



AFM BioMed Conference San Diego, December (13)14-17, 2014

After Barcelona 2007 (Spain), Monterey 2008 (USA), Red Island 2010 (Croatia), Paris 2011 (France) and Shanghai 2013 (China), AFM BioMed Conference has the pleasure to announce the 6th conference on AFM for Life Sciences and Nanomedicine, on December (13)14-17, 2014 (including training) in San Diego, California, USA.

**The conference is hosted by the University of California, San Diego (UCSD).
The venue is the Auditorium of Sanford Consortium for Regenerative Medicine.
The Conference is chaired by Professor Adam Engler, UCSD.**

PROGRAM

Topics	Chairs	Invited Speakers
Imaging	Clemens Franz I T, Karlsruhe, Germany	James J. De Yoreo PNNL, Richland, USA
Integrative AFM Developments	Robert Ros ASU, Tempe, USA	Tilman Schäffer University of Tübingen, Germany
Forces and Biomechanics	Hermann Gaub LMU Munich, Germany	Hongbin Li UBC, Vancouver, Canada
Biomedical Applications	James Gimzewski UC Los Angeles, USA	Hans Oberleithner Münster University, Germany

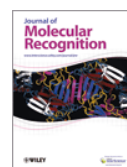
Organizing Committee

Pierre Parot	CEA Marcoule, France
Jean-Luc Pellequer	CEA Marcoule, France
Daniel Navajas	University of Barcelona - IBEC, Spain
Sanjay Kumar	UC Berkeley, USA
Vesna Svetličić	Rudjer Boskovic Institute, Zagreb, Croatia
Simon Scheuring	INSERM, Aix-Marseille Université, France
Jun Hu	Shanghai Institute of Applied Physics, Shanghai, China
Adam Engler	UC San Diego, USA



<http://www.afmbiomed.org>



UC San Diego



Saturday December 13th 2014

10:00	<div style="text-align: center;">  <p>Workshop 1</p> <p>Sanford Consortium Room 1013A/B: Ian Armstrong</p> </div> <p>The Dimension FastScan-Bio AFM allows direct visualization of biomolecules with an unprecedented combination of spatial and temporal resolution. The FastScan AFM is easier to use than ever before with innovative software that allows image canvas pan and zoom, and image stamping to quickly get to an area of interest. A slider bar facilitates scan rate control without the need of multiparametric adjustment to enable the user to capture dynamic events. Nano-tracking software continuously tracks an object to remain in the scanning field of view to compensate for either intrinsic or extrinsic sample movement. Realtime on-board data manipulation allows the user to create movies whilst they are scanning to see immediate results. These features and more will be demonstrated on Origami DNA samples courtesy of Dr. Masudur Rahman and Dr. Michael Norton of Marshall University.</p>
12:00	Lunch
14:00	<div style="text-align: center;">  <p>Workshop 2</p> <p>Sanford Consortium Room 1013A/B: Andrea Slade</p> </div> <p>Our latest BioScope AFM is the perfect integration of AFM and inverted light microscopy. It incorporates Bruker's latest Peak Force Tapping innovations including the new nanomechanics package, which significantly expands mechanobiology applications into a lower modulus range covering live cells and tissues. With its open access design, and bio friendly features and accessories, the latest BioScope AFM is the most integrated and easiest to use life science AFM available. The workshop will include a real-time demonstration of the functional integration of light microscopy techniques with AFM in order to conduct optically guided, high-resolution mapping of both the structural and mechanical properties of mammalian cells.</p>
16:00-18:00	Conference Registration / Poster Installation

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All the scientific sessions will happen in the
Roth Auditorium of Sanford Consortium for Regenerative Medicine.

Sunday Dec 14th 2014 - DAY 1

8:00	Registration / Poster Installation	
8:45	Welcome address and Conference Introduction Adam J. Engler, Conference Chair Shu Chien, Director of IEM	
9:00	Invited Lecture: "Using in situ AFM to understand how proteins assemble into ordered structures that direct the formation of mineralized tissues" James J. De Yoreo, Pacific Northwest National Laboratory, Richland, WA, USA	
9:30	"Marine polysaccharide networks: self-assembly vs. self-organization revealed by atomic force microscopy" Vesna Svetličić, Ruđer Bošković Institute, Zagreb, Croatia	
9:50	"Protein-protein and Protein-membrane interaction of Annexin-A5" Atsushi Miyagi, INSERM, Université Aix-Marseille, Marseille, France	
10:10	"Imaging electrostatic charge distribution in biomembranes using low oscillation Dynamic Atomic Force Microscopy" Jaime Colchero, Universidad de Murcia, Madrid, Spain	
10:30	Coffee Break	
10:50	"Probing the compressibility of tumor cell nuclei by combined atomic force-confocal microscopy" Marina Krause, Radboud University Nijmegen Medical Centre, Nijmegen, The Netherlands	
11:10	"Probing of antigens on malaria infected erythrocytes using protein-antibody affinity based molecular force spectroscopy" Himanshu Singh, National University of Singapore, Singapore	
11:20	"High-Speed Atomic Force Microscopy of ESCRT protein assembly" Lorena Redondo-Morata, INSERM, Aix-Marseille Université, Marseille, France	
11:30	"Applying image registration technique to construct 3D object from topologic images" Seungryong Cho, KIAS, Republic of Korea	
11:40*	"Atomic Force Microscopy of Protein Translocation Machinery in Supported Lipid Bilayers" R.R. Sanganna Gari, University of Missouri-Columbia, Columbia, MO, USA	
11:50	"Effects of Carbon Nanotubes on the Aggregation of A-beta Peptides" Dongdong Lin, Fudan University, Shanghai, China	

12:00	Lunch Break POSTER SESSION 1	
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13:30	Invited Lecture: "From Nanomechanics towards Medical Diagnosis" Hans Oberleithner, Münster University, Germany	
14:00	"CAT (Confocal-AFM-TIRF) Microscopy as Novel Tool for E-Cadherin Knockdown Analysis in Cancer Cells" Stefano Loporatti, NNL-Istituto Nanoscienze CNR, Lecce, Italy	
14:20	"Fibrinogen-erythrocyte binding as biomarker of increased cardiovascular risk. An atomic force microscopy study." Ana Filipa Guedes, Universidade de Lisboa, Lisbon, Portugal	
14:40	"In vitro guidance of developing neural networks" H. Dermutz, ETH Zürich, Zürich, Switzerland	
15:00	Coffee Break	
15:30	"Human erythrocytes adapt to mechanical stress by regulation of cell volume and cell elasticity" Hermann Schillers, University of Münster, Münster, Germany	
15:50	"Cancer Metastasis in Bone: Investigating the Role of Cancer Cell Interaction with Bone Matrix Proteins and Mesenchymal Stem Cells on the Single Cell Level" Stefanie Sudhop, Munich University of Applied Sciences, Munich, Germany	
16:10*	"Cartilage Morphogenesis: Investigation of Cartilage Structure and Mechanical Properties by AFM." Carina Prein, Ludwig-Maximilians-University, Munich, Germany	
16:20	"Three Biomedical Applications of Atomic Force Microscopy" Etienne Dague, CNRS, Toulouse, France	

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16:30	"Study of blocking effect on T-cell by Atomic Force Microscopy" Hueih-Min Chen, National Nano Device Laboratories, Hsinchu, Taiwan	
17:00	WELCOME PARTY At the Sanford Consortium	

* indicates a short talk that will also be presented as a poster

Monday Dec 15th 2014 - DAY 2

9:00	Invited Lecture: "Folding and Unfolding Mechanism of the Metalloprotein Rubredoxin: a Single Molecule Force Spectroscopy Perspective." Hongbin Li , University of British Columbia, Vancouver, Canada	
9:30	"The elastic and structural properties of ribonucleotide embedded short DNA" Hsiang-Chih Chiu , National Taiwan Normal University, Taipei, Taiwan	
9:50	"Feeling what cells feel: Using the AFM to mimic cell mechano-sensing" Alexander Fuhrmann , UC San Diego, La Jolla, CA, USA	
10:10	"Atomic force microscopy can distinguish force-contraction properties of human pluripotent stem cell-derived cardiomyocytes" Martin Pesl , Masaryk University, Brno, Czech Republic	
10:30	Group Photo	
10:50	Coffee Break	
11:20*	"AFM time-dependent material mechanical properties characterization for stem cell culture substrate" Valeria Panzetta , Italian Institute of Technology, Naples, Italy	
11:30	"Investigating the Influence of LRP-1 Silencing on the Migratory potential of FTC-133 Cancer Cells by Dynamic Cell Studies and Atomic Force Microscopy" Anthony Le Cigne , University of Reims Champagne-Ardenne, Reims, France	
11:40*	"Biomechanics of articular cartilage - friction and wear at the micro-scale" Joanna M. Urban , Technical University of Munich, Garching, Germany	
11:50*	"Tension predominates the nanomechanical behavior of cells probed by Torsional Harmonic AFM" Nicola Mandriota , Columbia University, New York, NY, USA	
12:00*	"Single-molecule force spectroscopy on oligorotaxane foldamers" Damien Sluysman , University of Liège, Liège, Belgium	
12:10*	"The binding force of the staphylococcal adhesion SdrG is remarkably strong" Philippe Herman-Bausier , Université catholique de Louvain, Louvain-la-Neuve, Belgium	
12:20	"The interplay between cholesterol, AB(1-42) and lipid phase domains determines membrane failure in complex model systems" Silvia Seghezza , Istituto Italiano di Tecnologia, Genova, Italy	
12:30*	"Lipid preference of lactose permease: combining AFM and FS with FRET measurements" Jordi H. Borrell , Universitat de Barcelona, Barcelona, Spain	
12:40*	"Dynamics and pH-dependence of Ag43 adhesins self-association probed by Atomic Force Spectroscopy" Grégory Francius , Université de Lorraine, Villers-lès-Nancy, France.	
13:00	Lunch Break POSTER SESSION 2	
14:30	Invited Lecture: "Cell mechanics by scanning ion conductance microscopy" Tilman Schäffer , University of Tübingen, Tübingen, Germany	
15:00	"Fast Stiffness Mapping of Cells Using High-Bandwidth Atomic Force Microscopy" Manish J. Butte , Stanford University, Palo Alto, CA, USA	
15:20	"AFM Nanodynamics a complementary tool to conventional Micromechanical AFM-contact assessment for time dependent biomaterial" Mojtaba Azadi , MIT, Cambridge, MA, USA	
15:40	"Cellular adaptive response to mechanical signaling studied by integrated optical and atomic force microscopy" Andreea Trache , Texas A&M University, College Station, TX, USA	
16:00	Coffee Break	
16:30	"A 3D-Printed AFM System with Piezotube and Electromagnetic Actuators for Biomedical Applications" Hamdi Torun , Bogazici University, Istanbul, Turkey	
16:40*	"Improved Single Molecule Force Spectroscopy using Micromachined Cantilevers" Thomas T. Perkins , National Institute of Standards and Technology, Boulder, CO, USA	
16:50*	"Uncovering Bacterial Phenotypic Heterogeneity by Combined Time-Lapse Atomic Force and Optical Microscopy" Haig Alexander Eskandarian , Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland	
17:00*	"Correlative Light Atomic Force Electron Microscopy (CLAFEM): combining force measurements to CLEM" Frank Lafont , Institut Pasteur, University of Lille, Lille, France	

* indicates a short talk that will also be presented as a poster

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Tuesday Dec 16th 2014 - DAY 3

9:00	Plenary Lecture: "Atomic Force Microscopy of cells as a Diagnostic for Cancer, cancer prevention and detection of chemo-resistance" James Gimzewski, University of California, Los Angeles, CA, USA	
9:30	"Fibrinogen-dependent cell-cell adhesion of erythrocytes assessment by AFM-based force spectroscopy" Ana Filipa Guedes, Universidade de Lisboa, Lisbon, Portugal	
9:50	"The overexpression of Lamin B1 in autosomal dominant leukodystrophy influences the mechanical properties of cell nuclei" Claudio Canale, Istituto Italiano di Tecnologia, Genova, Italy	
10:10	"Shear dependence of von Willebrand Factor's interactions with Factor VIII and ADAMTS13 demonstrated at single molecular level by AFM" Klaus Bonazza, Vienna University of Technology, A-1060 Vienna, Austria	
10:30	Coffee Break	
10:50	"In Vivo Lung Elastance And Stiffness Of The Decellularized Lung In A Murine Model Of Marfan Syndrome" Daniel Navajas, Universitat of Barcelona, Barcelona, Spain	
11:10*	"Are marine polysaccharide gels harvesting silica?" Galja Pletikapić, Ruđer Bošković Institute, Zagreb, Croatia	
11:20	"Obtention and characterization of acellular myocardial scaffold for cardiac tissue engineering" A. Bayes-Genis, Germans Trias i Pujol University Hospital, Badalona, Spain	
11:30*	"T-lymphocyte adhesion forces and mechanotransduction modulated by activation with TNF" Qian Li, University of Kiel, Kiel, Germany	
11:40*	"Unravelling of a mechanism of resistance to colistin in Klebsiella pneumoniae thanks to Atomic Force Microscopy" Cécile Formosa, Université de Toulouse, Toulouse, France	
11:50*	"Inhibition of host-pathogen interactions in cystic fibrosis The role of lectin-glycoconjugates interaction" Magali Phaner-Goutorbe, Université de Lyon, Lyon, France	
12:00	Lunch Break POSTER SESSION 3	
13:30	Plenary Lecture: "Studying early stages of fibronectin fibrillogenesis in living cells by atomic force microscopy" Clemens Franz, Karlsruhe Institute of Technology, Germany	
14:00	"Structural Analysis of Recombination Mediator Protein Rad52 by Atomic Force and Electron Microscopy" Jarmila Mlcouskova, Masaryk University, Brno, Czech Republic	
14:20	"Imaging and Three-Dimensional Reconstruction of Chemical Groups in a Protein Complex using DNA Labels" Duckhoe Kim, Columbia University, New York, NY, USA	
14:50	"AFM-based approaches to high resolution imaging and electrical recording of amyloid proteins" Fernando Terán Arce, UC San Diego, La Jolla, CA, USA	
15:10	Coffee Break	
15:40	"Single-molecule reconstruction of DNA secondary structure by atomic force microscopy" Alice Pyne, University College London, London, UK	
16:00	The adsorption and disassembly of amelogenin nanospheres onto hydroxyapatite surfaces Jinhui Tao, Pacific Northwest National Laboratory, Richland, WA, USA	
16:20	"AFM mapping of the role of the Fast Kinetics of highly toxic Alzheimer's disease related Pyroglutamate-Modified Amyloid-B Oligomers in Membrane Binding and Membrane Permeability" Joon Lee, UC San Diego, La Jolla, CA, USA	
16:40*	"Dynamics of Toxins in Non Supported Lipid Bilayers by high-speed Atomic Force Microscopy" Ignacio López de Blas, INSERM, Université Aix-Marseille, Marseille, France	
18:00	GALA BANQUET Birch Aquarium at Scripps	

* indicates a short talk that will also be presented as a poster

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Wednesday Dec 17th 2014 - DAY 4

9:00	Plenary Lecture: "Mechanical Nanotomography of Cells Invading 3D-Matrices" Robert Ros, Arizona State University, Tempe, AZ, USA	
9:30	"Cardiac cell mapping by Simultaneous Electrical and Mechanical Probing" Casper Clausen, DTU Nanotech	
9:50	"How to overcome the effect of spurious resonances on the quantification of tip-sample interactions" Mario S Rodrigues, Universidade de Lisboa, Lisbon, Portugal	
10:10	"Force-controlled patch-clamp using atomic force microscopy" Dario Ossola, ETH Zurich, Zurich, Switzerland	
10:30	Coffee Break	
10:50	"Contact Resonance Force Microscopy of Soft Materials in Liquid" Allison B. Churnside, National Institute of Standards and Technology, Boulder, CO, USA	
11:10	"AFM Circular Mode: A new powerful tool for applications in NanoBiotechnology" Olivier Noel, Université du Maine, Le Mans, France	
11:30	"New Conducting Atomic Force Microscopy for Simultaneous Electrical Recording and Imaging of Biomolecules" Brian Meckes, UC San Diego, La Jolla, CA, USA	
11:50	Lunch Break POSTER SESSION 4	
13:00	"Impact of hydrostatic pressure on endothelial nanomechanics" Valeria Prystopiuk, Institute of Physiology II, Münster, Germany	
13:20	"Parkin affects the biomechanical properties of human fibroblasts: a CAT microscopy study" Stefano Loporatti, Istituto Nanoscienze CNR, Lecce, Italy.	
13:40	"Local and global cell mechanics depend on adhesion geometry" Annafrancesca Rigato, INSERM, Université Aix-Marseille, Marseille, France	
14:00	"Influence of cellular adhesiveness on the formation of cell boundaries" Steve Pawlizak, University of Leipzig, Leipzig, Germany	
14:20	"Impact of the Actin Cytoskeleton on the Mechanical Properties of Cells and Tissues" Celine Heu, University of New South Wales, Sydney, Australia	
14:40	"Dynamic coupling of ALCAM to the actin cortex strengthens cell adhesion to CD6" Joost te Riet, Radboud UMC, Nijmegen, The Netherlands	
15:00	"Nanomechanical and topographical imaging of living cells by Atomic Force Microscopy with colloidal probes" Alessandro Podestà, Università degli Studi di Milano, Milano, Italy	
15:30	Awards Ceremony Announcement of AFM BioMed Conference 2016	

Poster Presentation List

Board #	Title	Presenter
1*	"Uncovering Bacterial Phenotypic Heterogeneity by Combined Time-Lapse Atomic Force and Optical Microscopy"	Haig Alexander Eskandarian Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland
2	"High-speed force mapping on living cells with a small-cantilever AFM"	Tilman Schäffer University of Tübingen, Tübingen, Germany
3*	"Correlative Light Atomic Force Electron Microscopy (CLAFEM): combining force measurements to CLEM"	Frank Lafont Institut Pasteur, University of Lille, Lille, France
4	"Non-contact imaging combining the Scanning Ion Conductance Microscopy and the Atomic Force Microscope"	Livie Dorwling-Carter ETH Zürich, Zürich, Switzerland
5	"Improved Single Molecule Force Spectroscopy using Micromachined Cantilevers"	Thomas T. Perkins National Institute of Standards and Technology, Boulder, CO, USA
6	"High-speed force mapping on living cells with a small-cantilever AFM"	Christoph Braunsmann University of Tübingen, Tübingen, Germany
7	"A sticky tale: Sample preparation technique determines cell surface receptor mobility and adhesion"	Thomas Mueller University of Birmingham
8*	"Dynamics of Toxins in Non Supported Lipid Bilayers by high-speed Atomic Force Microscopy"	Ignacio López de Blas, INSERM, Université Aix-Marseille, Marseille, France
9*	"Atomic Force Microscopy of Protein Translocation Machinery in Supported Lipid Bilayers"	R.R. Sanganna Gari University of Missouri-Columbia, Columbia, MO, USA
10	"Hydrophobic interaction governs unspecific adhesion of staphylococci"	Nicolas Thewes Saarland University, Saarbrücken, Germany
11*	"Tension predominates the nanomechanical behavior of cells probed by Torsional Harmonic AFM"	Nicola Mandriota Columbia University, New York, NY, USA
12*	"Single-molecule force spectroscopy on oligorotaxane foldamers"	Damien Sluysmans University of Liège, Liège, Belgium
13	"Polymeric Ultrasound Contrast Agents Mechanical Properties"	Baptiste Sarrazin CEA Saclay, Saclay, France
14*	"AFM time-dependent material mechanical properties characterization for stem cell culture substrate"	Valeria Panzetta Italian Institute of Technology, Naples, Italy
15*	"The binding force of the staphylococcal adhesion SdrG is remarkably strong"	Philippe Herman-Bausier Université catholique de Louvain, Louvain-la-Neuve, Belgium
16	"Elasticity of pulmonary arteries within human lung tissue: Application of AFM to study pulmonary arterial hypertension"	Delphine Sicard Mayo Clinic, Rochester, MN, USA
17*	"Dynamics and pH-dependence of Ag43 adhesins self-association probed by Atomic Force Spectroscopy"	Grégory Francius Université de Lorraine, Villers-lès-Nancy, France
18*	"Biomechanics of articular cartilage - friction and wear at the micro-scale"	Joanna M. Urban, Technical University of Munich, Garching, Germany
19*	"Lipid preference of lactose permease: combining AFM and FS with FRET measurements"	Jordi H. Borrell Universitat de Barcelona, Barcelona, Spain
21	"Investigating the Impact of Antigen Density on Antigen-antibody Binding Efficiency with AFM"	Bin Li Shanghai Institute Of Applied Physics, Shanghai, China
22*	"Are marine polysaccharide gels harvesting silica?"	Galja Pletikapić Ruđer Bošković Institute, Zagreb, Croatia
23*	"Unravelling of a mechanism of resistance to colistin in Klebsiella pneumoniae thanks to Atomic Force Microscopy"	Cécile Formosa Université de Toulouse, Toulouse, France
24*	"Inhibition of host-pathogen interactions in cystic fibrosis The role of lectin-glycoconjugates interaction"	Magali Phaner-Goutorbe Université de Lyon, Lyon, France

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25	"CFTR is involved in polyphenol-induced swelling of the endothelial glycocalyx"	Hermann Schillers University of Münster, Münster, Germany
26*	"Cartilage Morphogenesis: Investigation of Cartilage Structure and Mechanical Properties by AFM."	Carina Prein Ludwig-Maximilians-University, Munich, Germany
27	"AFM-based sarcolemmal surface analysis of living cardiomyocytes unveils unexpected mitochondrial shift in heart failure"	Véronique Lachaize CNRS, LAAS, Toulouse, France
28*	"T-lymphocyte adhesion forces and mechanotransduction modulated by activation with TNF"	Qian Li University of Kiel, Kiel, Germany

* indicates a short talk that will also be presented as a poster