

## Program

### Day 1

**Oct. 3 (Mon)**

16:00 – 21:00	Onsite Registration & Reception (3F)
18:30 – 21:00	Mixer (3F)

### Day 2

**Oct. 4 (Tue)**

8:40 – 8:50	Toshio Ando Kanazawa University, Japan	Opening Remarks	
<b>Session 1: Complex structures &amp; Cells, Chair: Yuri Korchev</b>			
8:50 – 9:20	Roderick Lim Univ. of Basel, Switzerland	Watching native nuclear pore complexes at work	1
9:20 – 9:40	Richard W. Wong Kanazawa University, Japan	High-speed atomic force microscopy visualization of the nuclear pores dynamics in colon cancer cells	2
9:40 – 10:00	Azuma Taoka Kanazawa University, Japan	A new look at the nanostructure of the outer surface of living <i>Proteobacteria</i> using the high-speed atomic force microscope	3
10:00 – 10:25	Bart Hoogenboom London Center for Nanotechnology, UK	Nanomechanical probing of polymer behaviour in the nuclear pore complex	4
10:25 – 10:45	Musashi Takenaka Kobe University, Japan	Cell surface protein mapping via force curve measurements	5
10:45 – 11:05	Coffee Break & Exhibition		
<b>Session 2: DNA and DNA binding proteins, Chair: Sandor Kasas</b>			
11:05 – 11:30	Hiroshi Sugiyama Kyoto University, Japan	Molecular imaging of dynamic motions of biomolecules using high-speed atomic force microscopy	6
11:30 – 11:50	Alice L. B. Pyne University College London, UK	Visualisation of DNA conformational changes <i>in situ</i> at nanometre resolution	7
11:50 – 12:10	Bin Li Shanghai Institute of Applied Physics / Chinese Academy of Sciences, China	Klenow Fragment (KF) activity observed with atomic force microscopy	8
12:10 – 12:30	Daisuke Noshiro, Kanazawa University, Japan	Formation of variety of oligomers of archaeal minichromosome maintenance protein observed by high-speed AFM	9
12:30 – 13:40	Lunch		
<b>Session 3: AFM plus &amp; Cantilevers, Chair: Georg Fantner</b>			
13:40 – 14:00	Ikuo Obataya JPK, Japan	Versatile imaging mode covering from molecular imaging to cell mechanics	10
14:00 – 14:25	Pierre-Emmanuel Milhiet INSERM / Univ. of Montpellier, France	Correlative atomic force-single molecule localization microscopy, a new approach to probe architecture of biological membranes at the nanoscale	11
14:25 – 14:50	Eric Lesniewska Univ. of Bourgogne, France	Investigation of murine norovirus infection on HS-AFM-SERS platform	12

## 4<sup>th</sup> Kanazawa Bio-AFM Workshop 2016

14:50 – 15:10	Gregory Francius CNRS / Univ. Lorraine	Antimicrobial effect of chromogranin A derivatives on planktonic and sessile <i>E. coli</i> cells investigated by AFM and FTIR	13
15:10 – 15:35	Sandor Kasas EPFL, Switzerland	Detecting life using AFM cantilevers	14
15:35 – 15:55	Seokbeom Kim Sogang University, Korea	Can hydrogel AFM cantilevers outperform silicon counterparts?	15
15:55 – 16:15	Coffee Break & Exhibition		
16:15 – 16:35	Hyonchol Kim National Institute of Advanced Industrial Science and Technology, Japan	Single cell manipulation using cup-shaped AFM chip for measurement of cell-cell interaction	16
<b>Session 4: Motor proteins, Chair: Toshio Ando</b>			
16:35 – 17:05	Zev Bryant Stanford University, USA	Controllable molecular motors engineered from myosin and RNA	17
17:05 – 17:30	Noriyuki Kodera Kanazawa University, Japan	ATP-free unidirectional walking of myosin V revealed by interactive high-speed atomic force microscopy	18
17:30 – 18:00	Kazuhiro Oiwa NICT, Japan	Motility and regulation of dyneins studied by means of the bottom-up strategy	19
18:00 – 18:20	Ryota Iino National Institutes of Natural Sciences, Japan	Intermediate states during the stepping motion of kinesin-1 revealed by high-speed single-molecule imaging with gold nanoprobe	20
18:20 – 18:40	Motonori Imamura Kanazawa University, Japan	The extent of unidirectional cooperativity in rotorless <i>Enterococcus hirae</i> V <sub>1</sub> -ATPase revealed by high-speed AFM	21
18:40 – 19:00	Exhibition		
19:00 – 21:00	Gala Dinner		

### Day 3 Oct. 5 (Wed)

<b>Session 5: SICM, Chair: Pierre-Emmanuel Milhiet</b>			
8:40 – 9:10	Yuri Korchev Imperial College London, UK	Biosensing with ion conductance microscopy	22
9:10 – 9:30	Yasufumi Takahashi Kanazawa University, Japan	Development of multifunction scanning ion conductance microscopy for single cell analysis	23
9:30 – 9:55	Futoshi Iwata Shizuoka University, Japan	Development of nanomanipulators based on scanning probe microscopes for single cell manipulations	24
9:55 – 10:15	Shinji Watanabe Kanazawa University, Japan	Development of high-speed scanning ion conductance microscopy for visualizing biological samples in action	25
10:15 – 10:35	Coffee Break & Exhibition		
<b>Session 6: Membranes &amp; Membrane proteins, Chair: Bart Hoogenboom</b>			
10:35 – 11:05	Simon Scheuring INSERM / Aix-Marseille Univ., France	High-speed atomic force microscopy with environmental control: Direct visualization of conformational changes in channels, transporters and membrane-associated proteins	26

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11:05 – 11:25	Ayumi Sumino University of Fukui, Japan	HS-AFM revealed blocking dynamics of a scorpion toxin on the KcsA potassium channel	27
11:25 – 11:45	Aleksandr Noy Lawrence Livermore National Laboratory, USA	Real-time dynamics of carbon nanotube porins in supported lipid membranes visualized by high-speed AFM	28
11:45 – 12:15	Yu-Ling Shih Academia Sinica, Taiwan	Protein-membrane interaction underlying a biological oscillator, the Min system of <i>Escherichia coli</i>	29
<b>Session 7: Force spectroscopy, Chair: Roderick Lim</b>			
12:15 – 12:35	Irene Revenko Asylum Research / Oxford Instruments, USA	Nanomechanical AFM techniques for biological samples and biomaterials	30
12:35 – 13:45	Lunch		
13:45 – 14:10	Peter Hinterdorfer Johannes Kepler Univ. Linz, Austria	Nanopharmacological force sensing reveals two ligand binding sites in monoamine transporters	31
14:10 – 14:35	Joon Won Park POSTECH, Korea	Quantification of DNA, RNA, protein biomarkers with AFM	32
14:35 – 14:55	Sandra Posch Johannes Kepler Univ. Linz, Austria	VWF polymorphism p.Phe2561Tyr increases the bond life-time to platelet receptor GPIIb/IIIa: A single molecule force spectroscopy study	33
14:55 – 15:15	Yoo Jin Oh Johannes Kepler Univ. Linz, Austria	Investigation of curli mediate bacterial adhesion using force spectroscopy	34
15:15 – 15:40	Takaharu Okajima Hokkaido University, Japan	Mapping elastic modulus of single cells and tissue in stable state and morphogenesis by atomic force microscopy	35
15:40 – 16:05	Zhifeng Shao Shanghai Jiao Tong Univ., China	Multiplexed high-force magnetic tweezers for high-throughput mechanical phenotyping of cells and tissue sections	36
16:05 – 16:25	Coffee Break & Exhibition		
<b>Session 8: High-speed AFM, Chair: Simon Scheuring</b>			
16:25 – 16:50	Takayuki Uchihashi Kanazawa University, Japan	Dynamic interaction between Kai proteins dependent on phosphorylation states of KaiC revealed by HS-AFM	37
16:50 – 17:10	Adrian P. Nievergelt EPFL, Switzerland	Formation of SAS-6 protein assembly imaged by high-speed off-resonance tapping atomic force microscopy	38
17:10 – 17:30	Takamitsu Haruyama Kanazawa University, Japan	Negatively charged lipids are an essential factor for functional switching of human 2-Cys peoxiredoxin II from peroxidase to molecular chaperone	39
17:30 – 17:55	Georg Fantner EPFL, Switzerland	Bacterial nanoscopy, a closer look into the growth and division of <i>M. smegmatis</i>	40
17:55 – 18:15	Tohru Minamino Osaka University, Japan	Direct observation of ring formation of the C-terminal cytoplasmic domain of a flagellar type III export gate protein FlhA by high-speed atomic force microscopy	41
18:15 – 18:35	Brett Hartman Boston University, USA	High-speed AFM through non-raster scanning and high-speed scanning	42
19:00 – 21:00	Going out to town, Dinner (Invited Speakers)		

## Day 4

Oct. 6 (Thu)

<b>Session 9: FM-AFM, Chair: Peter Hinterdorfer</b>			
9:00 – 9:30	Takeshi Fukuma Kanazawa University, Japan	Atomic-resolution imaging of calcite dissolution process at 1 sec/frame by high-speed frequency modulation atomic force microscopy	43
9:30 – 9:50	Uri S. Sivan Technion, Israel	The hydrophobic interaction probed by a high-resolution FM-AFM New insight into an old elusive puzzle	44
9:50 – 10:10	Kenichi Umeda University of Tokyo, Japan	Molecular-scale local hydration structures on heterogeneously charged surfaces by FM-AFM and MD calculation	45
<b>Session 10: HS-AFM, Chair: Zhifeng Shao</b>			
10:10 – 10:30	Takahiro Nakayama Kanazawa University, Japan	Nano-space video imaging of fibrous assembly of protein and relevant enzyme molecule dynamics	46
10:30 – 10:50	Atsushi Miyagi INSERM / Aix-Marseille Univ., France	Temperature controlled and force controlled high-speed atomic force microscopy	47
10:50 – 11:10	Coffee Break		
11:10 – 11:30	Hiroki Konno Kanazawa University, Japan	Dynamic processes of oligomer and fibril formation by yeast prion Sup35 observed by high-speed atomic force microscopy	48
11:30 – 11:50	Maxime Ewald Université de Reims, France	Observations by high-speed atomic force microscopy of the toxicity of amyloid peptide involved in Alzheimer degeneration	49
11:50 – 12:10	Feng-Yueh Chan Academia Sinica, Taiwan	Astigmatic high speed AFM tip engagement based on phase estimation	50
12:10 – 12:35	Toshio Ando Kanazawa university, Japan	High-speed AFM visualization of structure, function and dysfunction of intrinsically disordered proteins	51
12:35	Free time or Goodbye		
15:00	Bus departure for Kanazawa University (from KKR Hotel Kanazawa)		
15:30 – 17:00	Lab tours		
17:00	Bus departure for KKR Hotel Kanazawa		