

Monday 15th October 2012

Multifrequency AFM Tutorial
(requires specific registration)

Time	Duration (minutes)	Type	Title and Speaker
09.00-13.00	4 hours	Tutorial	Theory, Methods and Demostration Roger Proksch (Asylum Research) Santiago Solares (Univ. of Maryland) Horacio Vargas (CSIC) Ricardo Garcia (CSIC)

IV Multifrequency AFM Conference

14.45-15.00	15	Welcome	Why multifrequency AFM? Ricardo Garcia Instituto de Microelectrónica de Madrid, CSIC, Tres Cantos, Spain
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Session I: Multifrequency AFM Methods
Chairperson: David Haviland

15.00-15.30	30	Invited 1	Rapid Nanomechanical Approaches to Biological Imaging and Sensing Ozgur Sahin Columbia University, New York, NY, USA
15.30-16.00	30	Invited 2	Multifrequency AFM methods to Study Mechanics of Soft Materials at the Nanoscale Igor Sokolov Clarkson University, Potsdam, NY, USA
16.00-16.20	20	Oral 1	Amplitude-modulation atomic force microscopy at the solid-liquid interface: oscillation non-linearity and imaging resolution Kislon Voitchovsky Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland
16.20-16.40	20	Oral 2	Multifrequency methods in AFM-based mechanical and infrared spectroscopy Craig B. Prater Anasys Instruments, Santa Barbara CA, USA

Coffee Break: 16:40-17:00

Session II: Nanomechanics I
Chairperson: Jason Cleveland

17.00-17.20	20	Oral 3	Distortion in the Thermal Noise Spectrum of Atomic Force Microscope Cantilevers John E. Sader University of Melbourne, Victoria, Australia
17.20-17.40	20	Oral 4	Nonlinear detection mechanism in quantitative atomic force microscopy characterization of high-frequency nanoelectromechanical systems Alvaro San Paulo Instituto de Microelectrónica de Madrid, Tres Cantos, Spain
17.40-17.55	15	Oral 5	Linearized force AFM Ivo Knittel Saarland University, Saarbrücken, Germany

Session III – Posters

18.00-19.30	1h30		Drinks will be served during the poster session
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Tuesday 16th October 2012

Session IV: Multifrequency AFM methods II

Chairperson: John Eli Sader

09.00-09.30	30	Invited 3	Exploring the limits of nanoscale subsurface elastic imaging of solid state nanostructures via ultrasonic force and related microscopies Oleg Kolosov Lancaster University, Lancaster, UK
09.30-09.45	15	Oral 6	Tip-sample interaction in SubSurface-AFM Gerard Verbiest Kamerlingh Onnes Laboratory LION, CA Leiden, Netherlands
09.45-10.00	15	Oral 7	Amplitude dependence force spectroscopy with intermodulation atomic force microscopy Daniel Platz Royal Institute of Technology (KTH), Stockholm, Sweden
10.00-10.15	15	Oral 8	A spectral-fitting-method for force reconstruction Daniel Forchheimer Royal Institute of Technology (KTH), Stockholm, Sweden
10.15-10.30	15	Oral 9	Enhanced Magnetic Force Microscopy Resolution Employing Torsional Resonance Mode Andreas Kaidatzis Instituto de Microelectrónica de Madrid, Tres Cantos, Spain

Coffee Break: 10.30-11.00

Session V: Bimodal AFM

Chairperson: Ozgur Sahin

11.00-11.30	30	Invited 4	Mapping of Surface Properties in Bimodal AFM Using Frequency Modulation and Band Excitation: Advantages, Challenges and Perspectives Santiago Solares University of Maryland, Maryland, USA
11.30-11.50	20	Oral 10	AM-FM and Loss Tangent Imaging –Quantitative Nanomechanical Property Mapping Roger Proksch Asylum Research, Santa Barbara, CA, USA
11.50-12.10	20	Oral 11	Measuring electric field induced sub-pm displacement of step edge ions Shigeki Kawai University of Basel, Basel Switzerland
12.10-12.25	15	Oral 12	Repulsive bimodal atomic force microscopy on polymers Christian Dietz Technische Universität Darmstadt, Darmstadt, Germany

Mini break

Session VI: Bimodal AFM II

Chairperson: Roger Proksch

12.35-13.05	30	Invited 5	Force spectroscopy using bimodal dynamic force microscopy Abdullah Atalar Bilkent University, Ankara, Turkey
13.05-13.25	20	Oral 13	Structural Flexibility Mapping of proteins by Bimodal Atomic Force Microscopy in liquids Elena T. Herruzo

			Instituto de Microelectrónica de Madrid, Tres Cantos, Spain
Lunch: 13.30-15.00			
Session VII: Higher eigenmodes Chairperson: Arvind Raman			
15.00-15.30	30	Invited 6	Higher dimensions of SPM: Probing Dynamics Materials Functionalities Sergei Kalinin Oak Ridge National Laboratory, Oak Ridge, TN, USA
15.30-15.50	20	Oral 14	Imaging the surface stress and vibration modes of a microcantilever by laser beam deflection microscopy Javier Tamayo Instituto de Microelectrónica de Madrid, CSIC, Tres Cantos, Spain
15.50-16.05	15	Oral 15	Static and dynamical topography of AFM cantilever by Digital Holographic Microscopes (DHM) Yves Emery Lycée Tec SA, Lausanne, Switzerland
16.05-16.20	15	Oral 16	Imaging and simulation of mode shapes and harmonics of AFM cantilevers using Scanning Electron Microscopy Heinz Sturm Federal Institute for Materials Research and Testing, Division, Berlin, Germany
Mini break Session VIII: Nonlinear dynamics Chairperson: Kislou Voitchovsky			
16.25-16.40	15	Oral 14	Nonlinear dynamics and modal interactions in a microcantilever Hidde Westra Delft University of Technology, Delft, The Netherlands
16.40-16.55	15	Oral 15	Dynamic Behavior of AFM: Harmonic, Subharmonic, Non-periodic and Chaotic Motions Yin Zhang Chinese Academy of Sciences, Beijing, China
Coffee break: 16.55-17.20			
Session IX: Materials science Chairperson: Elena T. Herruzo			
17:20-17.50	30	Invited 7	Multifrequency MFM mode to distinguish electrostatic and magnetic signals Agustina Asenjo Instituto de Ciencia de Materiales de Madrid, CSIC, Madrid, Spain
17.50-18.05	15	Oral 16	Photovoltage Decay Measurements by Photo-assisted Kelvin Probe Force Microscopy on Cu(In,Ga)Se₂ Solar Cells Takuji Takahashi The University of Tokyo, Tokyo, Japan
18.05-18.20	15	Oral 17	Open loop-Kelvin Probe force microscopy techniques in the single and multi-frequency domains Liam Collins University College Dublin, Dublin, Ireland.
18.20-18.35	15	Oral 18	Enhancement of the aspect-ratio and lateral resolution of AFM tips by depositing nanoparticles with Ion Cluster Source resolution and durability of Supersharp tips

			Lidia Martínez Instituto Ciencia de Materiales, CSIC, Madrid, Spain
Conference Dinner Meeting at lobby, bus leaves at: to be defined			
Wednesday 17th October 2012			
Session X: Nanomedicine Chairperson: Igor Sokolov			
9.00-9.30	30	Invited 8	Mechanobiology of alveolar epithelial cells probed with atomic force microscopy Daniel Navajas Barcelona University
9.30-10.00	30	Invited 9	Arvind Raman Purdue University, West Lafayette, IN, USA
10.00-10.15	15	Oral 19	Spatial quantitative mapping of nanoscale electro-mechanical properties of viruses in physiological conditions by multi-harmonic AFM Alexander X. Cartagena Purdue University, West Lafayette, IN, USA
10.15-10.30	15	Oral 20	A Microcantilever Based Sensing Platform for the Investigation of Biological Interactions using Multiple Higher Resonance Modes Jason Jensen Trinity College Dublin, Dublin, Ireland
Coffee Break: 10.30-11.00			
Session VI: Energy dissipation AFM modes Chairperson: Sergio Santos			
11.00-11.20	20	Oral 21	Onset of lateral and vertical dynamic modes in liquid AFM H. Murakami University of Tokyo, Tokyo, Japan
11.20-11.35	15	Oral 22	Molecular and Nanoscale Compositional Contrast of Soft Matter in Liquid: Interplay between Elastic and Dissipative Interactions Jorge R. Ramos Instituto de Microelectrónica de Madrid, CSIC, Tres Cantos, Spain
11.35-11.50	15	Oral 23	Drive-amplitude-modulation atomic force microscopy. One method for all environments Miriam Jaafar Universidad Autónoma de Madrid, Madrid, Spain
11.50-12.05	15	Oral 24	Dissipation mode: a method for high resolution atomic force microscopy imaging in ambient conditions Alexei Temiryazev Institute of Radioengineering and Electronics RAS, Fryazino, Russia
Mini break			
Session VI: Nanomechanics II Chairperson: Sergei Kalinin			
12.15-12.35	20	Oral 25	Force Reduction in Contact Resonance Force Microscopy: Higher Eigenmode and Multifrequency Solutions Jason Killgore

			National Institute of Standards and Technology, Boulder, USA
12.35-12.50	15	Oral 26	Nanomechanical measurements of elastic and viscous response of materials with multifrequency methods Dalia Yablon ExxonMobil Research and Engineering, Annandale, USA
12.50-13.05	15	Oral 27	Force Feedback Microscopy M.S. Rodrigues Universidade de Lisboa, Lisboa, Portugal
13.05-13.25	20	Oral 28	Nanoscale material identification of single dielectric nanoparticles and viruses with ultra-weak polarization forces Laura Fumagalli Universitat de Barcelona, Barcelona, Spain
Lunch: 13.30 - 15.00			
Session VII: Nanomechanics III Chairperson: Ricardo Garcia			
15.00-15.30	30	Invited 10	Jason Cleveland Asylum Research
15.30-15.50	20	Oral 29	Quantification in ambient amplitude modulation atomic force microscopy Sergio Santos Masdar Institute of Science and Technology, Abu Dhabi
15.50-16.05	15	Oral 30	Quantitative AFM height measurements Andrea Cerreta Ecole Polytechnique Fédérale de Lausanne (EPFL), CH-1015 Lausanne, Switzerland
16.05-16.20	15	Oral 31	Height artifacts induced by water in air dynamic AFM Albert Verdaguer Campus de la UAB, Bellaterra, Spain
Coffee break: 16.20 - 16.40			
16.40-17.00	20	Oral 32	Harmonics and sub-harmonic excitation in ambient amplitude modulation atomic force microscopy Matteo Chiesa Masdar Institute of Science and Technology, Abu Dhabi
17.00-17.15	15	Oral 33	The High Speed AFM, a window into biomolecular dynamics Ignacio Casuso U1006 INSERM, Laboratory for Biological AFM, Marseille, France