Schedule of the XVI Linz Winter Workshop 2014

**Friday, Jan.31**

19:00-23:00  Get Together & Registration  Sommerhotel Julius-Raab-Heim, Ground Floor

**Saturday, Feb. 01**

08:00-09:00  Registration  Sommerhotel Julius-Raab-Heim, Ground Floor  
Peter Hinterdorfer  
University of Linz, Austria  
Krish Narain  
Agilent Technologies, USA

09:00-09:15  Welcome

**Session I: Nanomircrowave***  
Chairman: Ferry Kienberger

09:15-09:40  Brian A. Mazzeo  
Brigham Young University, USA  
1 Engineering the electrical properties of proteins: perspectives from molecular dynamics and dielectric spectroscopy

09:40-10:05  Gabriel Gomila  
University of Barcelona, Spain  
2 Electric polarization properties of single viruses and bacteria

10:05-10:20  Georg Gramse  
University of Linz, Austria  
3 Calibrated complex impedance and permittivity measurements with scanning microwave microscopy

10:20-10:35  Eric Lesniewska  
University of Bourgogne, France  
4 From surface to intracellular non-invasive nanoscale study of bacteria using mode synthesizing Atomic Force Microscopy and scanning microwave microscopy

10:35-10:55  Coffee Break  Sommerhotel Julius-Raab-Heim, Ground Floor

**Session II: Nanoparticles and Nanostructures**  
Chairman: Haiwon Lee

10:55-11:10  David P. Allison  
Oak Ridge National Laboratory, USA  
5 Nanoparticles as potential antimicrobial agents and more

11:10-11:25  Wolfgang Fritzsch  
Leibniz Institute of Photonic Technology, Germany  
6 Plasmonic effects on single metal nanostructures for bioanalytics and nanoscale manipulation

11:25-11:40  Ulrike Alexiev  
Freie Universität Berlin, Germany  
7 A universal particle image correlation spectroscopy (U-PICS) method for global analysis of dense and inhomogeneous distributed single molecules

11:40-11:55  Andrezej J. Kulik  
EPFL, Lausanne, Switzerland  
8 Nanoscale Infrared Spectroscopy of LHCII proteins and amyloids

11:55-12:10  Eric Finot  
University of Burgundy, France  
9 Principal component analysis of Raman spectra of single proteins

12:10-12:25  Gerald Kada  
Agilent Technologies Austria  
10 New developments with Agilent AFM and SEM

12:25-13:45  Lunch  Sommerhotel Julius-Raab-Heim, Ground Floor

**Session III: Nanopatterns**  
Chairman: Mitchell Dortycz

13:45-14:00  Haiwon Lee  
Hanyang University, Korea  
11 Parallel electrochemical metal deposition on Si by Polymer Pen Lithography

14:00-14:15  Elena Ambrosi  
Nanoinnovation Lab Trieste, Italy  
12 Nano-immuno assay development for the detection of cancer biomarkers

14:15-14:30  Richard Wolthofen  
University of Linz, Austria  
13 Nano-anchors with single protein capacity produced with STED-lithography

*Partly organized in partnership with the FP7-PEOPLA-2012-ITN training network “NONOMICROWAVE”*
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>14:30-14:45</td>
<td>E. Sevcik, Vienna University of Technology, Austria</td>
<td>14 Creating obstacle courses for raft proteins – How micropatterning can help decipher plasma membrane organization</td>
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<tr>
<td>14:45-16:45</td>
<td>Coffee Break and Poster Session, Sommerhotel Julius-Raab-Heim, Ground Floor</td>
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<tr>
<td>14:45-16:45</td>
<td>Session IV: Optical Superresolution, Chairman: Thomas Schmidt</td>
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<td>16:45-17:10</td>
<td>Jonas Ries, EMBL, Heidelberg, Germany</td>
<td>15 Superresolution microscopy of protein structures in situ</td>
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<tr>
<td>17:10-17:35</td>
<td>Claus, A. M. Seidl, Universität Düsseldorf, Germany</td>
<td>16 Multiparameter fluorescence imaging meets structural biology: High precision FRET studies protein structure and interactions in vitro and in live cells</td>
</tr>
<tr>
<td>17:35-17:50</td>
<td>Vincent Torre, SISSA Trieste, Italy</td>
<td>17 Restricted spot of light reveal an efficacy gradient of the phototransduction cascade along the rod outer segment</td>
</tr>
<tr>
<td>17:50-18:05</td>
<td>Benedikt Nimmervoll, CBL, Linz, Austria</td>
<td>18 Surface localized Hsp70 regulates clathrin independent endocytosis in melanoma cells</td>
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<tr>
<td>18:45-23:00</td>
<td>Conference Dinner, in Schloss Wildberg</td>
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<td>Sunday, Feb. 02</td>
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<tr>
<td>09:00-09:25</td>
<td>Toshio Ando, Kanazawa University, Japan</td>
<td>19 High-speed AFM: Technical progress and application to myosin V</td>
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<tr>
<td>09:25-09:50</td>
<td>Simon Scheuring, University Aix-Marseille, France</td>
<td>20 High-speed atomic force microscopy and high-speed force spectroscopy: Interactions between and within proteins</td>
</tr>
<tr>
<td>09:50-10:05</td>
<td>Aiko Yoshida, Kyoto University, Japan</td>
<td>21 Probing intracellular membrane/cytoskeleton dynamics from outside the cell by high-speed AFM combined with fluorescent microscopy</td>
</tr>
<tr>
<td>10:05-10:30</td>
<td>Mervyn J. Miles, University of Bristol, U.K.</td>
<td>22 Vertically-probe high-speed non-contact force microscopy</td>
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<tr>
<td>10:30-10:45</td>
<td>Daniel S. Wastl, University of Regensburg, Germany</td>
<td>23 Optimizing atomic resolution of force microscopy in ambient conditions</td>
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<tr>
<td>10:45-11:05</td>
<td>Coffee Break, Sommerhotel Julius-Raab-Heim, Ground Floor</td>
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<tr>
<td>11:05-11:30</td>
<td>Marek Cieplak, Polish Academy of Sciences Warsaw, Poland</td>
<td>24 Nanoindentation of 35 virus capsids in a molecular model</td>
</tr>
<tr>
<td>11:30-11:45</td>
<td>Daan Vorselen, VU University, Amsterdam, Netherlands</td>
<td>25 Structure and mechanics of extracellular vesicles from red blood cells</td>
</tr>
<tr>
<td>11:45-12:00</td>
<td>Marion Schiavone, University of Toulouse, France</td>
<td>26 Impact of caspofungin and gene deletions on yeast cell wall architecture</td>
</tr>
<tr>
<td>12:00-12:15</td>
<td>Ivan Liashkovich, University of Münster, Germany</td>
<td>27 Combination of confocal and atomic force microscopy enables direct assessment of nuclear stiffness in a living endothelial cell</td>
</tr>
<tr>
<td>12:15-13:40</td>
<td>Lunch, Sommerhotel Julius-Raab-Heim, Ground Floor</td>
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</tbody>
</table>
Session VII: Membrane Force Dynamics  
Chairman: Gerhard Schütz

13:40-14:05  
Pierre Bongrand  
University Aix-Marseille, France  
28 Membrane dynamics and T lymphocyte activation

14:05-14:30  
Pavel Tolar  
MRC National Institute for Medical Research, UK  
29 Mechanical extraction of antigens from B cell immune synapses: a unique way to sense ligand affinity

14:30-14:45  
Thomas Schmidt  
Leiden University, Netherlands  
30 P130Cas as sensor of local substrate stiffness

14:45-16:45  
Coffee Break and Poster Session  
Sommerhotel Julius-Raab-Heim, Ground Floor

Session VIII: Cellular Interactions  
Chairman: Zoya Leonenko

16:45-17:10  
Joon Won Park  
Pohang University, Korea  
31 Quantitative analysis and mapping of mRNA with Force-Based AFM

17:10-17:25  
Pierre-Emmanuel Milhiet  
University of Montpellier, France  
32 Observing fusion of influenza virus within artificial membranes using atomic force microscopy

17:25-17:40  
M. J. Doktycz  
Oak Ridge National Laboratory, USA  
33 Understanding microbial interfaces with atomic force microscopy

17:40-17:55  
Sang-Joon Cho  
AICT, Suwon, Korea  
34 Investigation of the cell to cell interaction using nanomechanical sensing and monitoring by AFM and SICM

19:15  
Meeting point Main Square  
Yellow trains depart for City Tour

20:00-23:00  
Conference Dinner  
Museum Lentos

Monday, Feb. 03

Session IX: Transporters and Channels  
Chairman: Peter Pohl

09:00-09:25  
George Stan  
University of Cincinnati, USA  
35 Computer simulations of protein unfolding and translocation by AAA+ nanomachines

09:25-09:50  
James C. Gumbart  
Georgia Tech., USA  
36 Single-molecule views of membrane-protein insertion from MD simulations

09:50-10:05  
Denis Knyazev  
University of Linz, Austria  
37 Ion conductivity of the bacterial translocation channel SecYEG engaged in translocation

10:05-10:30  
Hartmut Luecke  
UC Irvine, USA  
38 Structure, function and inhibitors of the acid-gated *Helicobacter pylori* urea channel, an essential component for acid survival

10:30-10:45  
Igor Goychuk  
University of Potsdam, Germany  
39 Coexistence of normal and anomalous transport by molecular motors in viscoelastic cytosol

10:45-11:05  
Coffee Break  
Sommerhotel Julius-Raab-Heim, Ground Floor

Session X: Single Molecule Force Spectroscopy  
Chairman: Peter Hinterdorfer

11:05-11:30  
Marco Lazzarino  
SISSA Triest, Italy  
40 Single molecule force spectroscopy of CNGA1 channels “in situ” reveals major conformational changes upon gating

11:30-11:45  
Yunfeng Chen  
Georgia Tech, USA  
41 Observing real-time bending/unbeding conformational changes of a single integrin in a cell-free system

11:45-12:00  
Ruby May A. Sullan  
Universite Catholique de Louvain, Belgium  
42 Single-cell force spectroscopy of pili-mediated adhesion

12:00-12:15  
Johan Zakrisson  
Umea University, Sweden  
43 Type 1 pili tweak external force to suit the FimH catch-bond

12:15-12:30  
Melanie Köhler  
University of Linz, Austria  
44 Studying the interactions between uncoupling proteins and purine nucleotides by combined recognition force spectroscopy and imaging

12:30-13:50  
Lunch  
Sommerhotel Julius-Raab-Heim, Ground Floor
## Session XI: Biomolecular Filaments

**Chairman: Pierre-Emmanuel Milhiet**

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Institution and Country</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>13:50-14:15</td>
<td>Ruxandra I. Dima</td>
<td>University of Cincinnati, USA</td>
<td>Multiscale Modeling of the Nanomechanics of Biomolecular Filaments</td>
</tr>
<tr>
<td>14:15-14:30</td>
<td>Alice Pyne</td>
<td>University College London, UK</td>
<td>Single-molecule reconstruction of nucleic acid secondary structure by atomic force microscopy</td>
</tr>
<tr>
<td>14:30-14:55</td>
<td>Victor Shahin</td>
<td>University of Münster, Germany</td>
<td>Nano-visualization of viral DNA breaching the nucleocytoplasmic barrier</td>
</tr>
<tr>
<td>15:10-15:25</td>
<td>Klaus Bonazza</td>
<td>Vienna University of Technology, Austria</td>
<td>Blood clotting and the crucial role of Ca<strong>2+</strong>-a single molecule imaging study</td>
</tr>
<tr>
<td>15:25-15:50</td>
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<td><strong>Coffee Break</strong></td>
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## Session XII: Nanomechanics**

**Chairman: Reinhard Schneppenheim**

<table>
<thead>
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<tr>
<td>15:50-16:10</td>
<td>Frauke Gräter</td>
<td>HITS Heidelberg, Germany</td>
<td>Molecular force sensors: insights from protein simulations</td>
</tr>
<tr>
<td>16:10-16:30</td>
<td>Carsten Baldauf</td>
<td>FH Berlin, Germany</td>
<td>Force-dependent auto-inhibition of von Willebrand factor (VWF) mediated by the A1-A2 complex</td>
</tr>
<tr>
<td>16:30-16:50</td>
<td>Matthias F. Schneider</td>
<td>Boston University, USA</td>
<td>The state-function relation of von Willebrand factor</td>
</tr>
<tr>
<td>16:50-17:05</td>
<td>Martin Benoit</td>
<td>LMU, Munich, Germany</td>
<td>Concepts for addressing single bio-molecule forces</td>
</tr>
<tr>
<td>17:05-17:20</td>
<td>Sandra Posch</td>
<td>University of Linz, Austria</td>
<td>Single molecular interactions between von Willebrand factor A-domains and collagen type III and VI Shear-induced VWF activation mediates platelet microthrombus formation and tumor progression upon melanoma cell-induced endothelial cell activation</td>
</tr>
<tr>
<td>17:20-17:40</td>
<td>Stefan W. Schneider</td>
<td>Heidelberg University, Germany</td>
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**Organized in partnership with the DFG Research Unit FOR I543 “Shenc – Shear flow regulation of Hemostasis”**

**END**