

Scientific Program

Sunday 23 September 2012

13.00 – 17.00 Registration

13.30 – 18.30 Short Courses

Location : Room 4

13.30 – 14.45 Tutorial 1

Holger Schönherr
University of Siegen, Siegen, Germany
Introduction to Atomic Force Microscopy on Polymers: Forces, Basic AFM Modes and Experimental Aspects

14.45 – 16.00 Tutorial 2

Philippe Leclère
University of Mons, Mons, Belgium
On the Mapping of the Mechanical Properties of Polymeric Materials at the Nanoscale by Atomic Force Microscopy

16.00 – 17.15 Tutorial 3

Peter Schön
University of Twente, Enschede, The Netherlands
Atomic Force Microscopy in Biology: From Single Molecules to Living Cells

17.15 – 18.30 Tutorial 4

Thierry Mélin
University of Lille, Villeneuve d'Ascq, France
An Introduction to Electrostatic Characterization using Scanning Probe Microscopy

19.30 – 21.00 Dinner

21.00 – 22.30 Get Together

Monday 24 September 2012

07.30 – 17.00 **Registration**

08.30 – 08.45 **Welcome – Opening of the conference**

Location : Aula Minor

08.45 – 09.45 **Keynote Lecture**

Hans-Jürgen Butt

Max Planck Institute for Polymer Research, Mainz, Germany

Using Microcantilevers Sensors to Analyse Drop Evaporation and Thin Polymer Films

09.45 – 10.15 **Coffee Break**

Session 01 : **AFM on Biological and Biomimetic Systems I : Biosurfaces**

Location : Room 4

10.15 – 10.55 **Session Chair Talk (invited)**

Daniel Müller

ETH Zürich, Basel, Switzerland

Multifunctional High-Resolution AFM of Native Proteins in Vivo and In Vitro

10.55 – 11.15 **Invited Talk**

Bart Hoogenboom

University College London, London, United Kingdom

Probing and Modelling Unstructured Proteins in Intact Nuclear Pore Complexes

11.15 – 11.35 **Invited Talk**

Georg Fantner

EPFL Lausanne, Switzerland

Characterization of Temporal Processes at the Nanometer Scale using HS-AFM and Molecular Dynamics Simulation

11.35 – 11.55 **Invited Talk**

Aysegul Cumurcu

MESA+ ,University of Twente, Enschede, The Netherlands

Nanoscale imaging of heterogeneous polymers by scanning near-field ellipsometry microscopy

11.55 – 12.15 **Invited Talk**

Mathieu Surin

University of Mons, Mons, Belgium

Self-Assembly of pi-conjugated Structures using DNA Templates: a joint SPM / Molecular Modelling Study

Session 02 : Surface Structures and Properties by AFM

Location : Room 6

- 10.15 – 10.55** **Session Chair Talk (invited)**
Gustavo Luengo
L'OREAL, Aulnay-sous-Bois, France
Influence of Polymers on Keratin Surface Properties in Cosmetics
- 10.55 – 11.15** Markus Hund
Universität Bayreuth, Bayreuth, Germany
Characterization of Core-Shell Particles using quasi in-situ Scanning Force Microscopy (QIS-SFM)
- 11.15 – 11.35** Yanyan Liu
The University of New South Wales, Canberra, Australia.
Micro-scratching of PET: Mechanisms of Debris Generation
- 11.35 – 11.55** Sayeda N. Nahar
Delft University of Technology, Delft, The Netherlands
Influence of Thermal Conditioning on Microstructures of Bituminous Materials
- 11.55 – 12.15** Daniel. W. Wesner
Bielefeld University, Bielefeld, Germany
The bio-nano-interface: Evaluating the Binding of Nanoparticles to Cellular Surfaces
- 12.15 – 14.00** **Lunch**

Session 03 : AFM on Biological and Biomimetic Systems II: Complex Assemblies

Location : Room 6

- 14.00 – 14.40** **Session Chair Talk (invited)**
Pierre-Emmanuel Milhiet
University of Montpellier, France
Structure and Dynamics of Membrane Components using High-Speed AFM
- 14.40 – 15.00** David Alsteens
Université Catholique de Louvain, Louvain-la-Neuve, Belgium
Functional Amyloids Create Adhesion Nanodomains in Yeasts
- 15.00 – 15.20** Gilbert Nöll
University of Siegen, Siegen, Germany
One-and-More-Dimensional Protein-DNA-Nanostructures by Self-Assembly of Dodecin-Flavin-DNA-Complexes
- 15.20 – 15.40** Lorena Redondo-Morata
Institute for Bioengineering of Catalonia (IBEC), Barcelona, Spain
AFM Force-Clamp Monitors the Lipid Bilayer Failure Kinetics

15.40 – 16.00 Willem Vanderlinden
Katholieke Universiteit Leuven, Heverlee, Belgium
Mesoscale DNA Structural Changes on Binding and Photo-reaction with Ru[(TAP)2(PHEHAT)]2+

16.00 – 16.30 **SPM Company Talk**
Ute Schmidt
Witec GmbH, Ulm, Germany
Analysis of Multi-Component Polymer Blends with the Confocal Raman AFM

Session 04 : **Characterizing Polymeric Systems by AFM**

Location : Room 4

14.00 – 14.40 **Session Chair Talk (invited)**
Greg Meyers
Dow Chemical, USA
Predicting Contrast in Dynamic AFM of Polymeric Systems

14.40 – 15.00 David.W. Jr Abmayr
ExxonMobil Chemical Co, Baytown, TX, USA
Atomic Force Microscopy for the Advanced Characterization of Industrial Polymers

15.00 – 15.20 Astrid D. Drechsler
Leibniz-Institut für Polymerforschung Dresden, Dresden, Germany
Distribution of Functionalized Inorganic Nanoparticles within a Thin Polymer Film Revealed by SPM, SEM and TEM

15.20 – 15.40 Stefano Piccarolo
Università di Palermo, Palermo, Italy
Polymer Solidification at High Cooling Rates: Source of Criticism of Standard Mechanisms of Crystallization

15.40 – 16.00 Mihaela Rusu
DSM Resolve, Geleen, The Netherlands
AFM Solutions in an Industrial Environment

16.00 – 16.30 **SPM Company Talk**
Craig B. Prater
Anasys Instruments, Santa Barbara, CA, USA
Sub-100 nm Polymer Characterization via AFM based IR Spectroscopy and Thermo-mechanical Analysis (TMA)

16.30 – 19.00 **Poster Session**

19.00 – 20.30 **Dinner**

Tuesday 25 September 2012

08.00 – 12.00 **Registration**

Location : Aula Minor

08.45 – 09.45 **Keynote Lecture**

Ricardo Garcia

CSIC, Madrid, Spain

Quantitative and Molecular Resolution Imaging in Air and Liquid by Dynamic AFM Methods

09.45 – 10.15 **Coffee Break**

Session 05 : **Soft Interfaces by Alternative or Combined Proximity Probe Microscopic Approaches**

Location : Room 4

10.15 – 10.55 **Session Chair Talk (invited)**

Atsushi Takahara

Kyushu University, Fukuoka, Japan

Direct Measurement of Thermal Behaviors of Polymer Interfaces and Polymer Nanorods by Nano-Thermal Analysis

10.55 – 11.15 **Invited Talk**

Shan Zou

National Research Council Canada, Ottawa, ON, Canada

Correlated Imaging and Nanomechanical Force Mapping

11.15 – 11.35

Craig B. Prater

Anasys Instruments, Santa Barbara, CA, USA

Nanomechanical Spectroscopy using Lorentz Force Contact Resonance AFM with self-heating AFM Probes

11.35 – 11.55

Elke Ghijsens

Katholieke Universiteit Leuven, Heverlee, Belgium

Chiral Induction of Self-assembled Structures at the Liquid/Solid Interface: the Role of Solvent

11.55 – 12.15

Thomas S. van Zanten

ICFO - Institut de Ciències Fotòniques, Castelldefels (Barcelona), Spain.

Optical Nanoscopy of the Cell Membrane using Near-Field Scanning Optical Microscopy

Session 06 : Conductive AFM and STM

Location : Room 6

- 10.15 – 10.55** **Session Chair Talk (invited)**
Rüdiger Berger
Max Planck Institute for Polymer Research, Mainz, Germany
A New Conductive Mode for Conductive Microscopy on Soft Samples
- 10.55 – 11.15** Benjamin Lachmann
Christian-Albrechts-University, Kiel, Germany
Electrical Conductivity of Single Molecules Measured with Conductive AFM
- 11.15 – 11.35** David Moerman
University of Mons, Mons, Belgium
Identifying Charge Transport Mechanisms in the Conductive Atomic Force Microscopy Probing of Semiconducting Polymer Thin Films
- 11.35 – 11.55** Lorenz Walder
Universität Osnabrück, Osnabrück, Germany
Self Assembling of Poly- and Oligo-Viologens on CNTs as Evidenced by STM
- 11.55 – 12.15** Olivier Douhéret
Materia Nova, Mons, Belgium
Exploring Local Photovoltaic Mechanisms in Organic Bulk Heterojunction Structures with Novel Scanning Probe Techniques
- 12.15 – 14.00** **Lunch**

Session 07 : Advanced Force Spectroscopy

Location : Room 6

- 14.00 – 14.40** **Session Chair Talk (invited)**
Sergei Sheiko
University of North Carolina, NC, USA
Molecular Mechanochemistry
- 14.40 – 15.00** Thomas Nick
Johannes Gutenberg University, Mainz, Germany
Rupture Force based of Split Aptamer Binding Tetracycline
- 15.00 – 15.20** Michael Pill
Munich University of Applied Sciences, Munich, Germany
Force Dependence of Mechanochemical Reactions determined with Single Molecule Force Spectroscopy and ab initio Simulation
- 15.20 – 15.40** Doreen Schütze
Christian-Albrechts-University, Kiel, Germany
Single Molecule Force-clam Spectroscopy on Azobenzene Monomers linking PEG Spacers

15.40 – 16.00 Seth L. Young
Georgia Institute of Technology, Atlanta, GA, USA
Utilizing Conformational Changes for Patterning Thin Films of Recombinant Spider Silk Proteins

16.00 – 16.30 **SPM Company Talk**
Peter Dewolf
Bruker Nano, Santa Barbara, CA, USA
Eliminating the Limitations of Contact-Mode in AFM-based Electrical Characterization

Session 08 : **Nanomechanical Analyses by AFM I : Polymers**

Location : Room 4

14.00 – 14.40 **Session Chair Talk (invited)**
Andy H. Tsou
ExxonMobil Research & Engineering Co., Annandale, NJ, USA
Nano-Mechanical Contrast and Characterization of Viscoelastic Polyolefins with Dynamic Atomic Force Microscopy

14.40 – 15.00 **Invited talk**
Davide Tranchida
Borealis Polyolefin GmbH, Linz, Austria
Linking Mechanical Properties and Thermal Analysis of Polyolefins on Nanometer Scale

15.00 – 15.20 Amir Bahrami
Université Catholique de Louvain, Louvain-la-Neuve, Belgium
Quantitative Nanomechanical Property Mapping in Polymer Blends and Nanocomposites using Atomic Force Microscopy (AFM)

15.20 – 15.40 Daniel Forchheimer
Royal Institute of Technology (KTH), Stockholm, Sweden
Probing Viscous and Elastic Forces with Dynamic AFM on Polymer Surfaces

15.40 – 16.00 Jérôme Sarrazin
ExxonMobil Europe Inc., Machelen, Belgium
Can we measure viscoelasticity with the help of PeakForce microscopy?

16.00 – 16.30 **SPM Company Talk**
Roland Goschke
Atomic Force, Mannheim, Germany
AM-FM and Loss Tangent Imaging for Quantitative Nanomechanical Properties

16.30 – 19.00 **Poster Session**

19.00 – 21.00 **Conference Dinner**

Wednesday 26 September 2012

Location : Aula Minor

08.45 – 09.45 **Keynote Lecture**
Vladimir Tsukruk
Georgia Institute of Technology, Atlanta, GA, USA
Scanning Probe Microscopy of Soft Matter: View of an Experienced User

09.45 – 10.15 **Coffee Break**

Session 09 : **Electrical Properties by AFM**

Location : Room 4

10.15 – 10.55 **Session Chair Talk (invited)**
David Ginger
University of Washington, Seattle, WA, USA
Probing Trap Formation in Polymer Solar Cells with Time Resolved Electrostatic Force Microscopy

10.55 – 11.15 Nasima Afshar Imani
Université Catholique de Louvain, Louvain-la-Neuve, Belgium
DOTT-Based Organic Thin-Film Transistors: A Kelvin Probe Force Microscopy Study of Electronic Properties

11.15 – 11.35 Ravi Chandra Chintala
IMEC, Heverlee, Belgium
Electrical Properties of APTMS SAM Layers studied with Conductive Atomic Force Microscope

11.35 – 11.55 Carsten Hentschel
Westfälische Wilhelms-Universität Münster, Münster, Germany
Electrical Characterization of Individual Polymer Nanowires Using Conductance Atomic Force Microscopy

11.55 – 12.15 Eleftherios Siamantouras
University of Warwick, Coventry, United Kingdom
Investigating Viscoelastic Effects on Cell Adhesion using Atomic Force Microscopy

Session 10 : **Tip-Sample Forces and Analyses of Soft Interfaces**

Location : Room 6

10.15 – 10.55 **Session Chair Talk (invited)**
Frieder Mugele
University of Twente, Enschede, The Netherlands
High Resolution Surface-Charge Measurements at Solid-Electrolyte Interfaces using Small Amplitude Frequency Modulation Dynamic Force Spectroscopy

- 10.55 – 11.15** Andrea Cerreta
Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland
Fine DNA Structure Revealed by Frequency Modulation AFM
- 11.15 – 11.35** Bede Pittenger
Bruker-Nano, Santa Barbara, CA, USA
Mapping Tip-Sample Interactions at the Atomic Scale with Peak Force Tapping
- 11.35 – 11.55** Horacio A. Vargas Guzman
Instituto de Microelectrónica de Madrid, Madrid, Spain
Peak Forces in Dynamic Atomic Force Microscopy Imaging of Soft Matter in Liquid
- 11.55 – 12.15** Wiktoria Walczyk
University of Siegen, Siegen, Germany
The Effect of AFM Imaging Conditions on the Apparent Dimensions of Surface Nanobubbles
- 12.15 – 14.00** **Lunch**

Session 11 : Nanomechanical Analyses by AFM II : Biomaterials

Location : Aula Minor

- 14.00 – 14.40** **Session Chair Talk (invited)**
Stephen Jesse
ORNL, Oak Ridge, TN, USA
Sines of Change: The Band Excitation Method applied to Soft Materials
- 14.40 – 15.10** **SPM Company Talk**
Erik A. Tholen
Intermodulation Products AB, Solna, Sweden
Quantitative surface analysis with intermodulation AFM
- 15.10 – 15.40** **SPM Company Talk**
Thomas Henze
JPK Instruments AG, Berlin, Germany
Advanced AFM Imaging Modes for High-Resolution and Quantitative Imaging
- 15.40 – 16.00** Martin Bennink
University of Twente, Enschede, The Netherlands
Nanomechanical Properties of alpha-Synuclein Fibrils providing Insight into the Structure of the Fibrils
- 16.00 – 16.20** **Best Posters and Best Oral Communication Awards**
- 16.20 – 16.30** **Concluding Remarks**
