SCHEDULE OF THE XVII LINZ WINTER WORKSHOP 2015

FRIDAY, JANUARY 30TH

GET TOGETHER & REGISTRATION
19.00-23.00
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**

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Affiliation</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>09.00-09.25</td>
<td><strong>Deborah Leckband</strong>, University of Illinois, USA</td>
<td>Molecular force transduction at cell-cell junctions</td>
<td></td>
</tr>
<tr>
<td>09.25-09.50</td>
<td><strong>Cheng Zhu</strong>, Georgia Institute of Technology, USA</td>
<td>Mechanoreception of platelet receptor GPIbα</td>
<td></td>
</tr>
<tr>
<td>09.50-10.15</td>
<td><strong>Michael Schlierf</strong>, Technical University Dresden, Germany</td>
<td>Probing the lipidic influence on the folding of an α-helical membrane protein by single-molecule FRET spectroscopy</td>
<td></td>
</tr>
</tbody>
</table>

**10.15-10.35**  
**COFFEE BREAK**  
Sommerhotel Julius-Raab-Heim, Ground Floor

**SESSION VI: SINGLE MOLECULE FORCE SPECTROSCOPY**  
Chairman: **Cheng Zhu**

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Affiliation</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.35-11.00</td>
<td><strong>Hongbin Li</strong>, University of British Columbia, Canada</td>
<td>Folding-unfolding mechanism of the metalloprotein Rubredoxin revealed by single molecule force spectroscopy</td>
<td></td>
</tr>
<tr>
<td>11.00-11.15</td>
<td><strong>Rong Zhu</strong>, Johannes Kepler University Linz, Austria</td>
<td>Nanopharmacological force sensing reveals allosteric coupling in transporter binding sites</td>
<td></td>
</tr>
<tr>
<td>11.15-11.30</td>
<td><strong>Michael F. Pill</strong>, Munich Univ. of Applied Sciences, Germany</td>
<td>Single molecule force spectroscopy and DFT calculations of the peptide bond under mechanical tension</td>
<td></td>
</tr>
<tr>
<td>11.30-11.45</td>
<td><strong>Nicolas Willet</strong>, University of Liege, Belgium</td>
<td>Conformational properties of helical foldamers under force</td>
<td></td>
</tr>
<tr>
<td>11.45-12.00</td>
<td><strong>Serguei K. Sekatskii</strong>, EPF Lausanne, Switzerland</td>
<td>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</td>
<td></td>
</tr>
</tbody>
</table>

**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
<table>
<thead>
<tr>
<th>Time</th>
<th>Session XI: Molecular Interaction and Complexes</th>
</tr>
</thead>
</table>
| 13.30-13.45     | **Maxim Molodtsov, IMP Vienna, Austria**  
Processivity of Cik1-Kar3 Kinesin is mediated by an asymmetric binding to tubulin |
| 13.45-14.00     | **Gesa Helms, TU Delft, Netherlands**  
Combining optical tweezers and reflection interference contrast microscopy for force spectroscopy of DNA sticky ends |
| 14.00-14.15     | **Maryam Hashemi Shabestari, VU University, Netherlands**  
Phosphorylation of mitochondrial transcription factor A involves in DNA binding regulation |
| 14.15-14.30     | **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     | **Sriharsha Puranik, ESRF Grenoble, France**  
Structural elucidation and oligomerization of the MADS-domain transcription factor SEPALLATA3 |
| 14.45-15.00     | **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 |

<table>
<thead>
<tr>
<th>Time</th>
<th>Session XII: Molecular Dynamics and Mechanics</th>
</tr>
</thead>
</table>
| 15.20-15.45     | **Frauke Gräter, IST Heidelberg, Germany**  
How protein structure determines mechanics: silk |
| 15.45-16.00     | **Damien Sluysmans, University of Liège, Belgium**  
Single-molecule force spectroscopy on oligorotaxane foldamers |
| 16.00-16.25     | **Carsten Baldauf, FHI Berlin, Germany**  
Structure and dynamics of peptide foldamers from first principles |