10th Multifrequency AFM Conference, May 26-30th, 2025

Monday 26th May 2025

Room 1	4th Symposium on Cell and Soft Matter Nanomechanics		
Time	**Duration (min)**	**Type**	**Presenter**
13:55 14:00	**5**	Welcome	Ricardo Garcia
14:00 14:25	**20+5**	Invited	**Alba Diz-Muñoz**, EMBL, Germany The missing mechanical link: how composite interfaces govern cell morphogenesis, immune migration, and stem cell fate
14:25 14:50	**20+5**	Invited	**Jorge Alegre-Cebollada** CNIC, Spain How do cells react to the viscoelasticity of the extracellular matrix?
14:50 15:10	**16+4**	Expert	**Alexander Cartagena-Rivera** NIH, USA Aberrant glycosylation regulates the cell surface architecture and viscoelasticity of pancreatic cancer cells
15:10 15:25	**12+3**	Oral	**Annalisa Caló** IBEC, Spain Mechanical mapping of soft materials and cells with colloidal AFM probes through advanced models
Coffee Break: 15:30-16:00			
Room 1		Session moderator	Andra C. Dumitru
16:00 16:25	**20+5**	Invited	**Alexander Kabla** Univ. Cambridge, UK Rheology of epithelial monolayers
16:25 16:45	**16+4**	Expert	**Michael Krieg** ICFO, Spain Dissecting Cytoplasmic Heterogeneity: A Quantitative Assay for Measuring Organelle-Specific Contributions to Cellular Mechanics
16:45 17:05	**16+4**	Expert	**Felix Rico** Univ. Marseille, France Mapping cell mechanics in health and disease
17:05 17:20	**12+3**	Oral	**Jaime Tejedor** CISC, Spain High-Throughput Nanorheology of Living Cells Powered by Supervised Machine Learning
End day 1			

10th Multifrequency AFM Conference, May 26-30th, 2025

Tuesday 27th May 2025

Room 1	3rd Symposium on Solid-Liquid Interfaces		
Time	**Duration (min)**	**Type**	**Presenter**
08:50-09:00	**10**	Welcome	Ricardo Garcia
09:00-09:30	**24+6**	Keynote	**James de Yoreo** Pacific Northwest National Laboratory, USA An in situ look at interfacial structure and dynamics during nucleation and self-assembly

4th Symposium on Cell and Soft Matter Nanomechanics			
Room 1		Session moderator	Michael Krieg
09:40 - 10:05	**20+5**	Invited	**Mingdong Dong** Aarhus University, Denmark Shaping Cells with Patterns and Protein Crystals
10:05 -10:25	**16+4**	Expert	**Jeanlex de Sousa** Universidade Federal do Ceará, Brazil Biomechanical Insights into the Proteomic Profiling of Cells in Response to Red Light Absorption
Coffee Break: 10:30-11:00			
4th Symposium on Cell and Soft Matter Nanomechanics			
Room 1		Session moderator	Jorge Alegre-Cebollada
11.00-11.25	**20+5**	Invited	**Tomaso Zambelli** ETH, Switzerland Intracellular mechanotransmission combining FluidFM and FLIM
11:25-11:45	**16+4**	Expert	**Marina I. Giannotti** University of Barcelona, Spain Interaction and regulation in redox partner proteins of the respiratory and photosynthetic electron transport chains
11.45-12.00	**12+3**	Oral	**José Pérez** Bioactive Surfaces, Spain Decoration strategies for DeepTipTM AFM probes and examples of their use for the characterization of biological systems
12:20-12:40	**16+4**	Expert	**Andra C. Dumitru** Université Catholique de Louvain, Belgium Mechanical and Structural Alterations of Cell Nuclei in Diabetes
12:40-12:55	**12+3**	Oral	**Yoo Jin Oh** Johannes Kepler University Linz, Austria Plant-derived anti-HER2 antibody suppresses trastuzumab-resistant breast cancer with enhanced nanoscale binding
12:55-13:10	**12+3**	Oral	**Victor G. Gisbert** Université Catholique de Louvain, Belgium Unraveling the Mechanical Landscape of the LmrP Multidrug Transporter by Single-Molecule Atomic Force Microscopy

Lunch Break: 13:30-15:00			
4th Symposium on Cell and Soft Matter Nanomechanics			
Room 1		Session moderator	Marina I. Giannotti
15:00-15:25	**20+5**	Invited	**Fernando Moreno-Herrero** CSIC, Spain Understanding DNA repair protein machines from single-molecule manipulation methods
15:25-15:45	**16+4**	Expert	**Shivaprasad Pati** Indian Institute of Science Education and Research, India Soft Glassy Rheology of single cells with pathogenic Huntington's aggregates
15:45-16:00	**12+3**	Oral	**Livia Angeloni** Sapienza University of Rome Investigating the correlation between macrophage mechanical properties and function in response to biochemical and physical cues
16:00-16:15	**12+3**	Oral	**Andre Körnig** Bruker Nano Surfaces Enhancing Large-Scale BioAFM Mechanical Characterization
16:15-16:30	**12+3**	Oral	**Rafael Daza** Universidad Politécnica de Madrid, Spain Application of atomic force microscopy for the identification of the Pgp protein in the lumen of blood vessels
Coffee Break (16:30-17:00)			
End day 2			

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Tuesday 27th May 2025

3rd Symposium on Solid-Liquid Interfaces

Room 2		Session moderator	Esther Lladó-Alarcón
09:40-10:00	**16+4**	Expert	**Matteo Chiesa** Khalifa University, EUA Rethinking Surface Wettability: The Counterintuitive Role of Water in Hydrophobicity Evolution of Graphitic Surfaces
10:00-10:15	**12+3**	Oral	**Markus Valtiner** Univ. Wien, Austria Ion adsorption at charged interfaces: visualization and quantification of ion specific effects and water structure
10:15-10:30	**12+3**	Oral	**Gianlorenzo Bussetti** Politecnico di Milano, Italy Unraveling the Role of Step-Edge Confinement in Ion Adsorption and Molecular Ordering on Cu(111) in Acidic Media
Coffee Break: 10:30-11:00			

3rd Symposium on Solid-Liquid Interfaces

Room 2		Session moderator	Angelika Kuhnle and Jeffrey Comer
11.00-11.25	**20+5**	Invited	**Marie P. Gaigeot** Univ. d'Evry, France Modeling aqueous oxide interfaces and their HD-SFG non-linear spectroscopy
11.25-11.45	**16+4**	Expert	**Jeffrey Comer** Kansas State University, USA Atomistic modeling of forces on AFM probes at liquid–solid interfaces
11.45-12.00	**12+3**	Oral	**Jian Gao** AMOLF Institute, Netherlands Atomic-Scale Insights into Bias-Induced Local Anodic Oxidation on Silicon via Reactive Molecular Dynamics
Break			
12:20-12:45	**20+5**	Invited	**Yingjie Zhang** Univ. of Ilinois, USA Integrating Microscopy and Spectroscopy to Unveil Liquid Structures Near Solid Surfaces
12:45-13:00	**12+3**	Oral	**Zhen Tang** CSIC, Spain Charge-Modulated Hydration Structures at Solid–Liquid Interfaces: From Contact Electrification to Electrochemical Analogs
13:00-13:15	**12+3**	Oral	**Simone Benaglia** Univ. Manchester Quantification of solvation forces with amplitude modulation AFM
Lunch Break: 13:30-15:00			

3rd Symposium on Solid-Liquid Interfaces			
Room 2		Session moderator	Yingjie Zhang
15.00-15.25	**20+5**	Invited	**Angelika Kuhnle** Bielefeld University, Germany Solvation Layer Mapping at “Hydrophobic” Surfaces
15.25-15.45	**16+4**	Expert	**Igor Siretanu** Univ. Twente, Netherlands Nanometer-Resolved Operando Photo-Response at the Semiconductor Electrolyte Interface of Faceted Nanoparticles
Coffee Break (16:30-17:00)			
End day 2			

Wednesday 28th May 2025			
Room 1		General Session	
Time	**Duration (min)**	**Type**	**Presenter**
Room 1		Session moderator	James de Yoreo
09:00- 09:30	**24+6**	Keynote	**Nina Balke** North Carolina State University, USA Small scale, big impact: Visualization of local electrochemical processes
09:30- 09:55	**20+5**	Invited	**Patrick Unwin** Univ. Warwick, UK High-Throughput Multifunctional Scanned Probe Microscopy: A New Era in Electrochemical Materials Discovery
09:55-10:15	**16+4**	Expert	**Kislon Voïchovsky** Durham University, UK Probing single metal ions at aqueous interfaces: imaging vs spectroscopy
Coffee Break: 10:20-11:00			
Multifrequency AFM sessions			
Room 1		Session moderator	Roger Proksch
11:00-11:20	**16+4**	Expert	**Hanna Cho** The Ohio State University, USA Investigating the role of collagen piezoelectricity in intrafibrillar mineralization
11:20-11:35	**12+3**	Oral	**Daniel Martin-Jiménez** CSIC, Spain Bimodal atomic force microscopy with a torsional eigenmode for highly accurate imaging of grain orientation in organic thin films
11:35-11:50	**12+3**	Oral	**Marvin Hoffer** Technische Universität Darmstadt, Germany Torsional force spectroscopy as a versatile tool to probe lateral interactions in biological and polymeric systems
11:50-12:05	**12+3**	Oral	**Daniel Rothhardt** Empa, Switzerland Exploring Atomic-Scale Properties of 2D NiBr2 on Au(111) Using Multimodal Scanning Force Microscopy
12:05-12:20	**12+3**	Oral	**Lara V. Fricke** Delft University of Technology, Netherlands Characterization of polymeric coating using nonlinear dynamic atomic force microscopy
Break			
Room 1		Moderator	Hanna Cho
12.30-12.55	**16+4**	Invited	**Roger Proksch** Oxford Instruments Asylum Research, USA Frontiers in Accurate and Low Noise Atomic Force Microscopy using a new Interferometric Detector
12:55-13:15	**16+4**	Expert	**Marti Checa** Oak Ridge National Laboratory, USA On-demand generation of ferroelectric topologies via scan path engineering
13.15-13.30	**12+3**	Oral	**Hans Gunstheimer** Nanosurf AG, Switzerland Quantitative Nanomechanical Mapping at High Frequencies using Photothermal Off-Resonance Tapping AFM

3rd Symposium on Solid-Liquid Interfaces			
Room 2		Session moderator	Kislon Voitchovsky
11:00 11:20	**16+4**	Expert	**Esther Alarcón-Lladó** AMOLF Institute, Netherlands Nanoscale interfacial energy mapping with electrochemical AFM
11.20 11.40	**16+4**	Expert	**Christopher Kley** Fritz Haber Institute, Germany Nanoscale insights into electrocatalyst surfaces and electrochemical interfaces
11.40 11.55	**12+3**	Oral	**Florian Hausen** Forschungszentrum Jülich, Germany Mechanical Insights on the Evolution of Functional Layers in Energy Materials
Multifrequency AFM sessions			
12:05 12:20	**12+3**	Oral	**Stefano Chiodini** Istituto Italiano di Tecnologia, Italy Electromechanical response of saddle points in twisted hBN moiré superlattices
Break			
Room 2		Session moderator	Daniel Martín-Jiménez
12.30 12.45	**20+5**	Oral	**Daniel Ebeling** Justus Liebig University Giessen, Germany Chemical Bond Imaging Using Atomic Force Microscopy with an Adaptive Tunneling Current Feedback
12.45 13.00	**16+4**	Oral	**Jaime Colchero** Centro de Investigación en Óptica y Nanofísica, Spain Noise related to the chemistry of the sample imaged in Dynamic AFM
13.00 13.15	**12+3**	Oral	**Miriam Jaafar** Univ. Autónoma de Madrid, Spain Magnetic Field Screening of 2D materials revealed by Magnetic Force Microscopy
13.15 13.30	**12+3**	Oral	**Jorge Marques** Max Planck Institute for Chemical Physics of Solids, Germany Characterization of magnetotactic bacteria by long-range Magnetic Force Microscopy
Lunch break 13:30-15:00			

Multifrequency AFM sessions			
Room 1		Session moderator	Carmen Munuera
14:55-15:20	**20+5**	Invited	**Oleg Kolosov** Lancaster University, UK Mixing 4-100 MHz ultrasonic frequencies in AFM for mapping nanosecond time scale electromechanics with nanoscale spatial resolution
15:20-15:40	**16+4**	Expert	**Miguel Muñoz** CSIC, Spain Scanning Thermal Microscopy of Electronic Devices
15:40-16:00	**16+4**	Expert	**Celia Polop** Univ.Autónoma de Madrid, Spain Nucleation and early-stage growth of Li and Na anodes in ZESSBs at the nanoscale by synchrotron-PEEM and AFM
16:00-16:15	**12+3**	Oral	**Husnu Aslan** Dansk Fundamental Metrologi, Denmark Atomic Force Microscopy as a Multimetrological Platform for Energy Devices
16:15-16:30	**12+3**	Oral	**Niklas Scheer** Forschungszentrum Jülich, Germany Revealing thin coatings of cathode materials based on their mechanical contrast by contact resonance atomic force microscopy
Poster Session 16:30-18:00 Moderators: Andra C. Dumitru, Christian Dietz, Daniel Martin-Jimenez, and Victor G. Gisbert			
Awards ceremony Andra C. Dumitru, R. Garcia			
Plenary	**Peter Hinterdofer** Johannes Kepler University, Austria Dynamic Multimeric Binding Strategies of Pathogens and Therapeutics: Lessons learnt from SARS-CoV-2 Variants of Concern		
Conference Dinner: 19:30-21:30 Buses leave at 21:15 and 21:30-21:45			

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Thursday 29th May 2025

General Session

Room 1		Session moderator	Peter Hinterdorfer
Time	**Duration (min)**	**Type**	**Presenter**
09:00- 09:30	**24+6**	Keynote	**Toshio Ando** Kanazawa University, Japan Past and Future of High-speed AFM for Dynamic Structural Biology
09:30- 09:50	**20+5**	Invited	**Georg Fantner** École Polytechnique Fédéral de Lauanne, Switzerland Correlative nanocharacterization by AFM and SEM
09:50-10:10	**16+4**	Expert	**Shuai Zhang** Pacific Northwest National Laboratory, USA Protein interaction, dynamics, and assembly at solid-liquid interfaces

Coffee Break: 10:20-10:50

Multifrequency AFM sessions

Room 1		Session moderator	Neus Domingo
10:50 11:15	**20+5**	Invited	**Sonia Contera-Antoraz** Univ. Oxford, UK Nanoscale viscoelasticity of living and soft matter with AFM
11:15 11:35	**16+4**	Expert	**Kenichi Umeda** Kanazawa University, Japan Advancing High-Speed AFM: DNA-Binding Protein Dynamics and Imaging Speed Enhancement
11:35 11:50	**12+3**	Oral	**Ignacio Casuso** Aix-Marseille University, France MurG ligase induces fluid regions in bacterial membranes
11:50 12:05	**12+3**	Oral	**Jonathan D. Adams** Nanosurf AG, Switzerland Photothermal cantilever actuation across the frequency spectrum
12:05 12:20	**12+3**	Oral	**Sidney Cohen** Weizmann Institute of Science, Israel Capturing Single Mitochondrial Activity by SPM-Based Noise Analysis

Break

Multifrequency AFM sessions

Room 1		Session moderator	Marti Checa
12.30 12.55	**20+5**	Invited	**Gabriel Gomila** Univ. Barcelona, Spain Probing the transversal and longitudinal electrical conductivity without physical contact by Scanning Dielectric Microscopy
12:55 13:15	**16+4**	Expert	**Georg Gramse** Johannes Kepler University, Austria Electrochemical Microwave Microscopy
13.15 13.35	**16+4**	Expert	**Neus Domingo** Oak Ridge National Laboratory, USA Driving and Imaging Domain Wall Dynamics in Ferroelectrics using “Scanning Oscillator” Atomic Force Microscopy

Lunch break 13:30-15:00

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Thursday 29th May 2025

Coffee Break: 10:20-10:50

Multifrequency AFM sessions

Room 2		Session moderator	Shiva Patil
10:50 11:10	**16+4**	Expert	**Alvaro San Paulo** Instituto de Micro y Nanotecnología, IMN-CNM (CSIC) Nanomechanical Sensing in Liquids with Dip-in Nanowire Probes
11:10 11:30	**16+4**	Expert	**Amir F. Payam** Ulster Univ., UK Multifrequency Atomic Force Microscopy and Cantilever-Based Sensors: Advancing Nanomechanical Spectroscopy
11:30 11:45	**12+3**	Oral	**Alberto M. Perez** Deltf Univ. Technology, The Netherlands Suspended microchannel resonators for nanomechanical cell characterization and further beyond
11:45 12:00	**12+3**	Oral	**Bartosz Pruchnik** Wroclaw University of Science and Technology Modification and application of active piezoresistive cantilevers for surface imaging with higher transverse modes of actuation

Break

Multifrequency AFM sessions

Room 2		Session moderator	Christian Dietz
12.25 12.40	**12+3**	Oral	**Michael Ruppert** Univ. Technology Sidney, Australia Low temperature multimode atomic force microscopy using an active MEMS cantilever
12:40 12:55	**12+3**	Oral	**Philip Schäfer** Attocube Systems, Germany Nanoscale infrared imaging and spectroscopy in organic and inorganic samples
12.55 13.10	**12+3**	Oral	**Ermes Scarano** KTH Royal Institute of Technology, Sweden Cryogenic AFM with an integrated kinetic inductive electromechanical transducer
13:10 13:25	**12+3**	Oral	**Vladimir Korolkov** Oxford Instruments Organic Supramolecular Heterostructures

Lunch break 13:30-15:00

Itifrequency AFM sessions			
Room 1		Session moderator	Oleg Kolosov
Time	**Duration (min)**	**Type**	**Presenter**
15:00-15:20	**16+4**	Expert	**Carmen Munuera** CSIC, Spain Insights into MoS2-based devices via operando KPFM
15:20-15:40	**16+4**	Expert	**Cristina Gómez-Navarro** Univ. Autónoma de Madrid, Spain Mechanics of defective 2d materials
15:40-15:55	**12+3**	Oral	**Andrea Cerreta** Park Systems Europe, Germany Characterizing the electronic properties of graphene on silicon carbide via Atomic Force Microscopy
15:55-16:10	**12+3**	Oral	**Sanket Jugade** Indian Institute of Science, India Solid-like Behaviour of Confined Water in Graphene-Liquid Cells
End day 4			

10th Multifrequency AFM Conference, May 26-30th, 2025			
Friday 30th May 2025			
General Session			
Room 1		Session moderator	Mingdong Dong
Time	**Duration (min)**	**Type**	**Presenter**
09:00 09:25	**20+5**	Invited	**Adam Foster** Aalto University, Finland Machine learning in Scanning Probe Microscopy
09:25 09:50	**20+5**	Invited	**Sergio Santos** UiT The Arctic University of Norway, Norway Exploiting Multifrequency AFM Observables for Object and Phenomenon Identification and Enhanced Material Characterization
09:50 10:10	**16+4**	Oral	**Rubén Pérez** Univ. Autónoma de Madrid, Spain A microscopic view on the interaction of the SARS-CoV2 Spike protein with surfaces with different hydrophobicity
10:10 10:25	**12+3**	Oral	**Ricardo Garcia** CSIC, Spain Nanorheology of Living Cells Powered by Machine Learning
End Conference **Coffee Break: 10:30-11:00**			