

Nano-Molecular Analysis for Emerging Technologies II Programme

Tuesday 17th October – Frontier issues in the Characterisation of Nanoparticles, Fibres and Nanowires

9.15 am Coffee

9.50 am **Welcome address**

Dr Martyn Sené, Director Quality of Life Division, National Physical Laboratory, UK

Analysis and characterisation of Nanoparticles and Nanowires

Session chair: Klaus Wittmaack

10.00 am **Invited: The secret lives of nanoparticles: characteristics of nanoparticles and nanostructured materials that are frequently forgotten or ignored**

Don Baer, M. H. Engelhard,⁺ A. S. Lea,⁺ D. G. Gaspar,⁺ C-M. Wang,⁺ J. E. Amonette,⁺ S. Kuchibhatla⁺ and S. Seal*,⁺ Pacific Northwest National Laboratory, *University of Central Florida, USA

10.40 am **Silica Nanometrology via Fluorescence and Absorption**

Jan Karolin, D J S Birch and A Cleary, University of Strathclyde, UK

11.00 am **Nano-scale Interaction of Single Wall Carbon Nanotubes and Collagen**

Debdulal Roy¹, S Bhattacharyya², J. P. Salvetat², M. L. Saboungi²,
¹National Physical Laboratory, UK, ²C.N.R.S. / Université d'Orléans, France

11.20 am Coffee

Analysis and characterisation of Nanoparticles and Nanowires

Session chair: Graham Leggett

11.45 am **Invited: Characterisation of ambient and laboratory generated nanoparticles**

Klaus Wittmaack, GSF – National Research Centre for Environment and Health, Institute of Radiation Protection, Germany

12.25 pm **High sensitivity depth resolved determination of Au in ZnO nanowires using SIMS**

R J H. Morris^a, M. G. Dowsett^a, S. H. Dalal^b, D. L. Baptista^b, K. B. K. Teo^b and W. I. Milne^b,^aUniversity of Warwick, ^bUniversity of Cambridge UK.

12.45 pm **Micro- and Nanoparticle Characterisation**

Peter Cumpson, National Physical Laboratory, UK

1.05 pm Lunch and poster session and exhibition.

Nano-Analysis of Fibres

Session chair: Don Baer

2.00 pm **Invited: Frictional Force Microscopy and the nano-analysis of microfibrils**

Graham Leggett, University of Sheffield, UK

2:40 pm **Nano-analysis of Cellulose Fibres as a Key for Development of Innovative Functional Materials**

Pedro Fardim, Åbo Akademi University, Finland

3.00 pm **Identification and Quantification of ToF-SIMS Images using Multivariate Analysis**

Joanna L. S. Lee^a, I. S. Gilmore^a, I. W. Fletcher^b, M. P. Seah^a,^aNational Physical Laboratory, ^bICI Measurement Science Group, UK.

3.20 pm Tea

NanoTubes Nanowires and Fullerenes

Session chair: Meryvn Miles

3.45 pm **Invited: Carbon nano-tube AFM tips for the characterisation of surfaces and devices**

Julie Macpherson, David P. Burt and Neil R. Wilson, University of Warwick, UK

4.25 pm **Attachment of Carbon Nanotubes to Multiple Atomic Force Microscope Probes**

Christopher T. Gibson, Stewart Carnally and Clive J. Roberts, University of Nottingham, UK

4.45 pm **Hooke's Law at the Nanoscale**

Mick Phillips, Dorothee Almecija, Lien T. Ngo, Andreas Heidelberg and John J. Boland, Trinity College, Dublin, Ireland

Evening Reception And Poster Session

5.05 pm Main Poster session, exhibition and drinks reception

6.45 pm Transport to conference dinner

7.15 pm Dinner at The Wharf

Wednesday 18th October – Frontier issues in Organic Multi-layer Characterisation

9.00 am Coffee

Measurement Requirements and Capability Development for Pharmaceutical and Bio Systems

Session chair: Birgit Hagenhoff

9.40 am **Invited: 3-D characterization of polymeric biomaterials and model drug delivery systems with cluster secondary ion mass spectrometry**
Christine M. Mahoney¹, and Anna M. Belu², ¹National Institute of Standards and Technology and ²Medtronic Inc., USA

10.20 am **SIMS Depth Profiling of Model Organic Materials using C₆₀ ions**
Alex Shard, I S Gilmore, National Physical Laboratory, UK

10.40 am **Lubrication of short-side-chain mucin is facilitated by its complex adsorption on solid/liquid interfaces.**
Gleb E Yakubov¹, James McColl², Jeroen H H Bongaerts¹ and Jeremy Ramsden², ¹Unilever Corporate Research, UK, ²Cranfield University, UK

11.00 am Coffee

Characterisation of Biological and Bio-Nano Surfaces

Session chair: Christine Mahoney

11.25 am **Invited: ToF-SIMS Characterisation of Biological Materials using Cluster sources and Imaging**
Birgit Hagenhoff and Daniel Breitenstein, TASCON GmbH, Germany

12.05 pm **3D Molecular Imaging of Biological Samples Using ToF-SIMS with C₆₀**
John S Fletcher, Nicholas P Lockyer and John C Vickerman, University of Manchester, UK

12.25 pm **Direct label-free imaging of proteins in membranes of living cells by Scanning Ion Conductance Microscopy**
Andrew I. Shevchuk^{*}, Gregory I. Frolenkov[†], Daniel Sánchez^{*}, Peter S. James[‡], Noah Freedman[§], Max J. Lab^{*}, Roy Jones[‡], David Klenerman[¶], and Yuri E. Korchev^{*}, ^{*} Imperial College London, [†] University of Kentucky, [‡] The Babraham Institute, UK, [§] Ionscope Limited, UK, [¶] University of Cambridge, UK

12.45 pm Lunch and poster session

Characterisation of Thin Polymer Films

Session chair: Julie Macpherson

1.40 pm **Invited: Video rate AFM for the real time characterisation of Polymers and Biological Systems**
Mervyn Miles, Loren Picco, Arturas Ulcinas, David Engledew and Massimo Antognozzi, University of Bristol

2.20 pm **Structural Changes of Thermally Responsive Poly(N-isopropylacrylamide) Grafted onto Solid Surface Detected by AFM and QCM-D**
Naoyuki Ishida and Simon Biggs, University of Leeds, UK

2.40 pm **The Several Supra-Molecular Structures of Poly(VGGVG) Elastin-like Polypeptide**
Jim Castle² R Flamia¹, A M Salvi¹, P A Zhdan² and A M Tamburro¹, ¹Università degli Studi della Basilicata, Italy, ²University of Surrey, UK

3.00 pm Tea

Characterisation of Organic Layers for Electronic Devices

Session chair: Ian Gilmore

3.25 pm **Invited: The Development of Solution Processed Semiconducting Polymers in Organic Field Effect Transistors**
Iain McCulloch, Merck Chemicals, UK

4.05 pm **Printed multi-layer device: organic transistor**
Nick Stone, Novalia, UK

4.25 pm **Modelling of Nanomechanical Nanoindentation Measurements using an AFM or Nanoindenter for compliant layers on stiffer substrates**
Charles Clifford, M P Seah, National Physical Laboratory, UK

4.45 pm Closing and Farewell