEITEC, Brno University of Technology, Purkyňova 123, 612 00 Brno, Czech Republic * andrew.yacoot@npl.co.uk
P07	Experimental and theoretical characterisation of Multi-dimension Absolute Positioning Sensor (MAPS) 1) Alistair Forbes, Edward Heaps, Tim Coveney, Andrew Yacoot* 2) Richard Aras 1) National Physical Laboratory, Teddington, Middlesex TW11 0LW, UK 2) Anemos Technology Ltd, 100 Fenchurch Street, London EC3M 5JD, UK * andrew.yacoot@npl.co.uk
P08	Displacement sensing using AFM cantilevers and room temperature single electron transistors 1) Komal Kaur*, Wenkun He, Mervyn Jones, Zahid Durrani 2) Andrew Yacoot 1) Depart. of Electronic and Electrical Engineering, Imperial College London, London, SW7 2AZ, UK 2) National Physical Laboratory, Teddington, Middlesex, TW11 0LW, UK * komal.kaur17@imperial.ac.uk
P09	A Novel Approach for Floor Noise Cancellation Using Active Self-Sensing Cantilever Disturbance Measurement in Atomic Force Microscopy 1) J. Budnick*, F. Rabel, O. Radler, T. Sattel 2) R. Subianto, C. Du, X. Zhou 3) F. Dietrich, A. K. Bindu, H. Pietscher, J. Basseri, I. W. Rangelow 1) Technische Universität Ilmenau, Mechatronics Group, 98693 Ilmenau, Germany 2) Parcan GmbH, Ehrenbergstrasse 3, 98693 Ilmenau, Germany 3) nano analytik GmbH, Ehrenbergstrasse 3, 98693 Ilmenau, Germany * jan.budnick@tu-ilmenau.de
P10	Improved stability and resolution of metrological AFM head for scanning quantum transistor microscopy (SQTM) W. Godlewski, B. Pruchnik*, D. Badura, W. Kopczyński, T. Piasecki Department of Nanometrology, Wrocław University of Science and Technology, Janiszewskiego 11/17, 50-372 Wrocław, Poland * bartosz.pruchnik@pwr.edu.pl
P11	A Statistical Approach to the Optimisation of Ultra-Precision Flexures 1) Emily Cachia*, Gregory Bizarri, Heather Almond, Arijit Lodh, Edith Rogers 2) Louise Wright, Andrew Yacoot, Paul Morantz 1) Cranfield University, College Road, Cranfield, Bedfordshire, MK430AL, UK 2) National Physical Laboratory, Hampton Road, Teddington, TW11 0LW, UK * emily.cachia@cranfield.ac.uk

Posters Part II

Interferometry

P21	Efficient beat-frequency measurement for characterizing transient DFB laser modulation in multi-wavelength interferometry 1) Hongdan Yan*, Paul Köchert, Florian Pollinger 2) Michael Krauhausen, Roland Priem, Ralf Classen 1) Physikalisch-Technische Bundesanstalt (PTB), Bundesallee 100, 38116 Braunschweig, Germany 2) VOLAS GmbH, Krantzstraße 7, 52070 Aachen, Germany * hongdan.yan(at)ptb.de
P22	Higher-order nonlinearity corrections for homodyne laser interferometers C. Freytag*, M. Matus Bundesamt für Eich- und Vermessungswesen (BEV), Arltgasse 35, 1160 Wien, Austria * clara.freytag(at)bev.gv.at
P23	Further development of hybrid white light interferometer and atomic force microscope for industrial applications: overall design concept of a new prototype 1) Tom Weyh*, Min Xu, Gaoliang Dai 2) Kay Wenzel, Torsten Machleidt 3) Thomas Kissinger 1) Physikalisch-Technische Bundesanstalt (PTB), Bundesallee 100, 38116 Braunschweig, Germany 2) GBS metrology GmbH, Robert-Bosch-Ring 8, 98693 Ilmenau, Germany 3) Institute of Process Measurement & Sensor Technology, Technical University of Ilmenau, Germany * tom.weyh(at)ptb.de

Posters Part III Calibration samples and strategies	
P31	Towards feedback-channel-based evaluation of crystalline Si(111) step-height standards L. Daul*, I. Busch, T. Simons Physikalisch-Technische Bundesanstalt (PTB), Bundesallee 100, 38116 Braunschweig, Germany * Lars.Daul(at)ptb.de
P32	Novel Methods for Characterization of Gratings and AR Waveguide Couplers A. Mattila, V. Byman, V. Korpelainen, A. Lassila VTT MIKES, Tekniikantie 1, 02150 Espoo, Finland * aleksi.mattila(at)vtt.fi
P33	ALD-Assisted Linewidth Compensation for Multilayer Linewidth Standards Jingtong Feng*, Zhijun Yin, Zhikun Chang, Xiao Deng School of Physics Science and Engineering, Tongji University, Shanghai 200092, China * 2332720(at)tongji.edu.cn
P34	Drift and thermal corrections in 2D registration measurements Christoph Weichert*, Matthias Schumann, Christian Werner, Rainer Köning, Jens Flügge Physikalisch-Technische Bundesanstalt (PTB), Bundesallee 100, 38116 Braunschweig, Germany * christoph.weichert(at)ptb.de
P35	Multiscale samples for simple scanning probe microscope calibration 1) David Nečas, Vojtěch Švarc, Gabriele Gradara, Aniket Mukherjee* 2) Petr Klapetek, Miroslav Valtr 3) Virpi Korpelainen, Oili Ylivaara, Tuomas Vaimala 4) Piotr Sosinowski, Dariusz Czufek 5) Bruno Torre 6) Andrew Yacoot 7) Ingo Busch 1) CEITEC, Brno University of Technology, Purkyňova 123, 61200 Brno, Czech Republic 2) Czech Metrology Institute, Okružní 772/31, 638 00 Brno, Czech Republic 3) VTT MIKES, Tekniikantie 1 02150 Espoo, Finland 4) GUM, Elektoralna 2, 00-139 Warszawa, Woj Mazowieckie, Poland 5) INRIM, Strada delle Cacce, 91, 10135 Torino, Italy 6) NPL, Hampton Road, Teddington, Middlesex, TW11 0L, England 7) Physikalisch-Technische Bundesanstalt (PTB), Bundesallee 100, 38116 Braunschweig, Germany * mukherjeea(at)vutbr.cz

P36	Turing patterns as a referenced multi-technique calibration ruler for hybrid and functional nanometrology 1) Bruno Torre*, Irdi Murataj, Monica Marini, Natascia De Leo, Luca Boarino, Federico Ferrarese Lupi, Gianluca Milano, Luigi Ribotta 2) Ingo Busch 3) Virpi Korpelainen 4) Andrew Yacoot, Marina Romanchikova 5) Petr Klapetek 6) Richard Koops 7) Piotr Sosinowski 8) Abdul Raif 9) Peter DeWolf 1) INRiM Istituto Nazionale di Ricerca Metrologica, Strada delle Cacce, 91, 10135 Torino, Italy 2) Physikalisch-Technische Bundesanstalt (PTB), Bundesallee 100, 38116 Braunschweig, Germany 3) VTT MIKES, Tekniikantie 21, 02150 Espoo, Finland 4) National Physical Laboratory, Hampton Road, Teddington Middlesex TW11 0LW, United Kingdom 5) Czech Metrology Institute, Okružní 31, 638 00 Brno, Czech Republic 6) VSL, Thijssseweg 11, 2629 JA Delft, The Netherlands 7) GUM Główny Urząd Miar, ul. Elektoralna 2, 00-139 Warszawa, Poland 8) Park Systems Europe GmbH, Schildkroetstraße 15, 68199 Mannheim, Germany 9) Bruker Corporation, Santa Barbara, California, United States * b.torre(at)inrim.it
P37	A virtual height standard for AFM calibration R. Koops*, W. Knulst VSL National Metrology Institute, Thijssseweg 11, 2629 JA, Delft * rkoops(at)vsl.nl
P38	Traceable Evaluation of XYZ Metrological Performance and Geometric Distortion of a Laser Scanning Confocal Microscope Using Multifunctional Reference Standards B. Ngansalung*, J. Buajarern National Institute of Metrology (NIMT), 3/4-5 Moo 3, Klong 5, Klong Luang, Pathumthani 12120, Thailand * benjaratn(at)nimt.or.th
P39	A Standardised Workflow for the 3D Characterisation of Tactile and Optical Surface Topography Measurement Systems Based on Model Fitting of Topography Data from Marker-Based Structures 1) L. Heinrich*, D. Hüser, S. Gao, G. Dai 2) R. Tutsch 1) Physikalisch-Technische Bundesanstalt (PTB), Bundesallee 100, 38116 Braunschweig, Germany 2) TU Braunschweig, Institut für Produktionsmesstechnik, 38106 Braunschweig, Germany * Lena.Heinrich(at)ptb.de
P40	A machine-learning approach for analysing and correcting systematic deviations in optical surface topography measurements Sai Gao*, Andre Felgner, Frank Pohlenz, Thorsten Dziomba Physikalisch-Technische Bundesanstalt (PTB), Bundesallee 100, 38116 Braunschweig, Germany * Sai.Gao(at)ptb.de

P41	Impact of measurement conditions on noise evaluation when calibrating material measurement standards using stylus profilometry 1) L. Carcedo*, M.M. Ozaita 2) E.M. Rubio 3) J. de Vicente 4) D. Fernández-Martínez 1) Centro Español de Metrología (CEM), Alfar 2, 28760 Tres Cantos, Spain 2) Universidad Nacional de Educación a Distancia (UNED), Juan del Rosal 12, 28040 Madrid, Spain 3) Universidad Politécnica de Madrid (UPM), José Gutiérrez Abascal 2, 28006 Madrid, Spain 4) Universidad Carlos III de Madrid (UC3M), Universidad 30, 28911 Leganés, Madrid, Spain * icarcedo(at)cem.es
P42	Application of Benford's Law for statistical validation of AFM measurement data A. Sikora* Wrocław University of Science and Technology, Department of Nanometrology, Janiszewskiego 11-17, 50-372 Wrocław, Poland * andrzej.sikora(at)pwr.edu.pl
P43	EURAMET comparison of Conductive Atomic Force Microscopy (C-AFM) 1) F. Piquemal, J. Morán-Meza 2) P. Klapetek*, J. Martinek 3) S. Møller Sønderskov, H. Aslan 4) Z. Li 5) B. Sauvet, V. Korpelainen 1) Laboratoire national de métrologie et d'essai (LNE), FR-78197 Trappes Cedex, France. 2) Czech Metrology Institute (CMI), Brno, Czech Republic 3) Dansk Fundamental Metrologi (DFM) – Danish National Metrology Institute, Hoersholm, Denmark 4) Physikalisch-Technische Bundesanstalt (PTB), Braunschweig, Germany 5) VTT MIKES, Espoo, Finland. * petr.klapetek(at)cmi.gov.cz
P44	Correlative metrology for studying the physicochemical properties of graphene oxide during its reduction 1) L. Chibane, A. Delvallée*, S. Douri, N. Fleurence, J. Morán-Meza, F. Piquemal, N. Feltin 2) L. Chibane, E. Flahaut 1) Laboratoire National de métrologie et d'Essais (LNE), Trappes, France 2) Centre Inter-universitaire de Recherche et d'Ingénierie des Matériaux (CIRIMAT) UMR CNRS 5085, Toulouse, France * alexandra.delvallee(at)lne.fr
P45	Preliminary Results on Electron-Beam Lithography-Based Fabrication of SOI Quantum-Dot Transistor Structures Toward Room-Temperature Quantum Nanometrology 1) M. Kucharska, A. Sierakowski, P. Janus, K. Domański, M. Grzywacki 2) M. Kucharska 1) Łukasiewicz Research Network – Institute of Microelectronics and Photonics, Piaseczno, Poland 2) Wrocław University of Science and Technology, Wrocław, Poland * magdalena.kucharska(at)imif.lukasiewicz.gov.pl
P46	Towards FEBID Single Electron Transistor on a probe's tip – methodology of fabrication and measurement 1) Julia Pruchnik*, Robert Jesionowski, Bartosz Pruchnik, Tomasz Piasecki 2) Andrzej Sierakowski, Magdalena Kucharska 1) Wrocław University of Science and Technology, 50-370 Wrocław, Poland 2) Łukasiewicz Institute of Microelectronics and Photonics, 02-668 Warszawa, Poland * julia.pruchnik(at)pwr.edu.pl

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P51	Traceable Indenter Geometry Calibration in Nanoindentation: A Rigorous Approach to Metadata and Uncertainty A. Charvátová Campbell*, M. Valtr, P. Klapetek Czech Metrology Institute, Okružní 31, 638 00 Brno, Czech Republic * acharvatovacampbell(at)cmi.gov.cz
P52	Synthetic data generation for general purpose Neural Network training on BioAFM indentation experiments 1) Gabriele Gradara*, Petr Klapetek 2) Radka Obořilová, Jan Příbyl 1) Czech Metrology Institute (CMI), Okružní 31, 63800 Brno, Czech Republic 2) CEITEC MU, Kamenice 5, 62500 Brno, Czech Republic * gabriele.gradara(at)cmi.gov.cz
P53	Metrological characterisation of soft AFM cantilevers combining experimental dynamic calibration and numerical modelling 1) L. Ribotta*, A. Schiavi, A. Facello, A. Giura, L. Giorio, B. Torre, M. Marini, A. Prato 2) L. Fabbiano 1) Istituto Nazionale di Ricerca Metrologica (INRiM), Strada delle Cacce 91, 10135, Turin, Italy 2) Politecnico di Bari, Via Amendola 126/B, 70126, Bari, Italy * l.ribotta(at)inrim.it
P54	Nanomechanical Characterization of Soft Materials and Biomaterials Using a Self-Sensing Piezoresistive Colloidal Probe 1) Zhi Li, Sai Gao, Frank Pohlenz 2) Sahil Manoj Sopariwala 3) Lakshmishri Jayachandran Menon 4) Diana Herz 1) Physikalisch-Technische Bundesanstalt (PTB), 38116 Braunschweig, Germany 2) Ernst-Abbe Hochschule Jena, 07745 Jena, Germany 3) Leibniz Universität Hannover, 30167 Hannover, Germany 4) Institut für Halbleitertechnik, LENA, TU Braunschweig, 38106 Braunschweig, Germany * Zhi.Li(at)ptb.de

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Particles

P61	Multicore-Fiber-Based Scatterometry for Compact Particle and Defect Detection A. Paul*, S. F. Pereira Department of Imaging Physics, Faculty of Applied Sciences, Delft University of Technology, Lorentzweg 1, 2628 CJ, Delft, The Netherlands * A.Paul-1@tudelft.nl
P62	Reference DC Magnetometry Measurements to Metrologically Characterize Magnetic Nanoparticles for Biomedical Applications S. Arsalani*, R. Schürmann, P. Radon, U. Steinhoff, and F. Wiekhorst Physikalisch-Technische Bundesanstalt, Abbestrasse 2-12, D-10587 Berlin, Germany * soudabeh.arsalani@ptb.de
P63	Thermal conductivity measurements of particles using Scanning Thermal Microscopy M. Valtr, J. Martinek, A. Charvátová Campbell, P. Klapetek Department of Nanometrology, Czech Metrology Institute, Okružní 31, 638 00 Brno, Czech Republic * miroslav.valtr@cmi.gov.cz