

14th International Colloquium on Scanning Probe Microscopy

薄膜・表面物理分科会特別研究会「走査型プローブ顕微鏡（20）」

December 7-9, 2006

Atagawa Heights, Shizuoka, Japan

organized by

Thin Film and Surface Physics Division of Japan Society of Applied Physics

sponsored by

Japan Society of Applied Physics

<http://dora.bk.tsukuba.ac.jp/event/ICSPM14/>

7-Dec (Thu)	8-Dec (Fri)	9-Dec (Sat)
	Session 5 (8:00-9:50)	Session 9 (8:00-10:10)
	8:00 S5-1s Rief M (Invited-S)	8:00 S9-1i Nishino T (Invited)
	8:35 S5-2 Kageshima M	8:25 S9-2 Akai-Kasaya M
	8:50 S5-3 Watanabe K	8:40 S9-3 Fujii S
	9:05 S5-4 Shinozaki Y	8:55 S9-4 Suzuki S
	9:20 S5-5 Sumitomo K	9:10 S9-5 Fukidome H
	9:35 S5-6 Okajima T	9:25 S9-6 Zhang YF
	Break (9:50-10:05)	9:40 S9-7 Sasahara A
	Session 6 (10:05-11:40)	9:55 S9-8 Clair S
	10:05 S6-1s Hinterdorfer P (Invited-S)	Break (10:10-10:25)
	10:40 S6-2 Kawahara T	Session 10 (10:25-12:25)
	10:55 S6-3 Kimura K	10:25 S10-1i Hasegawa S (Invited)
	11:10 S6-4 Kobayashi N	10:50 S10-2 Satoh N
	11:25 S6-5 Yamada TK	11:05 S10-3 Takihara M
	Lunch (11:40-13:00)	11:20 S10-4 Shin H-J
	Session 7 (13:00-15:00)	11:35 S10-5 Tanaka R
	13:00 S7-1s Garcia R (Invited-S)	11:50 S10-6s Zhu C (Invited-S)
	13:35 S7-2i Muraoka M (Invited)	Closing (12:25-12:30)
	14:00 S7-3 Sugawara Y	
	14:15 S7-4 Schuler J	
	14:30 S7-5 Nishida S	
	14:45 S7-6 Fujinami S	
	Break (15:00-15:15)	
	Session 8 (15:15-18:00)	
	15:15 S8-1s Kalinin SV (Invited-S)	
	15:50 S8-2i Kawata S (Invited)	
	16:15 S8-3 Naruse N	
	16:30 S8-4 Uemura T	
	16:45 S8-5 Kim J	
	17:00 S8-6 Matsumoto T	
	17:15 S8-7 Terada Y	
	17:30 S8-8 Ansari ZA	
	17:45 S8-9 Sawaya S	
	Banquet (19:00-)	
Registration (12:00-14:00)		
Opening (14:00-14:05)		
Session 1 (14:05-15:35)		
14:05 S1-1s Heinrich AJ (Invited-S)		
14:40 S1-2i Aono M (Invited)		
15:05 S1-3 Ohara M		
15:20 S1-4 Sugimoto Y		
Break (15:35-15:50)		
Session 2 (15:50-17:10)		
15:50 S2-1s Yeom HW (Invited-S)		
16:25 S2-2 Gandopadhyay S		
16:40 S2-3 Murata Y		
16:55 S2-4 Nakazawa Y		
Session 3 (17:10-18:10)		
Exhibitor's Presentation		
Dinner (18:15-19:45)		
Session 4 (19:45-21:30)		
Poster Presentation		

December 7 (Thursday)

12:00-14:00 Registration

14:00-14:05 Opening (H. Shigekawa, M. Yoshimura)

14:05-15:35 Session 1 (Yeom, H.W.)

Oral presentations: INVITED-S (30+5min), INVITED (20+5min), GENERAL (10+5min)

S1-1s (INVITED-S)

Atomic-scale magnetism through the eyes of STM

A.J. Heinrich, C.F. Hirjibehedin and C.P. Lutz (IBM Almaden Res. Center)

S1-2i (INVITED)

Nanoscale Electrical Conduction

M. Aono (NIMS)

S1-3

Single molecule manipulation by vibrational excitation

M. Ohara^{1,2}, Y. Kim¹ and M. Kawai^{1,2} (¹RIKEN, ²Univ. of Tokyo)

S1-4

Single-atom chemical identification using AFM

Y. Sugimoto¹, P. Pou², M. Abe^{1,3}, P. Jelinek⁴, R. Perez², S. Morita¹ and O. Custance¹ (¹Osaka Univ., ²Autonoma de Madrid Univ., ³JST PRESTO, ⁴Academy of Sciences)

15:35-15:50 Break

15:50-17:10 Session 2 (Heinrich, A.)

S2-1s (INVITED-S)

Quasi-1D physics of atomic wires on Si surfaces

H.W. Yeom (Yonsei Univ.)

S2-2

Hetero-epitaxy of Ge on Si(110) studied by STM

S. Gangopadhyay, M. Yoshimura and K. Ueda (Toyota Technological Inst.)

S2-3

Imaging Sidewall Surfaces of an ErSi₂ Nanocluster on Si(100) by Scanning Tunneling Microscope with a Metal-coated Carbon Nanotube Tip

Y. Murata, M. Kishida, K. Motoyoshi, S. Honda and M. Katayama (Osaka Univ.)

S2-4

Gate Control of Electronic Transport in Defective Carbon Nanotubes

Y. Nakazawa^{1,2}, T. Yamamoto^{1,2} and K. Watanabe^{1,2} (¹Tokyo Univ. of Science, ²CREST-JST)

17:10-18:10 Session 3 (Tomitori, M.)

-- Exhibitor's Presentation --

S3-1

Nanotechnologies by Agilent Technologies

Agilent Technologies Japan Ltd.

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S3-2

Pencil-type scanning probe microscope for combined instruments
FUJI IMVAC, INC.

S3-3

Intoroduction of JEOL's Scanning Probe Microscope
JEOL Ltd.

S3-4

New SPM Products by Veeco 2006
Nihon Veeco K.K.

S3-5

OLYMPUS Micro Cantilevers since 1991
OLYMPUS CORPORATION

S3-6

New Lineup of RIBM SPM products: SXM-Advance, SXM-Basic, NanoLiveVision
Research Institute of Biomolecule Metrology Co., Ltd.

S3-7

A New SPM Equipment SPM-9600 Model
SHIMADZU CORPORATION

S3-8

Introduction of handling products of Tec Corporation
Tec Corporation

S3-9

AFM cantilever by Tomoe Engineering
Tomoe Engineering Company

S3-10

Introduction of SPM & SPM-based advanced systems
Toyo Corporation

S3-11

Ultimate Nanoprobing in UHV: Four independent Scanning Tunneling Microscopes navigated by High Resolution UHV SEM
ULVAC-PHI

S3-12

New SPM products of Unisoku and RHK technology
UNISOKU Co.,Ltd.

18:15-19:45 Dinner

19:45-21:30 Session 4 (Takeuchi, O., Nakajima, K.) -- Poster Presentation --

December 8 (Friday)

8:00-9:50 Session 5 (Hinterdorfer, P.)

S5-1s (INVITED-S)

Mechanics of Protein Folding and Unfolding
M. Rief (Techn. Univ. Germany)

S5-2

Viscoelastic responses of single biopolymer investigated with magnetically-modulated atomic force microscopy
Y. Nishihara¹, T. Chikamoto¹, M. Kageshima^{1,2}, Y. Hirata³, T. Inoue³, S. Kimura⁴, Y. Naitoh¹ and Y. Sugawara¹ (¹Osaka Univ., ²JST-PRESTO, ³National Inst. of Adv. Industrial Sci. and Technol., ⁴Chiba Univ.)

S5-3

Non-equilibrium stretching of a single polymer chain
K. Watanabe, N. Ohno, K. Nakajima and T. Nishi (Tokyo Tech)

S5-4

Optimization of membrane protein attachment to substrate for imaging the conformational changes by atomic force microscopy
Y. Shinozaki¹, K. Sumitomo¹, K. Inoue² and K. Torimitsu¹ (¹NTT BRL, ²Kyushu Univ.)

S5-5

Atomic force microscopy of the purple membrane suspended over nanoholes
K. Sumitomo¹, H. Miyashita¹, K. Furukawa¹, C. Ramanujan², H. Nakashima¹, M. Kobayashi¹, J. F. Ryan² and K. Torimitsu¹ (¹NTT BRL, ²Univ. of Oxford)

S5-6

Nanorheology of living cells investigated by AFM
T. Okajima, M. Tanaka, S. Tsukiyama, T. Kadowaki, S. Yamamoto, M. Shimomura and H. Tokumoto (Hokkaido Univ.)

9:50-10:05 Break

10:05-11:40 Session 6 (Rief, M.)

S6-1s (INVITED-S)

Single Molecule Recognition Force Microscopy
P. Hinterdorfer (Johannes Kepler University Linz)

S6-2

Single molecule recognition imaging by frequency shift detection in liquids
T. Kawahara, T. Matsumoto, H. Hokonohara and T. Kawai (ISIR, Osaka Univ.)

S6-3

Hydration Force Measurements by Frequency Modulation Dynamic Force Microscopy
K. Kimura¹, T. Horiuchi¹, K. Kobayashi², K. Matsushige^{1,2} and H. Yamada^{1,3} (¹Kyoto Univ., ²IIC, Kyoto Univ., ³CREST)

S6-4

High sensitive phase modulation atomic force microscopy with Q-control technique
N. Kobayashi¹, Y. J. Li^{1,2}, Y. Naitoh^{1,2}, M. Kageshima^{1,2} and Y. Sugawara^{1,2} (¹Osaka Univ., ²CREST-JST)

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S6-5

AFM study of α -helix-forming peptides

G. Aoki, T.K. Yamada, S. Kojima and T. Mizoguchi (Gakushuin Univ.)

11:40-13:00 Lunch**13:00-15:00 Session 7 (Kalinin, S.V.)****S7-1s (INVITED-S)**

Nanofabrication, Nanomechanics and Compositional Mapping in force microscopy

R. Garcia (Instituto de Microelectronica de Madrid, CSIC)

S7-2i (INVITED)

Linear and nonlinear contact resonance in atomic force acoustic microscopy

M. Muraoka (Akita Univ.)

S7-3

The Origin of Anomalous Dissipation Contrast on Si(001) Surface Observed with NC-AFM at 5K

Y. Sugawara, H. Nomura, Y. Naitoh and M. Kageshima (Osaka Univ.)

S7-4

Atomic resolution AFM on NaCl at 5 K using the QPlus sensor

M. Maier, A. Bettac, J. Schuler, M. Wittmann and A. Feltz (Omicron NanoTechnology GmbH)

S7-5

Atomic resolution frequency-modulation atomic force microscopy in liquid

S. Nishida¹, D. Kobayashi¹, T. Sakurada² and H. Kawakatsu² (¹JST, ²IIS, Univ. of Tokyo)

S7-6

Dynamic Response of Force-modulation Method on Polymer Surfaces

S. Fujinami, K. Nakajima and T. Nishi (Tokyo Tech)

15:00-15:15 Break**15:15-18:00 Session 8 (Garcia, R.)****S8-1s (INVITED-S)**

Electromechanics on the nanoscale: A new dimension in Scanning Probe Microscopy

S.V. Kalinin (Oak Ridge National Laboratory)

S8-2i (INVITED)

Tip-pressurized Near-Field Raman Microscopy

S. Kawata^{1,2} (¹Osaka Univ., ²RIKEN)

S8-3

Fourier transform photo-absorption spectroscopy by detecting scanning tunneling microscope current

N. Naruse^{1,2}, Y. Mera^{1,2}, Y. Nakamura^{1,2}, M. Ichikawa^{1,2} and K. Maeda^{1,2} (¹Univ of Tokyo, ²CREST-JST)

S8-4

Plasmon-enhanced forbidden fluorescence from phthalocyanine molecules induced by a scanning tunneling microscope

T. Uemura^{1,2}, T. Nakano¹, M. Akai-Kasaya^{1,3}, A. Saito^{1,4,5}, M. Aono^{2,4} and Y. Kuwahara^{1,4,5} (¹Osaka Univ., ²Nano System Functionality Center, NIMS, ³PRESTO, JST, ⁴ICORP, JST, ⁵Harima Inst., RIKEN)

S8-5

Optical characterization of single polymer nanotubes using

D. C. Kim¹, R. Kim¹, D. H. Park², J. Joo² and J. Kim¹ (¹Univ. of Incheon, ²Korea Univ.)

ICPSM14 Program, Dec 7-9, 2006, Atagawa, Japan

S8-6

Time-resolved electrostatic force detection

T. Matsumoto^{1,2} and T. Kawai^{1,2} (¹ISIR, Osaka University, ²CREST-JST)

S8-7

Ultrafast carrier dynamics in optically excited semiconductors probed by time-resolved scanning tunneling microscopy

Y. Terada, M. Aoyama, H. Kondo, N. Ebisawa, O. Takeuchi and H. Shigekawa (Univ. of Tsukuba, CREST-JST)

S8-8

Modification of an AFM Si tip by Pt sputtering and its characterization

Z.A. Ansari¹, T. Arai² and M. Tomitori¹ (¹JAIST, ²Univ. of Tsukuba, PRESTO-JST)

S8-9

Mechanical Vibration Properties of Cantilevered Carbon Nanotubes

S. Sawaya¹, Y. Nakayama^{1,2,3} and S. Akita^{1,3} (¹Osaka Pref. Univ., ²Osaka Univ., ³CREST-JST)

19:00- Banquet

December 9 (Saturday)

8:00-10:10 Session 9 (Okajima, T.)

S9-1i (INVITED)

Molecular Tips for "Intermolecular Tunneling Microscopy"
T. Nishino, T. Ohshiro and Y. Umezawa (Univ. of Tokyo)

S9-2

Electrical Transport through Polydiacetylene Wires Using Nanogap Flat Electrodes
M. Akai-Kasaya^{1,2}, N. Ogami², A. Saito², M. Aono³ and Y. Kuwahara² (¹PREST-JST, ²Osaka Univ., ³NIMS)

S9-3

Conductance and force in single molecular junctions of p-phenylene derivatives
S. Fujii and M. Fujihira (Tokyo Inst. of Tech.)

S9-4

Acquisition of a Peak Signal with a High S/N ratio during XANAM measurement
S. Suzuki^{1,4}, M. Nakamura², K. Kinoshita², Y. Koike³, K. Fujikawa², W.-J. Chun^{1,4}, M. Nomura³ and K. Asakura¹ (¹CRC Hokkaido-Univ., ²Hokkaido Univ., ³PF-KEK, ⁴CREST-JST)

S9-5

Control of Self-Assembly of Fullerene Programmed by Direct Thiolation and Substrate Interaction
H. Fukidome, M. Yoshimura, K. Ueda, M. Sekido and M. Ohon (Nano High-Tech Res. Center, Toyota Technol. Inst.)

S9-6

Manipulation of BDA molecules deposited on Au(111) surface by tunneling electron injection
Y.F. Zhang¹, T. Osada¹, N. Zhu¹, Y. Sainoo^{1,2} and T. Komeda^{1,2} (¹IMRAM, Tohoku Univ., ²JST-CREST)

S9-7

SPM analysis of individual dye molecules on TiO₂(110)
A. Sasahara^{1,2}, M. Ikeda², N. Koide³, L. Han³ and H. Onishi² (¹JST, ²Kobe Univ., ³Sharp Corp.)

S9-8

Single wall carbon nanotubes at metal surfaces
S. Clair, Y. Kim and M. Kawai (RIKEN)

10:10-10:25 Break

10:25-12:25 Session 10 (Kobayashi, K.)

S10-1i (INVITED)

Multi-probe SPM, Present and Future
S. Hasegawa (Univ. of Tokyo)

S10-2

Multi-probe atomic force microscopy using piezoelectric cantilevers
N. Satoh¹, E. Tsunemi¹, K. Kobayashi², S. Watanabe³, T. Fujii³, K. Matsushige¹ and H. Yamada^{1,4} (¹Kyoto Univ., ²Kyoto Univ(IIC), ³Nikon Corporations, ⁴CREST/JST)

S10-3

Photovoltage Mapping on Polycrystalline Silicon Solar Cells by KFM with Piezo-resistive Cantilever
M. Takihara¹, T. Igarashi¹, T. Ujihara² and T. Takahashi¹ (¹Univ. of Tokyo, ²Nagoya Univ.)

S10-4

Electronic Structure of Fe nanodots on MgO thin film

H.-J. Shin, S.H. Kim, H.J. Yang and Y. Kuk (Seoul Nat'l Univ.)

S10-5

Probing the electronic characteristics of single bionanodot

R. Tanaka¹, A. Miura¹, Y. Uraoka¹, T. Fuyuki¹ and I. Yamashita^{1,2} (¹NAIST, ²ATRL Matsushita Electric)

S10-6s (INVITED-S)

Structural bases of catch bonds

C. Zhu (Georgia Inst. of Technology)

12:25-12:30 Closing (H. Onishi)
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December 7 (Thursday)

20:00-21:30 Session 4 (Takeuchi, O., Nakajima, K.)
-- Poster Session --

S4-1p

Ab initio Green's function study on NMR-STM simulation of hydrogen molecular junction
T. Tada^{1,2} and *S. Watanabe*^{1,2} (¹Univ. of Tokyo, ²CREST-JST)

S4-2p

Loop Thermal Current in Graphitic Ribbons with Structural Defects
M. Morooka^{1,2}, *T. Yamamoto*^{1,2} and *K. Watanabe*^{1,2} (¹Tokyo Univ. of Science, ²CREST-JST)

S4-3p

Subsurface imaging using complementary media
K. Kobayashi (Ochanomizu Univ.)

S4-4p

Nc-AFM and STM simulations of H-terminated Si(001) surfaces
*A. Masago*¹, *S. Watanabe*¹, *K. Tagami*² and *M. Tsukada*² (¹Univ. Tokyo, ²Waseda Univ.)

S4-5p

STM simulation for B- and P-doped Si(111) surfaces
M. Hirayama, *J. Nakamura* and *A. Natori* (UEC)

S4-6p

Steady-state adsorption of hydrogen on Si(111)-7x7 surface
*Y. Iwadate*¹, *S. Heike*², *M. Fujimori*² and *T. Hashizume*^{1,2} (¹Tokyo Inst. of Technology, ²ARL, Hitachi, Ltd.)

S4-7p

Metastable Phase of Si(110) Surface: 5×8 reconstruction
Y. Ohira, *M. Yoshimura* and *K. Ueda* (Toyota Technological Inst.)

S4-8p

Initial Oxidation Process of Si(110)- $\sqrt{3} \times \sqrt{3}$ Surface
Y. Ohira, *M. Yoshimura* and *K. Ueda* (Toyota Technological Inst.)

S4-9p

Growth of Germanium on hydrogen-terminated Si(113) surface
M. Yoshimura, *K. Mamiya* and *K. Ueda* (Toyota Technological Inst.)

S4-10p

Tip-induced diffusion at the Ge(111)- $c(2 \times 8)$ surface
*A. Ohiso*¹, *K. Mizuta*¹, *M. Hiragaki*¹, *Y. Sugimoto*¹, *M. Abe*^{1,2} and *S. Morita*¹ (¹Osaka Univ., ²JST PRESTO)

S4-11p

Scanning Tunneling Microscopy Study of Pd Adsorption on Pt(111)
*E. Narihira*¹, *K. Umezawa*¹, *Y. Ohira*² and *M. Yoshimura*² (¹Osaka Prefecture Univ., ²Toyota Technological Inst.)

S4-12p

Hydrogen adsorption on a Fe monolayer grown on Ni(111) investigated by scanning tunneling microscopy
B. An, *S. Fukuyama* and *K. Yokogawa* (AIST)

S4-13p

Surface electronic structures of $c(3\sqrt{2} \times \sqrt{2})R45^\circ$ -C/Cr(001) thin film surfaces studied by STM/STS
H. Oka, *A. Nakai* and *K. Sueoka* (Hokkaido Univ.)

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S4-14p

Ultrahigh Vacuum Non-Contact Atomic Force Microscope Observation of Surface Structure and Grain Size Changes of Ge₂Sb₂Te₅ Films by Annealing Effect

M. Asai, A. Miyachi, Y. Yin, H. Sone and S. Hosaka (Gunma-Univ.)

S4-15p

Formation of In nanowires realized on Si(113) Surface

M. Xu, A. Okada, S. Yoshida, K. Kanazawa, K. Hayashi, O. Takeuchi and H. Shigekawa (21st Century COE, CREST-JST, Univ. of Tsukuba)

S4-16p

Au induced nanowire on Si(110) studied by STM

M. Tanaka, M. Yoshimura and K. Ueda (Toyota Technological Institute.)

S4-17p

Observation of carbon nanowire-like structures formed on HOPG substrate

X.L. Guo and D. Fujita (ANCC, NIMS)

S4-18p

Direct Growth of Single Carbon Nanofiber onto W tip induced by Ion Irradiation

J. Tanaka¹, M. Kitazawa^{1,2}, M. Tanemura¹ and R. Ohta² (¹Nagoya Inst. Technol., ²Olympus Co. Ltd.)

S4-19p

Interaction between single wall carbon nanotubes and organic molecules on metal surfaces

S. Clair, C. Rabot, Y. Kim and M. Kawai (RIKEN)

S4-20p

STM Observation of Titanium-Carbide Metallofullerenes

N. Fukui¹, H. Moribe¹, H. Umemoto¹, T. Sugai¹, Y. Suwa², S. Heike², M. Fujimori², T. Hashizume^{2,3} and H. Shinohara^{1,4,5} (¹Nagoya Univ., ²ARL, Hitachi.Ltd, ³Tokyo Inst. of Technology, ⁴IAR Nagoya Univ., ⁵CREST/JST)

S4-21p

STM/STS Observation of *T_d*-symmetric Metallofullerene: Lu₂@C₇₆

K. Ohashi¹, N. Fukui¹, H. Umemoto¹, T. Sugai^{1,2} and H. Shinohara^{1,2,3} (¹Nagoya Univ., ²IAR Nagoya Univ., ³JST/CREST)

S4-22p

STM observation of nanographene on Pt(111)

M. Yamamoto, S. Entani, S. Ikeda and K. Saiki (Univ. of Tokyo)

S4-23p

Surface structures of activated carbon fibers characterized by scanning tunneling microscopy

B. An¹, Z. Lin¹, S. Fukuyama¹, K. Yokogawa¹, S. Lim², S-H. Yoon² and I. Mochida² (¹AIST, ²Kyushu Univ.)

S4-24p

STM-BH Imaging of S atoms on Au(111) in Their Different Charge States

Y. Miyawaki¹, S. Kurokawa² and A. Sakai² (¹Kyoto University, ²IIC, Kyoto University)

S4-25p

Local Barrier Height measurements on p-type GaAs(110) surfaces

K. Kobayashi¹, S. Kurokawa² and A. Sakai² (¹Kyoto Univ., ²IIC, Kyoto Univ.)

S4-26p

Local tunneling barrier height (LBH) observations on Ni₃Al(111)

M. Saida, S. Ogata and M. Sasaki (Univ. of Tsukuba)

S4-27p

Surface Potential difference of Biomineralized Inorganic nanodot by KFM

S-I. Yamamoto¹, Y. Uraoka², T. Fuyuki², M. Okuda³ and I. Yamashita³ (¹KCCT, ²NAIST, ³PANASONIC)

S4-28p

Local polarized domains of ferroelectric materials investigated by Kelvin probe force microscopy

A. Nakai¹, N. Satoh¹, K. Kobayashi², K. Matsushige¹ and H. Yamada^{1,3} (¹Kyoto Univ., ²IIC, Kyoto Univ., ³CREST/JST)

S4-29p

Surface potential measurement of α -sexithiophene by Kelvin probe force microscopy utilizing frequency modulation detection method

N. Satoh¹, K. Kaisei¹, K. Kobayashi², S. Watanabe³, T. Fujii³, K. Matsushige¹ and H. Yamada^{1,4} (¹Kyoto Univ., ²Kyoto Univ(IIC), ³Nikon Corporations, ⁴CREST/JST)

S4-30p

Dynamic KFM/EFM Detecting a Potential by Frequency Shift with Amplitude Feedback

A. Takagi¹, F. Yamada², T. Matsumoto^{1,2} and T. Kawai² (¹JST-CREST, ²ISIR, Osaka University)

S4-31p

KFM measurement without bias-voltage feedback

O. Takeuchi, Y. Ohrai, S. Yoshida and H. Shigekawa (CREST, 21st COE, Univ. of Tsukuba,)

S4-32p

Investigation of organic field-effect transistors using Kelvin probe force microscopy

S. Heike and T. Hashizume (ARL, Hitachi Ltd.)

S4-33p

Near field photoluminescence investigations of InGaN/GaN quantum wells grown on freestanding GaN substrate

M.S. Jeong¹, O.H. Cha¹, J.S. Kim¹, C.C. Byeon¹, D.-K. Ko¹, J. Lee¹, C.-H. Hong² and E.-K. Suh² (¹Advanced Photonics Research Inst., GIST, ²Chonbuk National Univ.)

S4-34p

Nanoscale carrier flow in an operating GaAs p-n junction imaged by Light-Modulated Scanning Tunneling Spectroscopy

S. Yoshida, Y. Kanitani, R. Oshima, Y. Okada, O. Takeuchi and H. Shigekawa (CREST, 21st COE, Univ. of Tsukuba,)

S4-35p

Local Measurements of Minority Carrier Diffusion Length in Polycrystalline Silicon Solar Cells by Kelvin Probe Force Microscopy

M. Takihara¹, T. Ujihara² and T. Takahashi¹ (¹Univ. of Tokyo, ²Nagoya Univ.)

S4-36p

Ultrafast photo-induced carrier dynamics observed by pulse-pair excited scanning tunneling microscopy

M. Aoyama, H. Kondo, N. Ebisawa, Y. Terada, O. Takeuchi and H. Shigekawa (Tsukuba-Univ.)

S4-37p

Development of fiber-coupled polarized SNOM

T. Igarashi¹, T. Tadokoro², K. Nakajima¹ and T. Nishi¹ (¹Tokyo Institute of Technology, ²Techno synergy)

S4-38p

SQUID Probe Microscope Combined with Scanning Tunneling Microscope

M. Tachiki¹, T. Hayashi^{1,2} and H. Itozaki^{1,3} (¹National Inst. for Materials Science, ²Sendai National College of Technology, ³Osaka Univ.)

S4-39p

The effect of polarization direction on the electrical field distribution at near-field of a tip-on-aperture NSOM probe
J.-B. Kim¹, S.-J. Na¹ and W.-S. Chang² (¹Korea Advanced Inst. of Science and Technology, ²Korea Inst. of Machinery and Materials)

S4-40p

Fabrication of cantilevered tip-on-aperture probe for enhancing of the resolution of scanning near-field optical microscopy
W.-S. Chang¹ and M.-S. Jeong² (¹Korea Inst. of Machinery and Mateirlas, ²Advanced Photonic Res. Inst.)

S4-41p

Development of an Ultrasonic Atomic Force Microscope with digital PLL and AGC
K. Nakamoto¹, Y. Imashige¹, H. Uchiumi¹, K. Yonei¹, S. Kitamura¹, T. Tsuji² and K. Yamanaka² (¹JEOL Ltd., ²Tohoku-Univ.)

S4-42p

Functional AFM using self-detective Cantilever
Y. Miyatake, Y. Yamamoto, T. Sasaki, K. Ishikawa, H. Mizuno and T. Nagamura (UNISOKU Co.,Ltd.)

S4-43p

Electromechanical Imaging and Polarization Switching of Ferroelectric Materials in a Liquid Environment: Ultrahigh Resolution and Novel Physics
B.J. Rodriguez, S. Jesse, A. Baddorf and S.V. Kalinin (Oak Ridge National Laboratory)

S4-44p

The Hunt for a Snark: Spatially Resolved Imaging of Nucleation Centers in Ferroelectrics
S. Jesse, B.J. Rodriguez and S.V. Kalinin (Oak Ridge National Laboratory)

S4-45p

Does it Always Have to be a Sine? Band Excitation Method and Energy Dissipation Measurements by SPM
Stephen Jesse and Sergei V. Kalinin (Oak Ridge National Laboratory)

S4-46p

The AFM Tweezers System : Creation of a New Class of Atomic Force Microscope
K. Ayano¹, K. Nakagawa², T. Takekawa¹, T. Konno³, T. Kobayashi³, M. Yasutake⁴, T. Umemoto⁴ and G. Hashiguchi¹ (¹Kagawa Univ, ²Tokyo Univ, ³AOI ELEC-CO.,LTD, ⁴SII NT Inc.)

S4-47p

Development of a High-speed Atomic force Microscope (AFM)
Y. J. Li^{1,2}, N. Kobayashi¹, H. Nomura¹, Y. Naitoh^{1,2}, M. Kageshima^{1,2} and Y. Sugawara^{1,2} (¹Osaka Univ., ²CREST, JST)

S4-48p

Reduction of frequency noise in frequency modulation AFM in liquid environment
T. Horiuchi¹, K. Kimura¹, K. Kobayashi², Y. Hirata³, K. Matsushige¹ and H. Yamada¹ (¹Kyoto Univ, ²IIC Kyoto Univ, ³AIST)

S4-49p

Towards AFM in TEM using optical fiber-less Laser Doppler velocimetry
T. Sakurada¹, K. Nakagawa¹, Y. Hoshi¹, S. Meguro², O. Takano² and H. Kawakatsu¹ (¹IIS, Univ. of Tokyo, ²Neoark Corporation)

S4-50p

2D comparison between heterodyne laser interferometer and crystal periodicity observed by friction force microscopy
Y. Hoshi and H. Kawakatsu (IIS, Univ. of Tokyo)

S4-51p

Phase-Locked Forced-Oscillation AFM Controller

D. Kobayashi¹, S. Nishida¹ and H. Kawakatsu² (¹JST, ²IIS Univ. of Tokyo)

S4-52p

Electric conductance through a point contact between a Si tip and a Si surface

T. Arai^{1,2} and M. Tomitori³ (¹Univ. Tsukuba, ²SORST, JST, ³JAIST)

S4-53p

Local conductance imaging of nanomaterials on insulator using an integrated nanogap probe

M. Nagase and H. Yamaguchi (NTT BRL)

S4-54p

Monitoring conditions of cantilever and control during conducting atomic force microscopy spectroscopy measurements

T. Oohira and A. Ando (AIST)

S4-55p

Development of multi-probe AFM with optical beam deflection method

E. Tsunemi¹, N. Satoh¹, K. Kobayashi², K. Matsushige¹ and H. Yamada^{1,3} (¹Kyoto Univ., ²IIC Kyoto Univ., ³CREST/JST)

S4-56p

Molecular-resolution imaging using 2nd-resonance frequency modulation atomic force microscopy with optical beam deflection system

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S4-57p

Atomic resolution frequency-modulation atomic force microscopy in liquid using photothermal excitation and laser Doppler velocimetry

S. Nishida¹, D. Kobayashi¹, T. Sakurada² and H. Kawakatsu² (¹JST, ²IIS, Univ. of Tokyo)

S4-58p

Dissipative force modulation Kelvin probe force microscopy applying doubled frequency ac bias voltage

H. Nomura, K. Kawasaki, T. Chikamoto, Y. Naitoh, M. Kageshima and Y. Sugawara (Osaka-Univ.)

S4-59p

Single-crystal nano-wire cantilevers for scanning force microscopy

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S4-60p

Fabrication of Carbon Nanotube Tips for Scanning Probe Microscopy through the Preparation of Catalyst by Arc Plasma Deposition

Y. Matsuura, C.-C. Chiu, M. Yoshimura and K. Ueda (Toyota Technological Inst.)

S4-61p

Electric properties of single carbon nanofibers grown on tips of scanning probe microscope by ion irradiation

M. Kitazawa^{1,2}, R. Ohta¹, J. Tanaka² and M. Tanemura² (¹Olympus Co.Ltd., ²NIT)

S4-62p

Nanometer-scale deposition of photo-curing resin using a nanopipette probe microscope and near-field optical illumination

Y. Ushiro, A. Sasaki and F. Iwata (Shizuoka Univ.)

S4-63p

Mechanism of electric field induced deposition of In nano-dots with the Nano-Jet Probe

S. Ohkouchi^{1,2}, Y. Sugimoto^{1,3}, N. Ozaki³, H. Ishikawa¹ and K. Asakawa³ (¹AIST, ²NEC Corp., ³Univ. of Tsukuba)

S4-64p

Fabrication of periodic nano-holes on GaAs substrate by using AFM tip assisted oxidation and chemical wet etching

J.S. Kim, M.S. Jeong, C.C. Byeon, D.-K. Ko and J. Lee (*Advanced Photonics Research Inst., GIST*)

S4-65p

AFM based atomic manipulation at room temperature

Y. Sugimoto¹, M. Abe^{1,2}, O. Custance¹ and S. Morita¹ (¹Osaka Univ., ²JST PRESTO)

S4-66p

Research on Fine Structures and Mechanical Properties of Human Hair by Atomic Force Microscope

H. Kitano^{1,2}, A. Yamamoto¹, M. Niwa¹, S. Fujinami², K. Nakajima², T. Nishi² and S. Naito³ (¹Hoyu Co.,Ltd., ²Tokyo Inst. of Technology, ³KEK)

S4-67p

Single Molecular Anatomy of Host-guest Chemistry Based on Atomic Force Microscopy Study of Cyclodextrin-ferrocene Molecular Interaction

S. Yasuda¹, Y. Okutsu², I. Suzuki³, K. Shinohara⁴, O. Takeuchi² and H. Shigekawa² (¹AIST, ²Univ. of Tsukuba, ³Tohoku Univ., ⁴JAIST)

S4-68p

Visualization of stretch-induced intracellular tensional response of single fibroblasts by mechanical-SPM

K. Tamura, T. Mizutani, H. Haga and K. Kawabata (*Hokkaido Univ.*)

S4-69p

Elastic properties of gels and living cells measured by colloidal probe AFM

T. Kadowaki¹, T. Okajima¹, X.M. Tao² and H. Tokumoto¹ (*Hokkaido Univ.*, ²Zhejiang Univ.)

S4-70p

Frequency Sweep Method Using Piezo-Resistive Cantilever for Femto-Gram Biosensor

K. Takeda¹, H. Sone¹, H. Okano² and S. Hosaka¹ (¹Gunma-Univ., ²Tokyo Sokki Kenkyujo Co. Ltd.)

S4-71p

Supported planar membranes made from cyclic lipids

M. Shibakami, R. Goto and M. Nakamura (*AIST*)

S4-72p

Application of Scanning Tunneling Microscopy to Identification of Pheromone Molecules of Insects

K. Kawazu¹, K. Nakajima¹, M. Hara¹, T. Ando², Y. Ishikawa³ and S. Tatsuki³ (¹Tokyo Inst Tech, ²Tokyo Univ. of Agriculture and Technology, ³Univ of Tokyo)

S4-73p

Supramolecular π -Conjugated Polyrotaxane

K. Shinohara and T. Kitami (*JAIST*)

S4-74p

STM-induced photoemission spectroscopy on rubrene thin films - Does surface plasmon play an essential role for photoemission? -

A. Okada^{1,2,3}, K. Kanazawa^{1,2,3}, M. Berthe^{1,2,3}, K. Hayashi^{1,2,3}, N. Okawa^{1,2,3}, O. Takeuchi^{1,2,3} and H. Shigekawa^{1,2,3} (¹21st Century COE, ²CREST-JST, ³Univ. of Tsukuba)

S4-75p

STM/STS on the standing wave of anisotropic dispersion relations observed for self-assembled glycine monolayers on Cu(100)

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S4-76p

Single Molecular Conductance Studied by “Point Contact Method” Using Scanning Tunnelling Microscopy
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S4-77p

Scanning capacitance microscopy for alkylsilane monolayer covered-Si substrates patterned by scanning probe lithography
J. Han¹, K-H Lee², S. Fujii¹, H. Sano¹, Y. J. Kim¹, T. Ichii¹, K. Murase¹ and H. Sugimura¹ (¹Kyoto Univ., ²Research Inst. of Industrial Science & Technology)

S4-78p

DNA-based assembly of Au nanoparticles on TiO₂ powder
Y. Maeda, T. Akita and T. Fujitani (AIST)

S4-79p

Evaluation of Hydrophilicity and Stability of the Silicon Wafer Surface by Force Spectroscopy
J. Jung, I. Kim, B. Hong and B. Lee (Siltron Inc.)

S4-80p

Quantitative measurement of viscoelastic property with Scanning Probe Microscopy
M. Ohta¹, T. Ito¹, T. Marui¹, A. Kogure², M. Matsuda¹ and R. Kokawa¹ (¹Shimadzu Corp., ²Shimadzu AMC)

S4-81p

Interfacial Structure of Carbon Nanotube/Elastomer Composites Observed by Atomic Force Microscopy
A. Niikura, K. Nakajima, S. Fujinami, S. Nagai and T. Nishi (TOKYO Tech)

S4-82p

Temperature-dependence of Polymer Chain Conformation
N. Ohno, K. Watanabe, K. Nakajima and T. Nishi (Tokyo Tech)

S4-83p

Interim Report on Dynamic Nanofishing -from Forced Oscillation to Noise Analysis-
K. Nakajima, K. Watanabe, N. Ohno and T. Nishi (Tokyo Inst. of Technology)

S4-84p

Simultaneous quantification of elastic and adhesive interactions realized by AFM
S. Nagai, S. Fujinami, K. Nakajima and T. Nishi (Tokyo Tech)

S4-85p

Energy Dissipation at an Ultrasonically Oscillating Super-Hydrophobic Surface in Various Liquids
T. Kobayashi¹, M. Fujita² and M. Fujihira¹ (¹Tokyo Tech, ²Fujifilm)

S4-86p

Mechanism of velocity saturation of atomic friction force and the dynamic superlubricity at torsional resonance
M. Igarashi, J. Nakamura and A. Natori (UEC)

S4-87p

Atomic-resolution Imaging in Liquid by Amplitude Detection Dynamic-mode AFM
S. Kitamura¹, Y. Takeda¹, Y. Imashige¹ and H. Yamada² (¹JEOL Ltd., ²Kyoto Univ.)

S4-88p

Spatial fluctuation in the quality of ultrathin SiO₂ films observed by conducting atomic force microscope
A. Ando, T. Oohira and Y. Naitou (NeRI, AIST)

S4-89p

Spatial variation of thickness of ultrathin SiO₂ films observed by scanning capacitance microscopy

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