

SCHEDULE OF THE XVIII LINZ WINTER WORKSHOP 2016

FRIDAY, JANUARY 29TH

19.00-23.00

GET TOGETHER & REGISTRATION

Sommerhotel Julius-Raab-Heim, Ground Floor

SATURDAY, JANUARY 30TH

REGISTRATION & WELCOME

Sommerhotel Julius-Raab-Heim, Ground Floor

08.00-09.00

REGISTRATION

09.00-09.15

WELCOME

Peter Hinterdorfer, *Johannes Kepler University Linz, Austria*
George Tsai, *Keysight Technologies Inc, USA*

SESSION I: SINGLE MOLECULE FORCE SPECTROSCOPY

Chairman: **Joon Won Park**

09.15-09.40

(1)

Gerhard Hummer, *MPI Frankfurt, Germany*

On artifacts in single-molecule force spectroscopy

09.40-10.05

(2)

Piotr E. Marszalek, *Duke University, USA*

Vectorial folding of large multi-domain proteins

10.05-10.20

(3)

Samuel J. Hickman, *University of Leeds, UK*

Pulling on a plug domain: direct mechanical gating of BtuB, an outer-membrane protein transporter.

10.20-10.40

COFFEE BREAK

Sommerhotel Julius-Raab-Heim, Ground Floor

SESSION II: MEMBRANE DOMAINS & ORGANIZATION

Chairman: **Gerhard Schütz**

10.40-11.05

(4)

Maria F. Garcia-Parajo, *ICFO Barcelona, Spain*

Protein nanoclustering as functional unit of immune cells

11.05-11.30

(5)

Alf Honigmann, *MPI Dresden, Germany*

Plasma membrane scaffolding and compartmentalization

11.30-11.45

(6)

Eva Sevcsik, *Technical University Vienna, Austria*

GPI-anchored proteins do not reside in ordered domains in the live cell plasma membrane

11.45-12.10 (7) **Justin Taraska**, *NIH Bethesda, USA*
Imaging the nanometer-scale structure of the plasma membrane with correlative super-resolution light and electron microscopy

12.10-13.30 LUNCH
Sommerhotel Julius-Raab-Heim, Ground Floor

SESSION III: NANO-MICROBIOLOGY

Chairman: **Hans Oberleithner**

13.30-13.55 (8) **Yves F. Dufrêne**, *University of Louvain, Belgium*
Sticky microbes: forces in microbial biofilms

13.55-14.10 (9) **Yoo Jin Oh**, *Johannes Kepler University Linz, Austria*
Investigation of curli-mediated bacterial adhesion using a single molecular force spectroscopy approach

14.10-14.25 (10) **David P. Allison**, *University of Tennessee, USA*
Investigating mechanical-chemical properties of *Candida albicans* by AFM

14.25-14.40 (11) **Mitchell J. Doktycz**, *University of Tennessee, USA*
Mapping mechanical characteristics of plant roots

14.40-16.40 COFFEE BREAK AND POSTER SESSION
KEYSIGHT AFM DEMONSTRATION
Sommerhotel Julius-Raab-Heim, Ground Floor

SESSION IV: NANO SENSORS

Chairman: **Mervyn Miles**

16.40-16.55 (12) **Anna Münch**, *NanoTemper Technologies GmbH, Germany*
Biophysics at the Cutting Edge: MicroScale Thermophoresis and nanoDSF

16.55-17.10 (13) **Michael Leitner**, *SCL-Sensor Tech. Fabrication, Austria*
Self-sensing cantilever as upgrade for a commercial bio AFM

17.10-17.25 (14) **Sebastian Knust**, *Bielefeld University, Germany*
Measuring DNA translocation forces through solid state nanopores with optical tweezers

17.25-17.40 (15) **Pietro Parisse**, *INSTM, Italy*
Mismatch detection in DNA monolayers by Atomic Force Microscopy and Electrochemical Impedance Spectroscopy

17.40-17.55 (16) **Wolfgang Fritzsche**, *IPHT Jena, Germany*
Single Nanoparticle Plasmonics

17.55-18.10 (17) **Maria Ott**, *Martin-Luther-University Halle, Germany*
The structure and dynamics of BSA solutions at high concentrations

19.00-23.00 CONFERENCE DINNER
Castle Wildberg
Busses depart in front of the
Sommerhotel Julius-Raab-Heim at 19.00

SUNDAY, JANUARY 31ST

SESSION V: NANO-MECHANICS & MECHANONSENSATION Chairman: **Yves Dufrêne**

09.00-09.25 (18) **Hans Oberleithner**, *University of Münster, Germany*
Vascular nanomechanics with a grain of salt

09.25-09.50 (19) **Thomas Schmidt**, *Leiden University, Netherlands*
Force sensing and quantitative dSTORM on signal transduction proteins inside the integrin adhesome

09.50-10.05 (20) **Marco Lazzarino**, *IOM-CNR Laboratory TASC, Italy*
STOML3 facilitates mechanosensation in sensory neurons by regulating membrane mechanics

10.05-10.20 (21) **Daan Vorselen**, *Vrije University, Netherlands*
Mechanical characterization of small vesicles reveals excretion of softer vesicles by red blood cells in Spherocytosis

10.20-10.35 (22) **Laura Andolfi**, *IOM-CNR Laboratory TASC, Italy*
Mechanical properties of zona pellucida human oocytes are potential indicators of the oocyte status for in-vitro fertilization applications

10.35-11.00 COFFEE BREAK
Sommerhotel Julius-Raab-Heim, Ground Floor

SESSION VI: MOLECULAR RECOGNITION FORCE MAPPING Chairman: **Piotr E. Marszalek**

11.00-11.25 (23) **Joon Won Park**, *Postech, Korea*
Sensitive Quantification of Nucleotide Biomarkers with AFM

11.25-11.50 (24) **David Alsteens**, *University of Louvain, Belgium*
Imaging individual receptors while extracting kinetic and thermodynamic parameters using FD-based AFM

11.50-13.20 LUNCH
Sommerhotel Julius-Raab-Heim, Ground Floor

SESSION VII: ADVANCES IN MICROSCOPY & SPECTROSCOPY

Chairman: **Peter Pohl**

- 13.20-13.45 (25) **Jörg Enderlein**, *Georg August University, Germany*
Image Scanning Microscopy and Metal Induced Energy Transfer: Enhancing Microscopy Resolution in All Directions
- 13.45-14.00 (26) **Andrzej J. Kulik**, *EPFL Lausanne, Switzerland*
Nanoscale Infrared Spectroscopy with 10nm spatial resolution
- 14.00-14.15 (27) **Eric Lesniewska**, *University of Bourgogne, France*
Combining AFM-IR and Mode Synthesizing Atomic Force Microscopy: Application to the study of lipid vesicles inside bacteria
- 14.15-14.30 (28) **Georg Gramse**, *Johannes Kepler University Linz, Austria*
Sub-surface imaging with broadband microwave microscopy
- 14.30-14.45 (29) **Silviu-Sorin Tuca**, *Johannes Kepler University Linz, Austria*
Calibrated impedance of cells and bacteria using scanning microwave microscopy

14.45-16.45 COFFEE BREAK AND POSTER SESSION
KEYSIGHT AFM DEMONSTRATION
Sommerhotel Julius-Raab-Heim, Ground Floor

SESSION VIII: NANO-ASSEMBLIES & -PATTERNS

Chairman: **Mitchell Doktycz**

- 16.45-17.10 (30) **Mervyn J. Miles**, *University of Bristol, UK*
Dynamic Holographic Assembly of Supermicelles
- 17.10-17.25 (31) **Lucie Grebikova**, *University of Geneva, Switzerland*
Nano-Handling of Individual Dendronized Polymers
- 17.25-17.40 (32) **Birgit Plochberger**, *University of Applied Science Linz, Austria*
Confinement of lipid membranes by nanostructured polymer patterns to mimic cell-cell interaction
- 17.40-17.55 (33) **Hubert Gojzewski**, *Poznan University of Technology, Poland*
AFM studies on nucleation and growth of copper phthalocyanine aggregates, layers and multilayers

19.15 YELLOW TRAIN CITY TOUR
Trains depart on Main Square Linz

20.00-23.00

CONFERENCE DINNER
Lentos Art Museum

MONDAY, FEBRUARY 1ST

SESSION IX: OPTICAL NANOSCOPY

Chairman: **Thomas Klar, Birgit Plochberger**

- 09.00-09.25 (34) **Katrin Willig**, *MPI Göttingen, Germany*
STED microscopy of the living mouse brain
- 09.25-09.50 (35) **Thorsten Wohland**, *National University, Singapore*
An Investigation of Dynamics and Organization of Cell Membranes by Imaging Fluorescence Correlation Spectroscopy
- 09.50-10.05 (36) **Florian Baumgart**, *Technical University Vienna, Austria*
Label density variation to probe membrane protein nanoclusters in dSTORM and PALM
- 10.05-10.20 (37) **Pierre E. Milhiet**, *CNRS Montpellier, France*
Recruitment of tetraspanins during HIV-1 budding analysed by correlative AFM-SMLM
- 10.20-10.35 (38) **Sandra Mayr**, *University of Applied Science Linz, Austria*
Classification of Rhesus D Antigen Expression at Single Molecule Level by High-Resolution Fluorescence Microscopy and Machine Learning
- 10.35-10.55 COFFEE BREAK
Sommerhotel Julius-Raab-Heim, Ground Floor

SESSION X: HIGH-SPEED AFM

Chairman: **Johannes Preiner**

- 10.55-11.20 (39) **Toshio Ando**, *Kanazawa University, Japan*
High-speed AFM Imaging of Protein Molecules in Dynamic Action
- 11.20-11.35 (40) **Andreas Karner**, *Center for Advanced Bioanalysis, Austria*
A novel platform for tailoring membrane protein mobility
- 11.35-11.50 (41) **Georg Fantner**, *EPFL Lausanne, Switzerland*
Resolving the division process in *Mycobacterium Smegmatis*; from milliseconds to days
- 11.50-12.05 (42) **Gerald Kada**, *Keysight Technologies GmbH, Austria*
Scanning @ 2 seconds per frame: In situ Atomic Force Microscopy

12.05-13.30 LUNCH
Sommerhotel Julius-Raab-Heim, Ground Floor

SESSION XI: AFM FORCE SENSING & IMAGING

Chairman: **Toshio Ando**

- 13.30-13.45 (43) **Melanie Köhler**, *Johannes Kepler University Linz, Austria*
Molecular binding mechanism of purine nucleotides to mitochondrial uncoupling proteins
- 13.45-14.00 (44) **Sandra Posch**, *Johannes Kepler University Linz, Austria*
Interplay of domain interactions and unfolding in the force sensing protein von Willebrand factor (VWF)
- 14.00-14.15 (45) **Lilia Chtcheglova**, *Johannes Kepler University Linz, Austria*
Nanosensing of the epithelial-to-mesenchymal transition (EMT) of retinal pigment epithelial (RPE) cells
- 14.15-14.30 (46) **Lisa F. Almonte**, *University Murcia, Spain*
Ideal Atomic Force Microscopy Imaging of heterogeneous biological samples in liquid: Topography and Chemistry at vanishing force interaction in liquid

14.30-15.30 COFFEE BREAK
KEYSIGHT AFM DEMONSTRATION
Sommerhotel Julius-Raab-Heim, Ground Floor

SESSION XII: CELL MECHANICS & ADHESION

Chairman: **Georg Fantner**

- 15.30-15.45 (47) **Malgorzata Lekka**, *Polish Academy of Science, Poland*
Fast and slow cellular response to altered single cell cancer microenvironment
- 15.45-16.00 (48) **Georgiy Smolyakov**, *ITAV-CNRS Toulouse, France*
Cell adhesion and rigidity probed by single-cell force spectroscopy reveal the invasive character of breast cancer lines
- 16.00-16.15 (49) **Flavie Gillant**, *CNRS, France*
Backscattered light detection in phase contrast optical tweezers for the study of mechanotransduction in blood vessels endothelial cells
- 16.15-16.30 (50) **Adam P. Strange**, *University College London, UK*
Alternations in Nanoscale Mechanical Properties and Nanohistological Profiles of Collagen in the Disease Scleroderma Supplements Diagnosis
- 16.30-16.45 (51) **Tarek Ahmed**, *University College London, UK*
Investigation into the mechanical properties of ageing of in vitro glycosylated tissue models at the nanoscale