

SCHEDULE OF THE XVII LINZ WINTER WORKSHOP 2015

FRIDAY, JANUARY 30TH

19.00-23.00

GET TOGETHER & REGISTRATION

Sommerhotel Julius-Raab-Heim, Ground Floor

SATURDAY, JANUARY 31ST

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*
Rhys Jones, *Keysight Technologies, UK*

SESSION I: HIGH SPEED AFM

Chairman: **Peter Hinterdorfer**

09.15-09.40

- (1) **Toshio Ando**, *Kanazawa University, Japan*
High-speed AFM studies on ring-shaped ATPases

09.40-10.05

- (2) **Mervyn Miles**, *University of Bristol, UK*
Holographic 4π AFM

10.05-10.20

- (3) **Johannes Preiner**, *Center for Advanced Bioanalysis, Austria*
High speed AFM: Applications to integral membrane proteins

10.20-10.40

COFFEE BREAK
Sommerhotel Julius-Raab-Heim, Ground Floor

SESSION II: OPTICAL SUPERRESOLUTION

Chairman: **Gerhard Schütz**

10.40-11.05

- (4) **Ulrich Kubitscheck**, *University of Bonn, Germany*
Extended, sensitive and fast 3D-tracking of single molecules and RNA particles in living cells and tissue

11.05-11.30

- (5) **Dimitrios Stamou**, *University of Copenhagen, Denmark*
Nanoscale heterogeneities and their role in the emergence of biological phenotypes

11.30-11.55

- (6) **Thomas A. Klar**, *Johannes Kepler University Linz, Austria*
From STED microscopy to STED lithography

12.00-13.30 LUNCH
Sommerhotel Julius-Raab-Heim, Ground Floor

SESSION III: AFM IMAGING AND ANALYSIS

Chairman: **Mervyn Miles**

- 13.30-13.45 (7) **Gerald Kada**, *Keysight Technologies, Austria*
New developments with Keysight AFM and SEM
- 13.45-14.10 (8) **Sandor Kasas**, *EPF Lausanne, Switzerland*
Nanoscale motion detection by AFM
- 14.10-14.25 (9) **Mitchell J. Doktycz**, *Oak Ridge National Laboratory, USA*
Imaging plant roots by atomic force microscopy
- 14.25-14.40 (10) **David P. Allison**, *University of Tennessee, USA*
Applications for nanoparticles as antimicrobial agents
- 14.40-15.00 (11) **Ferry Kienberger**, *Keysight Technologies, Austria*
Quantitative sub-surface imaging in air and liquid using scanning microwave microscopy

15.00-16.45 COFFEE BREAK AND POSTER SESSION
Sommerhotel Julius-Raab-Heim, Ground Floor

SESSION IV: MOLECULAR DYNAMICS AND RECOGNITION

Chairman: **Toshio Ando**

- 16.45-17.10 (12) **Hirofumi Yamada**, *Kyoto University, Japan*
Molecular-scale visualization of self-assembly of biomolecules by frequency modulation atomic force microscopy in liquids
- 17.10-17.35 (13) **Ozgur Sahin**, *Columbia University, USA*
Beyond the single-molecule limit in biological imaging
- 17.35-18.00 (14) **Helmut Grubmüller**, *MPI Göttingen, Germany*
Atomistic simulation of single molecule experiments: molecular machines and a dynasome

18.45-23.00 CONFERENCE DINNER
Schloss Wildberg
Buses depart in front of the
Sommerhotel Julius-Raab-Heim at 18.45

SUNDAY, FEBRUARY 1ST

SESSION V: PROTEIN MECHANICS AND FOLDING

Chairman: **Hongbin Li**

- 09.00-09.25 (15) **Deborah Leckband**, *University of Illinois, USA*
Molecular force transduction at cell-cell junctions
- 09.25-09.50 (16) **Cheng Zhu**, *Georgia Institute of Technology, USA*
Mechanoreception of platelet receptor GPIb α
- 09.50-10.15 (17) **Michael Schlierf**, *Technical University Dresden, Germany*
Probing the lipidic influence on the folding of an α -helical membrane protein by single-molecule FRET spectroscopy
- 10.15-10.35 COFFEE BREAK
Sommerhotel Julius-Raab-Heim, Ground Floor

SESSION VI: SINGLE MOLECULE FORCE SPECTROSCOPY

Chairman: **Cheng Zhu**

- 10.35-11.00 (18) **Hongbin Li**, *University of British Columbia, Canada*
Folding-unfolding mechanism of the metalloprotein Rubredoxin revealed by single molecule force spectroscopy
- 11.00-11.15 (19) **Rong Zhu**, *Johannes Kepler University Linz, Austria*
Nanopharmacological force sensing reveals allosteric coupling in transporter binding sites
- 11.15-11.30 (20) **Michael F. Pill**, *Munich Univ. of Applied Sciences, Germany*
Single molecule force spectroscopy and DFT calculations of the peptide bond under mechanical tension
- 11.30-11.45 (21) **Nicolas Willet**, *University of Liege, Belgium*
Conformational properties of helical foldamers under force
- 11.45-12.00 (22) **Serguei K. Sekatskii**, *EPF Lausanne, Switzerland*
Dependence of the most probable and average bond rupture forces on the force loading rate in single molecule dynamic force spectroscopy experiment: first order correction to the Bell – Evans model and generalization to 3D geometry
- 12.00-13.30 LUNCH
Sommerhotel Julius-Raab-Heim, Ground Floor

SESSION VII: MEMBRANE MECHANICS

Chairman: **Deborah Leckband**

- 13.30-13.45 (23) **Birgit Plochberger**, *Vienna University of Technology, Austria*
Receptor-mediated HDL-lipid uptake is regulated by elastic properties of the plasma membrane
- 13.45-14.00 (24) **Peter Knittel**, *University of Ulm, Germany*
Colloidal AFM-SECM probes for single cell force spectroscopy at the cell- PEDOT:PSS interface
- 14.00-14.25 (25) **Joachim O. Rädler**, *LMU Munich, Germany*
Collective cell migration on microstructured surfaces
- 14.25-14.40 (26) **Victor Shahin**, *Münster University, Germany*
The influence of the microenvironment's stiffness on the morphology and function of Schwann cells
- 14.40-14.55 (27) **Cendrine Faivre-Moskalenko**, *ENS, Lyon, France*
Physical properties and genome uncoating of AAV vectors measured at the single virus level
- 14.55-16.45 COFFEE BREAK AND POSTER SESSION
Sommerhotel Julius-Raab-Heim, Ground Floor

SESSION VIII: BIOMOLECULAR PHOTONICS

Chairman: **Thomas Klar**

- 16.45-17.10 (28) **Thomas Huser**, *University of Bielefeld, Germany*
Extending optical superresolution microscopy beyond fluorescence
- 17.10-17.35 (29) **Maxime Dahan**, *ECNS Paris, France*
Probing the target search of DNA-binding proteins in mammalian cells, one molecule at a time
- 17.35-18.00 (30) **Clemens F. Kaminski**, *University of Cambridge, UK*
Nanoscale imaging of neurotoxic proteins
- 19.15 YELLOW TRAIN CITY TOUR
Trains depart on Main Square Linz
- 20.00-23.00 CONFERENCE DINNER
Palais Kaufmännischer Verein

MONDAY, FEBRUARY 2ND

SESSION IX: ADVANCES IN SPM

Chairman: **Mitchell Doktycz**

- 09.00-09.25 (31) **Ricardo Garcia**, *CSIC Madrid, Spain*
Advanced nanomechanical spectroscopy of soft-matter interfaces
- 09.25-09.40 (32) **Aliasghar Keyvani**, *Delft Univ. of Technology, Netherlands*
Low force tapping mode AFM imaging of biological samples with tapered cantilevers
- 09.40-09.55 (33) **Maarten H. van Es**, *TNO, Netherlands*
High speed imaging with the use of immersion AFM: quantification of the relation between cantilever response speed and damping
- 09.55-10.10 (34) **Hamed Sadeghian**, *TNO, Netherlands*
Parallel scanning probe microscope comes of age
- 10.10-10.25 (35) **Andra Dumitru**, *CSIC Madrid, Spain*
Single molecule detection of antibody-antigen interactions on a real biosensor interface
- 10.25-10.45
COFFEE BREAK
Sommerhotel Julius-Raab-Heim, Ground Floor

SESSION X: NANO CHANNELS AND NANO STRUCTURES

Chairman: **Ricardo Garcia**

- 10.45-11.00 (36) **Yizhou Tan**, *University of Cambridge, UK*
Optimizing diffusive transport with external binding sites in microfluidic channels
- 11.00-11.15 (37) **Angus McMullen**, *Brown University, USA*
Probing the physics of translocation through solid-state nanopores with stiff viruses
- 11.15-11.30 (38) **Harsha Bajaj**, *Jacobs University Bremen, Germany*
Antibiotic transport through porin mutants from clinical strains: Altered permeability contributes to resistance
- 11.30-11.45 (39) **Irene Fernandez-Cuesta**, *Hamburg University, Germany*
Individual nanoparticle detection with a plasmonic nanoantenna integrated with a 30 nm x 30 nm nanochannel
- 11.45-12.00 (40) **Alan Van Orden**, *Colorado State University, USA*
Photon antibunching to investigate electronic energy transport in small aggregates of semiconductor nanocrystal quantum dots

12.00-13.30

LUNCH

Sommerhotel Julius-Raab-Heim, Ground Floor

SESSION XI: MOLECULAR INTERACTION AND COMPLEXES

Chairman: **Sandor Kasas**

13.30-13.45

(41)

Maxim Molodtsov, *IMP Vienna, Austria*

Processivity of Cik1-Kar3 Kinesin is mediated by an asymmetric binding to tubulin

13.45-14.00

(42)

Gesa Helms, *TU Delft, Netherlands*

Combining optical tweezers and reflection interference contrast microscopy for force spectroscopy of DNA sticky ends

14.00-14.15

(43)

Maryam Hashemi Shabestari, *VU University, Netherlands*

Phosphorylation of mitochondrial transcription factor A involves in DNA binding regulation

14.15-14.30

(44)

Loredana Casalis, *NanoInnovation Laboratory, Italy*

Determination of average internucleotide distances in variable density ssDNA nano-brushes in the presence of different cations species

14.30-14.45

(45)

Sriharsha Puranik, *ESRF Grenoble, France*

Structural elucidation and oligomerization of the MADS-domain transcription factor SEPALLATA3

14.45-15.00

(46)

Klaus Bonazza, *Vienna University of Technology, Austria*

Shear dependence of von Willebrand Factor's interactions with Factor VIII and ADAMTS13 demonstrated at single molecular level by AFM

15.00-15.20

COFFEE BREAK

Sommerhotel Julius-Raab-Heim, Ground Floor

SESSION XII: MOLECULAR DYNAMICS AND MECHANICS

Chairman: **Peter Pohl**

15.20-15.45

(47)

Frauke Gräter, *IST Heidelberg, Germany*

How protein structure determines mechanics: silk

15.45-16.00

(48)

Damien Sluysmans, *University of Liège, Belgium*

Single-molecule force spectroscopy on oligorotaxane foldamers

16.00-16.25

(49)

Carsten Baldauf, *FHI Berlin, Germany*

Structure and dynamics of peptide foldamers from first principles