

International Scanning Probe Microscopy (ISPM) 2018 Tempe, AZ

Arizona State University, Tempe Campus, Physical Sciences Building F

Tuesday, May 8

- 5:00 pm Registration & Reception
7:00 pm Robert Ros, Arizona State University (Opening Remarks)
7:10 pm Paul Hansma, University of California Santa Barbara (Opening Lecture)
Scanning Probe Microscopy: Beginnings and Beyond

Wednesday, May 9

- 8:30 am Registration

Session I **Session Chair: Peter Hinterdorfer (Johannes Kepler University Linz, Austria)**

- 9:00 am Takeshi Fukuma, Kanazawa University (invited)
Recent Progress in Liquid-Environment Frequency Modulation AFM and Its Related Techniques
- 9:30 am Luca Piantanida, Durham University
Directional nanoscale mapping of liquid flow at interfaces
- 9:45 am Antoine Hinaut, University of Basel
Electrospray deposition of structurally complex molecules revealed by atomic force microscopy
- 10:00 am Marcos Penedo, Swiss Federal Laboratories for Materials Science and Technology
Halbach effect from chiral spin textures on thin film multilayers with interfacial Dzyaloshinskii-Moriya interaction

- 10:15 – 10:45 am Coffee Break

Session II **Session Chair: Laurene Tetard (University of Central Florida, USA)**

10:45 am Jennifer Dionne, Stanford University (invited)
Towards all-optical chiral resolution with achiral plasmonic and dielectric nanostructures

11:15 am Birgit Plochberger, Upper Austria University of Applied Sciences (invited)
Single-molecule-sensitive methods used for biomedical research – “Balance between temporal and spatial resolution”

11:45 pm- 12:45 pm Lunch Break

Session III Session Chair: Takeshi Fukuma (Kanazawa University, Japan)

12:45 pm Hongbin Li, University of British Columbia (invited)
Folding and Unfolding Mechanisms of Iron Sulfur Proteins Revealed by Single Molecule Force Spectroscopy

1:15 pm John Elie Sader, The University of Melbourne
A virtual instrument to standardize the calibration of AFM cantilevers

1:30 pm Damien Sluysmans, Northwestern University
Investigations into the mechanochemical properties of single artificial molecular switches

1:45 pm Floriane Devaux, University of Liege
Single-Molecule Force Spectroscopy of helical foldamers

2:00 pm Yoo Jin Oh, Johannes Kepler University
Label-free determination of chemical dissociation constant using topography and recognition imaging

2:15 pm Anny Fis, Johannes Kepler University
Investigating the Bacterial Translocon at the Single Molecule Level

2:30 pm Bintian Zhang, Arizona State University
Observation of large conductance fluctuations in proteins

2:45 pm – 3:15 pm Coffee Break

Session IV Session Chair: Ulrich Stimming (Newcastle University, UK)

- 3:15 pm Steven Eppell, Case Western Reserve University (invited)
Comparison of Theoretical Transient Cantilever Shape Against Direct Experimental Measurement
- 3:45 pm Omur E. Dagdeviren, Yale University
Quantifying Tip-Sample Interactions in Vacuum Using Cantileverbased Sensors: An Analysis
- 4:00 pm Wonho Jhe, Seoul National University
Bifurcation-enhanced ultrahigh force sensitivity of a buckled cantilever
- 4:15 pm Ryan Tung, University of Nevada
Contact Resonance AFM using Cantilevered Plates
- 4:30 pm Sayan Ghosal, Seagate Technology
Dynamic mode atomic force microscopy toward characterizing material properties at nano-scale

Poster Session (5 pm – 7 pm)

- P1 Omur E Dagdeviren, Yale University
Surface Structure and Electronic Properties of Epitaxial Topological Crystalline Insulator Films with Scanning Probe Microscopy
- P2 JaeHoon Lee, Andong National University
Design of modular Scanning Ion Conductance Microscopy Head
- P3 Gilberto Weissmuller, Universidade Federal do Rio de Janeiro
Nano-Mechanical Characterization of Colorimetric M13 Phage Sensor
- P4 Thi Huong Nguyen, University Medicine Greifswald
Insights into Uptake Pathway of Protein Coated Magnetic Nanoparticles in Platelets
- P5 Marta Kocun, Asylum Research
Quantitative Bimodal AM-FM Imaging Mode for Measurement of Elastic Modulus

- P6 Yusuke Mizutani, Niigata University
Simultaneous observation of the cell surface structure and cytoskeleton by scanning ion conductance microscopy and fluorescence
- P7 David Allison, University of Tennessee
Mechanical Characteristics of the Arabidopsis Root Apical Meristem
- P8 Mitchel Doktycz, Oak Ridge National Laboratory
Investigating the role of carotenoids in bacterial membrane organization
- P9 Lanping Yue, University of Nebraska
Room-temperature magnetic skyrmions in thin films by MFM imaging
- P10 Morgan Robinson, University of Waterloo
Contact-mode high-speed AFM of complex lipid membrane models
- P11 Sivaraman Rajaganapathy, , University of Minnesota
Robust Force Control for Single Molecule Force Spectroscopy
- P12 Nate Kirchhofer, Asylum Research
Nanoscale surface characterization by correlated multimodal scanning probe microscopy
- P13 Nataly Podolnikova, Arizona State University
Quantifying adhesion of platelets to fibrin(ogen) substrates using single cell force spectroscopy
- P14 Ilaria Pulsoni , University of Genova
An in vitro system for the mechano-electrical characterization of excitable cells
- P15 Jiawei Liu, Arizona State University
Morphology and Surface Potential of Salmonella Typhimurium
- P16 Kiarash Rhamani Eliato, Arizona State University
Quantification of ECM Remodeling by Cancer-Stromal Interactions using AFM Nanoindentation
- P17 JongOne Im, Arizona State University
Atomic Force Microscopy(AFM) as a Surface Printing Tool Used in Fabrication of a Nanomachine For Sequencing of Glycosaminoglycan
- P18 Rafiul Shibab, University of Nevada
Numerical Verification of the Hydrodynamic Reconstruction Method for Atomic Force Microscopy

P19 Nikolaus Frischauf, Upper Austria University of Applied Sciences
Atomic-force-microscopy based analysis of shockwaves used for treatment and their biological response

Thursday, May 10

8:30 am Registration

Session V **Georg Fantner (Ecole polytechnique fédérale de Lausanne, Switzerland)**

9:00 am Takayuki Uchihashi, Nagoya University (invited)
High-Speed Atomic Force Microscopy for Visualization of Dynamic Processes in Biological and Artificial Supramolecules

9:30 am Mervin Miles, University of Bristol
Non-tapping Mode High-speed AFM and the Role of Water

9:45 am Marta Kocun, Asylum Research
Video-Rate Atomic Force Microscopy

10:00 am – 10:45 am Coffee Break

Session VI **Steven Eppell (Case Western Reserve University, USA)**

10:45am Laurene Tetard, University of Central Florida (invited)
Multifrequency Atomic Force Microscopy for Nanoscale Functional Analysis

11:15 am Jason Killgore, National Institute of Standards and Technology
Innovations in Viscoelastic Contact Resonance for Spatially and Temporally Varying Nanomechanical Measurements

11:30 am Morgan Robinson, University of Waterloo
AFM and KPFM to study domains in model lipid membranes

11:45 pm Malithi Fonseka, University of Arizona
Investigation of morphology and nanomechanical properties of lipid bilayers composed of fluid and polymerizable lipids for biosensor applications

12:00 pm – 1:00 pm Lunch Break

Session VII **Jin He (Florida International University, USA)**

- 1:00 pm Georg Fanter, École polytechnique fédéral de Lausanne
Open Hardware - Academic instrument development in the age of open science
- 1:15 pm Sang Heon Lee, Andong National University
Low cost platform for scanning probe microscopes
- 1:30 pm Simon Yeowon Yoon, Sogang University
Polymeric atomic force microscope cantilevers fabricated via replica molding and ultraviolet curing
- 1:45 pm Ivan Yermolenko, Bruker Nano Surfaces
Improving the Accuracy of Elastic Property Mapping via AFM
- 2:00 pm – 10:00 pm Excursion and Conference Dinner

Friday, May 11

8:30 am Registration

Session VIII Takuji Takahashi, University of Tokyo, Tokyo, Japan

9:00 am Ulrich Stimming, Newcastle University (invited)
Li- and Na- Intercalation into Graphite studied by in-situ EC-STM

9:30 am Yasuo Cho, Tohoku University
Scanning nonlinear dielectric microscopy in peak-force tapping mode and its application to transition metal dichalcogenides

9:45 am Takeshi Uruma, Shizuoka University
Imaging of an n- layer of an Si fast recovery diode using Kelvin probe force microscopy

10:00 am Takuji Takahashi, University of Tokyo
Photo-assisted Kelvin Probe Force Microscopy on Cu(In,Ga)Se₂ Solar Cells under Light with Various Photon Energies

10:15 am Gajendra Shekhawat, Northwestern University
S_{TM} Temperature Mapping of Magnetic Nanoparticles for Technological Application

10:30 am Armen Kocharian, California State University Los Angeles
Structural and Magnetic Properties of Copper Nanoparticles Coated with Graphite-like Carbon Shell

10:45 am Jhinhwan Lee, Korea Advanced Institute of Science and Technology
Spin-polarized STM study toward high temperature spintronic device controlling superconductivity

11:00 am – 11:30 am Coffee Break

Session IX Takayuki Uchihashi (Nagoya University, Japan)

11:30 am Peter Hinterdorfer, Johannes Kepler University (invited)
Nanopharmacological force sensing on monoamine transporters

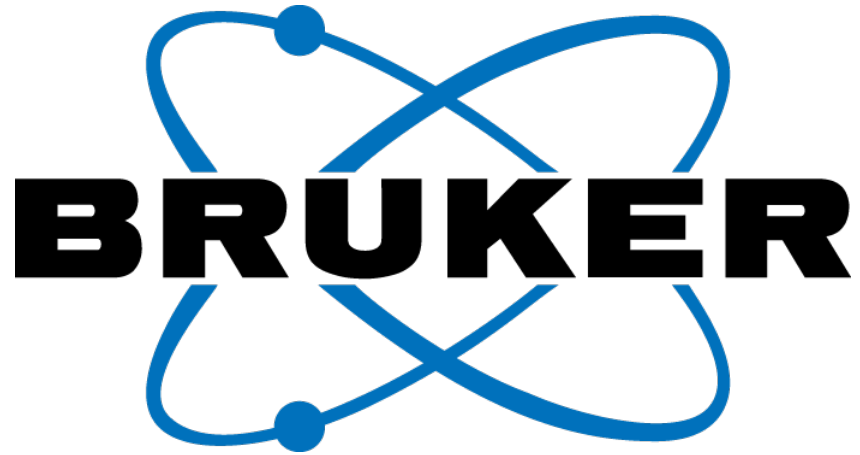
- 12:00 pm Ioannis Sgouralis, Arizona State University
Modeling and Analysis of Single Molecule Events with Bayesian Nonparametrics
- 12:15 pm Peiming Zhang, Arizona State University
Development of Multi-Arm Linkage Chemistry for AFM to Study Multivalent Interactions and Perform Multiplexed Detection
- 12:30 pm Arpita Roychoudhury, University of Liege
Studying the mechanical reversibility of click-chemistry linkages by AFM-based single-molecule force spectroscopy
- 12:45 pm Thi Huong Nguyen, University Medicine Greifswald
The Role of Atomic Force Spectroscopy in Identifying a New Mechanism of Autoimmune Thrombocytopenia Caused by a Subset of Antibodies

1:00 pm – 2:00 pm Lunch Break

Session X Hongbin Li (University of British Columbia, Canada)

- 2:00 pm Jin He, Florida International University (invited)
Extracellular Potential mapping of Living Cell Membrane by Scanning Ion Conductance Microscopy
- 2:30 pm Pablo David Garcia, CSIC
True determination of the elastic and viscoelastic properties of a single cell by force microscopy
- 2:45 pm Marco Lazzarino, CNR-IOM
AFM Investigation of the Mechanical Properties of Human Oocytes
- 3:00 pm Patrick Frederix, Nanosurf AG
Cell mass monitoring with AFM cantilevers
- 3:15 pm Pedro de Pablo, Universidad Autonoma de Madrid
Atomic Force Microscopy of viruses reveals the interplay between mechanics, structure and function
- 3:30 pm Stuart Lindsay, Arizona State University (Closing Remarks)

Sponsors (in alphabetical order):







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