Schedule of the XXIV. Linz Winter Workshop 2025

Friday, Jan. 31

19:00-23:00	**Get Together & Registration**		**Sommerhaus Hotel Julius-Raab-Heim, Ground Floor**

Saturday, Feb. 1

08:00-08:45	**Registration**		**Sommerhaus Hotel Julius-Raab-Heim, Ground Floor**
08:45-09:00	**Welcome / Opening**		**Peter Hinterdorfer** *Johannes Kepler University Linz, Austria*
	<u>Session I:</u> High-Speed AFM		**Chairman: Mervyn Miles**
09:00-09:25	*Toshio Ando* Kanazawa University, Japan	**1**	Energy Transduction Mechanism in Walking Myosin V studied with Interactive High-speed AFM
09:25-09:50	*Simon Scheuring* Weill Cornell Medicine, USA	**2**	High-speed Atomic Force Microscopy for Structural Biology
09:50-10:05	*Varun Gupta* University of Leeds, UK	**3**	Visualizing toehold mediated DNA origami disassembly by High-Speed AFM
10:05-10:20	*Clemens M. Franz* Kanazawa University, Japan	**4**	Observing Dynamic Conformational Changes within the Coiled-Coil Domain of Different Laminin Isoforms Using High-Speed Atomic Force Microscopy
10:20-10:35	*Johannes Preiner* University of Applied Sciences Upper Austria, Austria	**5**	A mechanistic model of IgG oligomerization and complement activation
10:35-10:55	**Coffee Break & Exhibitions**		**Sommerhaus Hotel Julius-Raab-Heim, Ground Floor**
	<u>Session II</u>: Raman and Microwave Microscopy		**Chairman: Gerhard Schütz**
10:55-11:20	*Sabine Hild* Johannes Kepler University Linz, Austria	**6**	Characterization of biological macromolecules using Raman Spectroscopy
11:20-11:35	*Naresh Kumar* ETH Zürich, Switzerland	**7**	Nanoscale Chemical Characterization of Supported Lipid Membranes using Tip-Enhanced Raman Spectroscopy
11:35-11:50	*Georg Gramse* Johannes Kepler University Linz, Austria	**8**	Electrochemical Microwave Microscopy for the studying the electrical dynamics at the solid electrolyte interface
11:50-12:05	*Eric Lesniewska* University of Bourgogne, France	**9**	Microwave and IR-Based Techniques for Analysing Molecular Signatures: A Novel Approach to Biomarker Detection
12:05-12:20	*Leon Hütsch* *Oxford Instruments GmbH*	**10**	*Platinum sponsor talk* Vero, the first Interferometric AFM from Oxford Instruments
12:20-13:45	**Lunch & Exhibitions**		**Sommerhaus Hotel Julius-Raab-Heim, Ground Floor**

Session III: Nano-Virology

Chairman: Ulrich Keyser

13:45-14:10	*Wouter H. Roos* University of Groningen, Netherlands	**11**	Nanoscale dynamics of biomolecular interactions: from viruses to antibiotics
14:10-14:25	*Yohei Yamauch* ETH Zürich, Switzerland	**12**	Enhanced Visualization of Influenza A Virus Cell Entry Using Live Virus-View Atomic Force Microscopy (ViViD-AFM)
14:25-14:50	*Dibyendu Kumar Das* IIT Kanpur, India	**13**	Single molecule imaging of Coronavirus spike trimers conformational dynamics in membrane during entry
14:50-16:15	**Poster Session I** **Coffee Break & Exhibitions**		**Sommerhaus Hotel Julius-Raab-Heim, Ground Floor**

Session IV: Nucleotide and Protein Nanodynamics

Chairman: Ricardo Garcia

16:15-16:40	*Ulrich Keyser* Cambridge University, UK	**14**	Nanopore microscopy for imaging DNA and RNA nanostructures
16:40-16:55	*Roland Bennewitz* INM Leibniz, Germany	**15**	Single-Polymer Force Microscopy of dsDNA Interacting with a Nanoporous Membrane
16:55-17:10	*Miklós Kellermayer* Semmelweis University, Hungary	**16**	Nanomechanics of porphyrin-bound DNA
17:10-17:35	*Dave Thirumalai* University of Texas, USA	**17**	Motor driven Genome Folding at the Single Molecule Level
17:35-18:00	*Sonja Schmid* University of Basel, Switzerland	**18**	The Timing of Life at the Nanoscale – New Tools for New Insights
19:00-23:00	**Conference Dinner**		**Altes Rathhaus / Gemeinderatssaal** **(on Mainsquare / Hauptplatz 1-5)**

Sunday, Feb. 2

Session V: Mechanotransduction and Nanomechanics

Chairman: Thomas Schmidt

09:00-09:25	*Hanna Engelke* University of Graz, Austria	**19**	Cell-Matrix Interactions – from fibers to mechanotransduction
09:25-09:50	*Cheng Zhu* Georgia Institute of Technology and Emory University, USA	**20**	Mechanotransduction through immunoreceptors
09:50-10:15	*Ricardo Garcia* CSIC Madrid, Spain	**21**	Frontiers in Nanomechanics: From Proteins to Cells
10:15-10:40	*Anne-Sophie Duwez* University of Liege, Belgium	**22**	Interrogating synthetic molecular motors with single-molecule force spectroscopy
10:40-11:00	**Coffee Break & Exhibitions**		**Sommerhaus Hotel Julius-Raab-Heim, Ground Floor**

Session VI: Cellular and Molecular Binding Mechanisms

Chairman: Anne-Sophie Duwez

11:00-11:15	*Mitchel J. Doktycz* Oak Ridge National Laboratory, USA	**23**	Understanding microbial adhesion to surfaces by AFM
11:15-11:30	*Samer Alokaidi* Saarland University, Germany	**24**	Patchy Adhesion of Staphylococcus aureus on Structured Surfaces Uncovered via Single Cell Force Spectroscopy
11:30-11:45	*Carolina Borrelli* University College London, UK	**25**	Resolving outer membrane organization of living Escherichia coli and its disruption by antibiotics
11:45-12:00	*Dina Grohmann* University Regensburg, Germany	**26**	DNA origami-based single-molecule force spectroscopy advances the molecular understanding of transcription initiation
12:00-12:15	*Rong Zhu* Johannes Kepler University Linz, Austria	**27**	Revealing the location and dynamics of a concealed binding site in the dopamine transporter
12:15-12:30	*Melanie Koehler* Leibniz Institute for Food Systems Biology, Germany	**28**	Maximizing Flavor: Leveraging Nano-biophysical Methods in Food Perception and Formulation Research
12:30-13:45	**Lunch & Exhibitions**		**Sommerhaus Hotel Julius-Raab-Heim, Ground Floor**

Session VII: Advances in Scanning Probe Microscopy

Chairman: Georg Fantner

13:45-14:10	*Franz J. Giessibl* University of Regensburg, Germany	**29**	Probing soft matter with the hard qPlus sensor – a crazy idea?
14:10-14:25	*M.J. Miles* Bristol University, UK	**30**	Vertical Probe Force Microscopy for Biomolecules
14:25-14:50	*Takeshi Fukuma* Kanazawa University, Japan	**31**	Nanoscale Measurements of Dynamics and Mechanics inside Living Cells by Nanoendoscopy AFM
14:50-15:15	*Mingdong Dong* *Aarhus University, Denmark*	**32**	Atomic-Scale Frictional Properties of 2D Materials Investigated Using Atomic Force Microscopy
15:15-16:35	**Poster Session II** **Coffee Break & Exhibitions**		**Sommerhaus Hotel Julius-Raab-Heim, Ground Floor**

Session VIII: Correlative Imaging

Chairman: Eric Lesniewska

16:35-17:00	*Georg E. Fantner* EPFL, Switzerland	**33**	CLEAM – Correlative Light/Electron/Atomic-Force Microscopy
17:00-17:15	*Costa Luca* Montpellier University, France	**34**	Correlative Fluorescence-AFM for probing Biomolecular Condensates
17:15-17:30	*Simon Jaritz* TU Vienna, Austria	**35**	A correlative study using single molecule localization microscopy and atomic force microscopy of collagen fibers
17:30-17:45	*Alexander Klasen* Park Systems, Germany	**36**	Platinum sponsor talk Investigating Correlative Properties of Soft Materials with SPM
17:45-18:00	*Wolfgang Schwinger,* Carl Zeiss GmbH, Austria	**37**	Sponsor talk Of-the-Shelf Solutions in Electron- & X-Ray Microscopy from ZEISS

19:00-23:00	**Conference Dinner in Cider Press House Freiseder**		**Buses depart in front of the Sommerhaus Hotel at 18:40 Boarding starts at 18:30, return of first bus 22:00**

Monday, Feb. 3

Session IX: Biomaterials and Bioinformatics — Chairman: Malgorzata Lekka

09:00-09:25	*Igor Sokolov* Tufts University, USA	**38**	OuterOmics with SPM/AFM and AI: the Birth of a New Area of Bioinformatics?
09:25-09:50	*Philippe Leclere* University of Mons, Belgium	**39**	Towards Quantitative Mapping of Mechanical Properties of Soft Materials: When AI Meets Materials
09:50-10:05	*Yoonhee Lee* DGIST, Republic of Korea	**40**	Exploring Nanomechanical Properties and AI-Based Classification of NSCLC Extracellular Vesicles
10:05-10:20	*Jaime R. Tejedor* CSIC, Spain	**41**	High-Throughput Nanorheology of Living Cells Powered by Supervised Machine Learning
10:20-10:35	*Bart W. Hoogenboom* Nanosurf AG, Switzerland	**42**	*Platinum Sponsor Talk* Shake it with light: the fast, the fit and the fancy of photothermally actuated atomic force microscopy
10:35-10:50	**Coffee Break & Exhibitions**		**Sommerhotel Julius-Raab-Heim, Ground Floor**

Session X: Nanomechanics and Microprinting — Chairman: Philip Leclere

10:50-11:15	*Malgorzata Lekka* Institute of Nuclear Physics PAN, Poland	**43**	From Nanomechanics to viscoelasticity in the metastatic potential of cancer cells
11:15-11:40	*Christine Selhuber-Unkel* Univ. Heidelberg, Germany	**44**	Engineering the Cellular Microenvironment: In Situ Control of Cell Migration and Adhesion
11:40-11:55	*Thomas Schmidt* University Leiden, Germany	**45**	Altered Mechanobiology of PDAC Cells with Acquired Chemoresistance to Gemcitabine and Paclitaxel.
11:55-12:10	*Thomas A. Klar* Johannes Kepler University Linz, Austria	**46**	Sub-diffraction optical lithography beyond acrylates
12:10-12:25	*Robert Magerle* Technische Universität Chemnitz, Germany	**47**	Nanomechanical ultrastructure of native tendon tissue
12:25-12:40	*Gregory Timp* University of Notre Dame, USA	**48**	Silicon Nanotechnology for Single Molecule and Single Cell Biology
12:40-14:00	**Lunch & Exhibitions**		**Sommerhotel Julius-Raab-Heim, Ground Floor**

Session XI: Nanobiophysics — Chairman: Igor Sokoloff

14:00-14:15	*Hannah Seferovic* Johannes Kepler University Linz, Austria	**49**	Nanomechanical binding mechanics of ligands drives agonistic activity
14:15-14:30	*Shiva Patil* Indian Institute of Science Education and Research, India	**50**	Soft Glassy Rheology of single cells using AFM and pathogenic aggregates
14:30-14:45	*Sanket Jugade* Indian Insitute of Science, India	**51**	Solid-like behaviour of Confined Water in Graphene-Liquid Cells

14:45-15:00	*Émilie Cenraud* CNRS, France	**52**	Biophysical Characterization of Phages for Integration into Antimicrobial polymer matrices: Towards Prophylactic Applications Against *Staphylococcus aureus.*
15:00-15:15	*Fanny Duhalde* Centre de Recherche Saint-Antoine, France	**53**	Dynamics of Matrix Vesicles-induced mineralization in osteoarthritis
15:15-15:30	*Karin Kornmueller* Medical University of Graz, Austria	**54**	Tracing Low Density Lipoprotein Aggregation: OF2i as a Breakthrough Analytical Tool
15:30-15:45	**Coffee Break & Exhibitions**		**Sommerhotel Julius-Raab-Heim, Ground Floor**

Session XII: Channels and Receptors

Chairman: Peter Pohl

15:45-16:00	*Haoqing Jerry Wang* University of Sydney, Australia	**55**	Microscale geometrical modulation of PIEZO1 mediated mechanosensing through cytoskeletal and tension redistribution
16:00-16:15	*Rohit Yadav* Johannes Kepler University Linz, Austria	**56**	Photomodulation of Kv Channel Activity
16:15-16:30	*Barbora Kalousková* TU Wien, Austria	**57**	Understanding the nanoscale organization of natural killer cell receptors NKp30 at the single-molecule level
16:30-16:45	*Birgit Plochberger* University of Applied Sciences Upper Austria, Austria	**58**	The interaction between TTYH2 and ApoE promotes lipid transfer
16:45-17:00	*Mengjia Xu* ETH Zurich, Switzerland	**59**	Patch-Clamp with Fluid FM
17:00-17:15	*Ekaterina Zorikova* Weizmann Institute of Science, Israel	**60**	Monitoring Mitochondrial Bioenergetics and Physical Properties Using Atomic Force Microscopy

Poster Sessions

Saturday, Feb. 1 (odd numbers presenting)
Sunday, Feb. 2 (even numbers presenting)

Authors	Number	Title

1 – Scanning Probe Microscopy Imaging

Ronnie Willaert, Charlotte Yvanoff, Azra Melkic, Sandor Kasas *Vrije Universiteit Brussels, Belgium*	1	Real-Time Obersvation of Topoisomerase IIα Dynamics on Spuercoiled Plasmid DNA Using Fast-Scan Atomic Force Microscopy
Meritxell Moreno Córdoba, Charlotte Yvanoff, Ines Villalba, Sandor Kasas, Ronnie G. Willaert *Vrije Universiteit Brussels, Belgium*	2	*Komagateibacter rhaeticus* cellulose production characterization through atomic force microscopy
Maryam Marefat, Andreas Karner, Martina Hofmann, Tina Karimian, Christine Siligan, Sandra Posch, Andreas Horner, Peter Lanzerstorfer, Johannes Preiner *University of Applied Sciences Upper Austria, Austria*	3	Insights on IgG oligomer mediated Fc Receptor clustering
Dimitry Sivun, Christoph Naderer, Babara Kroenigsberger, Jaroslaw Jacak *University of Applied Sciences Upper Austria, Austria*	4	Functional nanostructures for EVs immobilization
María Inés Villalba, Tianqi Zhang, Urs von Guntena, Ronnie Willaert, Sandor Kasas *EPFL, Lausanne, Switzerland*	5	AFM measurements on sporulated and vegetative *Bacillus subtilis*
Jürgen Strasser, Tereza Kadavá, Albert JR Heck, Johannes Preiner *University of Applied Sciences Upper Austria, Austria*	6	Elusive Spiders in our Blood – Exploring C4BP Subunit Arrangements and Protein Interactions via High-Speed AFM
Martin Dehnert, Tiberius Klose, Yong Pan, Dietrich R. T. Zahn, Maximilian Voigtländer, Johannes F. Teichert, Robert Magerle *Technische Universität Chemnitz, Germany*	7	Triacylglycerols affect the water content and cohesive strength of collagen fibers
M. Csilla Csányi, Richárd Csekö, Tßimea Feller, Miklós Kellermayer *Semmelweis University, Hungary*	8	The addition of detergents facilitates the epitaxial growth of amyloid fibrils on the mica surface
Balint Kiss, Luca Elizabet Kosik, Miklos Cervenak, Dominik Sziklai, Souma Yamamoto, Hiroki Konno, Hedvig Tordai, Miklós Kellermayer *Semmelweis University, Hungary*	9	Internal Dynamics of T7 bacteriophage Target Receptors
Lena Neubauer, Martina Failla, Jerôme Doss, Guillaume Andrieu, Bernhard Lendl, Georg Ramer, Ariane Deniset-Besseau *TU Vienna, Austria*	10	Investigation at the nanoscale of membrane lipids peroxidation in T-cells using AFM-IR
Margaux Petay, Magdalena Fuchs, Orestis G. Andriotis, Anxhela Docaj, Alessandra Carriero, Philipp J. Thurner, Bernhard Lendl, Georg Ramer *TU Vienna, Austria*	11	Exploring collagen fibrils intramolecular cross-linking through AFM-IR analysis
Ádam Zolcsák, Bálint Kiss, Tamás Bozó, Judit Somkuti, Vona István, Miklós kellermayer, Levente Herenyi *Semmelweis University, Hungary*	12	Nanostructural and nanomechanical alterations of photosensitizer-containing lipid membranes due to light-induced formation of reactive oxygen species
Marina Wiesenfarth, Julia Benthin, Sanjai Karanth, Melanie Koehler *Leibniz Institute for Food Systems Biology, Germany*	13	Beyond Taste: Unveiling the Multisensory Sensation of Creamy Mouthfeel in Dairy by synergizing Biophysical, Molecular and food Biology Approaches
Maxwell Sparey, Hannah Severovic, Gianluca Fabi, Michael Leitner, José Huertas, Ahmad Azizpour, Georg Gramse *Johannes Kepler University Linz, Austria*	14	Shear Force Microwave Microscopy: Complex impedance imaging, and Single Entity Electrochemistry

2 – Force Mapping and Spectroscopy

3 – Optical Microscopy and Spectroscopy

4 – Nano-Biophysics

Adriana P. C. Sánchez, Bruno Lartiges, Cécile Formosa-Dague *Toulouse Biotechnology Institute, France*	50	Investigating the influence of pH on the hydrophobic surface properties of Chlorella vulgaris to optimize microalgae harvesting in microfluidic systems
Anna Fučíková, Tereza Svatonova *Charles University, Czech Republic*	51	Nano-topographical changes in fingerprint due to degradation in time studied by Atomic force microscopy-option to set a timeline?
Nora Andrea Hagleitner-Ertugrul, Ferdinand Horvath, Laura Nübl, Nikolaus Goessweiner-Mohr, Christine Siligan, Denis G. Knyazev; Peter Pohl *Johannes Kepler University Linz, Austria*	52	Regulation of the Bacterial Translocon Secyeg by Proton Motive Force (PMF)