

# 7<sup>th</sup> Multifrequency AFM Conference, April 18<sup>th</sup>-20<sup>th</sup>, 2018, Madrid

Wednesday 18<sup>th</sup> April 2018

Time	Duration (minutes)	Type	Title, Speaker, Affiliation
08:00-09:30	1h 30	Registration	<b>Participant Registration</b>
<b>Opening</b>			
09:30-09:45	15	Welcome	<b>15 years of Multifrequency AFM</b> Ricardo Garcia, <i>Consejo Superior de Investigaciones Científicas (CSIC), Spain</i>
<b>Multifrequency AFM</b> Moderator: Arvind Raman Room: Amsterdam			
09:45-10:10	25	Invited	<b>Quantitative, wide modulus range and fast mechanical mapping with bimodal AMFM</b> Roger Proksch, <i>Asylum Research USA</i>
10:10-10:30	20	Expert	<b>Nanomechanical spectrometry of biological entities: from viruses to cells</b> Javier Tamayo, <i>Consejo Superior de Investigaciones Científicas (CSIC), Spain</i>
<b>Coffee Break 10:30-11:00</b>			
<b>Nanoscale imaging</b> Moderator: Robert Magerle Room: Amsterdam			
11:00-11:25	25	Invited	<b>Beyond Stiffness: Reveling the full spectrum of surface properties From Multifrequency AFM</b> Matteo Chiesa, <i>Masdar Institute, UAE</i>
11:25-11:45	20	Expert	<b>Functional high-speed AFM imaging using photothermal off-resonance tapping</b> Georg Fantner, <i>École Polytechnique Fédérale de Lausanne (EPFL), Switzerland</i>
11:45-12:05	20	Expert	<b>Engineering the Tip-Sample Interactions in Tapping Mode AFM</b> Hammed Sadeghian, <i>Netherlands Organisation for Applied Scientific Research (TNO), The Netherlands</i>

**15' break**

<b>Nanomechanical resonators and sensing</b> Moderator: Ernst Meyer Room: Amsterdam			
12:20-12:40	20	Expert	<b>Scanning force microscopy based on co-resonantly coupled cantilever probes</b> Thomas Mühl, <i>IFW Dresden, Germany</i>
12:40-12:55	15	Oral	<b>Multimode Resonant Sensing: From Inertial Imaging to Microdroplet and Cell Characterization with Microwave Sensors</b> M. Selim Hanay, <i>Bilkent University, Turkey</i>
12:55-13:10	15	Oral	<b>Advanced Sensing and Control with Active Cantilevers for Multimodal Atomic Force Microscopy</b> Michael G. Ruppert, <i>The University of Newcastle, Australia</i>
<b>Lunch break 13:10-15:00</b>			
<b>Viscoelasticity at the nanoscale</b> Moderator: Santiago D. Solares Room: Amsterdam			
15:00-15:25	25	Invited	<b>On Modeling and Measuring Viscoelasticity with dynamic Atomic Force Microscopy</b> David Haviland, <i>Royal Institute of Technology (KTH), Sweden</i>
15:25-15:45	20	Expert	<b>Multifrequency AFM for measuring multiscale viscoelasticity of living systems</b> Sonia A. Contera, <i>University of Oxford, UK</i>
15:45-16:00	15	Oral	<b>A Dynamic Scanning Indentation Technique for Quantitative Viscoelastic Property Mapping</b> Mathew D. Eaton, <i>Northwestern University, USA</i>
16:00-16:15	15	Oral	<b>Analytical Solutions for an AFM tip tapping a viscoelastic surface with multiple relaxation times</b> Enrique A. Lopez-Guerra, <i>The George Washington University, USA</i>
<b>Coffee Break 16:15-16:45</b>			
<b>Multifrequency AFM</b> Moderator: Gabriel Gomila Room: Amsterdam			
16:45-17:05	20	Expert	<b>The effect of edge compliance on the contact between a spherical indenter and a high-aspect-ratio rectangular fin</b> Georghe Stan, <i>National Institute Standards and Technology, USA</i>
17:05-17:20	15	Oral	<b>Photo-Assisted Kelvin Probe Force Microscopy to study the surface charge changes in the enhanced photo-catalytic activity of TiO<sub>2</sub> (110)</b> Monica Luna, <i>Consejo Superior de Investigaciones Científicas (CSIC), Spain</i>
17:20-17:35	15	Oral	<b>Nanosecond time resolution in EFM with Intermodulation</b> Riccardo Borgani, <i>KTH, Sweden</i>
<b>Posters (with coffee &amp; drinks) 17:45 – 19:15</b> Moderators: Christian Dietz, Celia Polop, Kison Voitchovsky Room: Pekin			

Thursday 19<sup>th</sup> April 2018

**Atomic, molecular and nanoscale spatial resolution imaging**

Moderator: Sergei V. Kalinin

Room: Amsterdam

9:00-9:25	25	Invited	<b>High resolution force microscopy of molecules</b> Ernst Meyer, <i>University of Basel, Switzerland</i>
9:25-9:45	20	Expert	<b>Atomic Resolution Imaging of Topography, Surface Potential and Dipole Moment on TiO<sub>2</sub>(110) Surface with Double-OH Defects</b> Yasuhiro Sugawara, <i>Osaka University, Japan</i>
9:45-10:00	15	Oral	<b>Chemical bond imaging using higher eigenmodes of tuning fork sensors in atomic force microscopy</b> Daniel Ebeling, <i>Justus Liebig University Giessen, Germany</i>
10:00-10:15	15	Oral	<b>High resolution ambient AFM imaging of supramolecular heterostructures: Where is the limit?</b> Vadimir Korolkov, <i>University of Nottingham, UK</i>
10:15-10:30	15	Oral	<b>Amplitude dependence of image quality in atomically-resolved bimodal atomic force microscopy</b> Dominik Kirpal, <i>University of Regensburg, Germany</i>

**Coffee Break: 10:30-11:00**

**Solid-liquid interfaces**

Moderator: Rubén Pérez

Room: Amsterdam

11:00-11:25	25	Invited	<b>Probing molecular processes at solid-liquid interfaces</b> Adam S. Foster, <i>Aalto University, Finland</i>
11:25-11:45	20	Expert	<b>Single ions at bio-interfaces: local dynamics and nano-mechanics</b> Kislon Voitchovsky, <i>Durham University, UK</i>
11:45-12:00	15	Oral	<b>Identification of Single Adsorbed Cations on Mica-Liquid Interfaces by 3D Force Microscopy</b> Daniel Martín-Jiménez, <i>Consejo Superior de Investigaciones Científicas (CSIC), Spain</i>
12:00-12:15	15	Oral	<b>In-situ AFM imaging of liquid-liquid interfaces</b> Luca Costa, <i>INSERM UMR, France</i>

**15' break**

<b>Mechanical and electrical interactions</b> Moderator: David Haviland Room: Amsterdam					
12:30-12:55	25	Invited	<b>Material Property Models in Atomic Force Microscopy: The Case of Viscoelastic Materials</b> Santiago D. Solares, <i>The George Washington University, USA</i>		
12:55-13:20	25	Invited	<b>Nanoscale dielectric microscopy of ultrathin molecular layers at the solid-liquid interface</b> Gabriel Gomila, <i>University of Barcelona, Spain</i>		
<b>Lunch break: 13:20-15:00</b>					
<b>Multifrequency AFM parallel sessions</b>		<b>Mapping nanomechanical properties</b> Moderator: Matteo Chiesa Room: Amsterdam		<b>Magnetic, electrical and optical properties</b> Moderator: Agustina Asenjo Room: Pekin	
15:00-15:20	20	Expert	<b>Nanorheological AFM for Soft Polymeric Materials</b> Ken Nakajima, <i>Tokyo Institute of Technology, Japan</i>	Expert	<b>Multi-frequency techniques for high-resolution Magnetic Force Microscopy</b> Hans J. Hug <i>Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland</i>
15:20-15:40	20	Expert	<b>Sensing in-plane nanomechanical surface and sub-surface properties of polymers</b> Christian Dietz <i>Technische Universität Darmstadt, Germany</i>	Expert	<b>Optical nano-imaging through AFM cantilever mechanical detection</b> Antonio Ambrosio <i>Harvard University, USA</i>
15:40-15:55	15	Oral	<b>Nanomechanical Spectroscopy of Soft Matter with Angstrom – Scale Resolution</b> Carlos A. Amo, <i>Consejo Superior de Investigaciones Científicas (CSIC), Spain</i>	Oral	<b>High-aspect- ratio magnetic force microscopy probes for measurements in liquid media</b> Miram Jaafar, <i>Consejo Superior de Investigaciones Científicas (CSIC), Spain</i>
15:55-16:10	15	Oral	<b>Resolving the stress puzzle in polycrystalline films with AFM</b> Celia Polop, <i>Universidad Autonoma de Madrid, Spain</i>	Oral	<b>Gradient-based Electro-mechanical Surface Properties by Force Microscopy: Smart Mechanical Materials</b> Neus Domingo, <i>Institut Català Nanociencia i Nanotecnologia, Spain</i>
16:10-16:25	15	Oral	<b>Nanomechanical Characterization of Self-Assembled Monolayers Using Bimodal AFM</b> Evangelia N. Athanasopoulou, <i>EPFL, Switzerland</i>	Oral	<b>Resonance-enhanced detection modes for high resolution subsurface imaging using electric and stress fields in AFM</b> Maria J. Cadena <i>Purdue University, USA</i>
<b>Coffee break: 16:25-16:55</b>					

Parallel sessions		Nanomechanics Moderator: Georg Fantner Room: Amsterdam		Novel approaches Moderator: Neus Domingo Room: Pekin	
16:55-17:15	20	Expert	<b>Nano-mechanical Properties of Interphases in Nanocomposite Materials by Intermodulation Atomic Force Microscopy</b> Philippe Leclère <i>University of Mons, Belgium</i>	Expert	<b>Photoinduced Thermal Desorption on an Atomic Force Microscope Platform Coupled with Mass Spectrometry for Multimodal Imaging</b> Olga S. Ovchinnikova <i>Oak Ridge National Laboratory, USA</i>
17:15-17:30	15	Oral	<b>Ultrahigh Pressure Local Tuning of Graphene Electronic Properties</b> Pablo Ares, <i>University of Manchester, UK</i>	Oral	<b>Buckling instability-based sensitive detection of mechanical disturbances by a quartz tuning fork AFM</b> Sangmin An, <i>Seoul National University, Korea</i>
17:30-17:45	15	Oral	<b>Graphene-Based Broadband High-Frequency Ultrasound Detector</b> G. J. Verbiest, <i>Aachen University, Germany</i>	Oral	<b>Lifting the fog on functionalities: humidity control and distortion correction for SPM</b> I.Gaponenko, <i>Univ. Geneva, Switzerland</i>
17:45-18:00	15	Oral	<b>Friction Reduction of Nanoscale Sliding Contacts Through Ultrasonic Excitation</b> Hossein J. Sharahi, <i>Univ. Calgary, Canada</i>	Oral	<b>Off-resonance intermittent contact AFM mode using multiple harmonics</b> Marcos Penedo, <i>Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland</i>
<b>Plenary Talk</b> Moderator: Ricardo Garcia Room: Amsterdam					
20:15	45	Plenary	<b>Scanning Probe Microscopy: Exploring the Information Dimension</b> Sergei V. Kalinin, <i>Oak Ridge National Laboratory, USA</i>		
<b>Conference Dinner 21:30</b>					

Friday 20<sup>th</sup> April 2018

**Multifrequency AFM  
Symposium Cell and Soft Matter Nanomechanics**

Moderator: Felix Rico

Room: Amsterdam

9:00-9:30	30	Keynote	<b>Forces guiding staphylococcal adhesion</b> Yves Dufrêne, <i>Université Catholique de Louvain, Belgium</i>
9:30-9:55	25	Invited	<b>Tracking a cell's mass in real time</b> David Martinez-Martin, <i>Eidgenössische Technische Hochschule (ETH), Switzerland</i>
9:55-10:15	20	Expert	<b>Bio-AFM is the new black in biomedical sciences</b> Nuria Gavara, <i>Queen Mary University of London, UK</i>
10:15-10:30	15	Oral	<b>Pinpointing Unlabeled RNA Within a Protein-RNA Complex Using T-Shaped Cantilevers</b> Youngkyu Kim, <i>Columbia University, USA</i>

**Coffee Break: 10:30-11:00**

**Soft Matter Nanomechanics**

Moderator: Roger Proksch

Room: Amsterdam

11:00-11:25	25	Invited	<b>3D Depth Profiling of the Tip-Sample Interaction on Hydrated Collagen Fibrils</b> Robert Magerle, <i>Technische Universität Chemnitz, Germany</i>
11:25-11:45	20	Expert	<b>Measuring the mechanical properties of biomolecules in liquids with large-scale atomistic molecular dynamics simulations</b> Rubén Pérez, <i>Universidad Autónoma de Madrid, Spain</i>
11.45-12.05	20	Expert	<b>Nanomechanics of Vesicles and Viruses</b> Wouter H. Roos, <i>Rijksuniversiteit Groningen, The Netherlands</i>

**10' break**

**Fast force spectroscopy/microscopy**

Moderator: Yves Dufrêne

Room: Amsterdam

12:15-12:35	20	Expert	<b>The HS-AFM and the cell membrane, news and views</b> Ignacio Casuso, <i>Université Aix-Marseille, France</i>
12:55-13:15	20	Expert	<b>Orthogonal fingerprinting for accurate and fast mechanical characterization of proteins</b> Jorge Alegre - Cebollada, <i>Centro Nacional de Investigaciones Cardiovasculares (CNIC), Spain</i>
13:15-13:30	15	Oral	<b>Dynamics of breaking intermolecular bonds in high-speed force spectroscopy</b> Manuel R. Uhlig, <i>Consejo Superior de Investigaciones Científicas (CSIC), Spain</i>

**Lunch break: 13:30 – 15:00**

### Cell Nanomechanics

Moderator: Sonia A. Contera

Room: Amsterdam

15:00-15:25	25	Invited	<b>Probing the mechanics of living cells and tissues with AFM</b> Guillaume T. Charras, <i>University College London, UK</i>
15:25-15:45	20	Expert	<b>High-frequency microrheology of living cells</b> Felix Rico, <i>Université Aix-Marseille, France</i>
15:45-16:00	15	Oral	<b>Cellular Mechanics Heterogeneity Assessed by Integrated Spinning Disk Confocal and Multi-harmonic Atomic Force Microscopy</b> Yuri M. Efremov, <i>Purdue University, USA</i>
16:00-16:15	15	Oral	<b>Quantitative Nanomechanics of Living Cells with AFM in Conjunction with Super-Resolution Optical Microscopy</b> Torsten Müller, <i>JPK Instruments, Germany</i>
16:15-16:30	15	Oral	<b>Time-resolved nanomechanical rheology of a single cell under the depolymerization of the actin cytoskeleton</b> Carlos R. Guerrero, <i>CSIC, Spain</i>