

# Nanoscience at Surfaces



## The University of Tokyo International Symposium 2006

ISSP-10

Kashiwa Campus, University of Tokyo

October 9-13, 2006

Institute for Solid State Physics

University of Tokyo



*nanonet*

JSPS  
NSFC  
KOSEF  
A3 Foresight program



## Welcome

On behalf of the organizing committee, I am pleased to welcome all of the participants to the 10<sup>th</sup> ISSP International Symposium on Nanoscience at Surfaces. This is the tenth in a series of international symposia organized by the Institute for Solid State Physics (ISSP), the University of Tokyo every two or three years, and is now organized as the University of Tokyo International Symposium 2006. It is intended to provide researchers in this interdisciplinary field the opportunity to discuss physical and chemical properties of nanostructures on surfaces and their fabrication processes. We hope participants will exchange their novel ideas and discuss directions of future researches in this symposium.

We wish to express our sincere appreciation to supports by The University of Tokyo Foundation, COE21 program "Quantum Extreme Systems and Their Symmetries" (Japanese Society for the Promotion of Science), Nanotechnology Researchers Network Center of Japan (Ministry of Education, Culture, Sports, Science and Technology of Japan), A3 foresight program "Sub-10 nm Wires; New Physics and Chemistry" (Japanese Society for the Promotion of Science, National Natural Science Foundation of China, Korea Science and Engineering Foundation), Foundation for Promotion of Material Science and Technology of Japan, Nippon Sheet Glass Foundation for Materials Science and Engineering, The Kao-foundation for Arts and Sciences, and Chiba Convention Bureau and International Center.

ISSP-10 Chair

Fumio Komori

## **Announcement**

### **Lecture Room Facility**

A PC projector with VGA connector is available. View graphs (A4 size) can be also projected on the screen.

### **Poster Preparation**

The poster session will be held from 16:10 to 18:10 on October 10 (odd #) and from 16:00 to 18:00 on October 12 (even #) in the foyers on the 6th floor of ISSP. Every poster will be displayed until 18:00 on October 12. The size of the poster board is 1.15 m high and 0.85 m wide.

### **Registration**

The registration fee is ¥25,000 (Student ¥10,000) and which covers the Get-Together Party, coffee breaks, the Banquet, the abstract booklet and the proceedings. The fee for the students covers all the above except the proceedings.

Only Japanese yen in cash is acceptable as payment at the registration desk. Neither credit cards nor checks are acceptable.

### **Get together party and Banquet**

Two symposium parties will be held at the Mitsui Garden Hotel Kashiwa, near Kashiwa Station. All participants and accompanying persons are invited. Please wear your name tag for admission to the parties. After the last session on October 11, a bus service to the banquet site will be available.

Get-Together Party: Monday, October 9      18:00 - 20:00

Banquet:                      Wednesday, October 11    19:00 - 21:00

### **Group Picture**

A group picture will be taken outside of the ISSP building on October 10 immediately after the morning session. In case of rain you will be notified about rescheduling.

### **Lunches**

Since the cafeteria on the Kashiwa Campus can accommodate only a limited number of people, boxed lunches will be sold at a room near the registration desk. Varieties of

lunch are also available at the COOP shop next to the cafeteria.

At the cafeteria you will not be able to use cash. Please purchase a prepaid card which is available at the entrance of the cafeteria. Any remaining amount will be paid back to you.

### **Computer and Network Facilities (Network Room)**

Wired LAN connections are available. Namely, 100 Base-TX LAN connections are possible in the Network Room. For those who do not carry their own PCs with them some desktop PCs are provided in the room. Wireless LAN is also available around the Lounge. Configurations will be notified in the network room and at the message board. Web browser and terminal (telnet, SSH) are installed.

### **Message Board**

Messages for participants as well as any changes in the program will be announced on the board.

### **Symposium Partners**

The University of Tokyo Foundation

COE21 program "Quantum Extreme Systems and Their Symmetries" (Japanese Society for the Promotion of Science)

Nanotechnology Researchers Network Center of Japan (Ministry of Education, Culture, Sports, Science and Technology)

A3 foresight program "Sub-10 nm Wires; New Physics and Chemistry" (Japanese Society for the Promotion of Science, National Natural Science Foundation of China, Korea Science and Engineering Foundation)

### **Financial support**

Foundation for Promotion of Material Science and Technology of Japan

Nippon Sheet Glass Foundation for Materials Science and Engineering

The Kao-foundation for Arts and Sciences

Chiba Convention Bureau and International Center

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# ---PROGRAM---

## Monday, October 9

18:00-20:00 **Get-Together Party** (Mitsui Garden Hotel Kashiwa)

## Tuesday, October 10

9:10-9:30 **Opening**

**Fumio Komori**, *Chair*, the ISSP-10 symposium

**Kazuo Ueda**, *Director*, ISSP

**Announcement**

**Yukio Hasegawa**, *ISSP*

**Session 1: Theory I** ..... *Chair: Osamu Sugino (ISSP)*

9:30-10:00      A-1      **Roberto Car**, *Princeton University, USA*  
"Non-equilibrium Electron Transport in Nanoscale Systems"

10:00-10:30    A-2      **Satoshi Watanabe**, *University of Tokyo*  
"Theoretical Analyses on Property Measurements Using  
Scanning Probe Microscopes"

10:30-10:50    ... *Coffee Break* ...

**Session 2: Transport properties in nano-scale** ..... *Chair: Fumio Komori (ISSP)*

10:50-11:10    A-3      **Kenji Hirose**, *NEC*  
"Contact Effects on Anomalous Electron Transport through  
Single Molecules -- ab initio Calculation Study --"

- 11:10-11:30    A-4    **Yoshifumi Oshima**, *Tokyo Institute of Technology*  
"Elongation of Carbon Fullerene in High-electric Field"
- 11:30-12:00    A-5    **Bing Wang**, *University of Science and Technology of China, China*  
"Conduction Mechanism of Aviram-Ratner Diodes with Single  
Pyridine- $\sigma$ -C<sub>60</sub> Oligomers"

12:00-12:20    *Group Picture*

12:20-14:00    ... *Lunch* ...

**Session 3: Theory II** ..... *Chair: Kiyoyuki Terakura (Hokkaido Univ.)*

14:00-14:30    A-6    **Walter Kohn**, *University of California-Santa Barbara, USA*  
"Nearsightedness" at Surfaces

14:30-14:50    A-7    **Katsuyoshi Kobayashi**, *Ochanomizu University*  
"Complementary Media of Electrons"

**Session 4: Organic Molecules at surfaces** .. *Chair: Satoshi Watanabe (Univ. Tokyo)*

14:50-15:20    A-8    **Yoshitada Morikawa**, *Osaka University*  
"First-principles Theoretical Study of Metal/Organic  
Interfaces"

15:20-15:50    A-9    **Flemming Besenbacher**, *University of Aarhus, Demark*  
"Dynamics and Self-assembly of Organic Molecules on Surfaces  
Revealed by High-resolution, Fast-scanning STM"

15:50-16:10    ... *Coffee Break* ...

Poster Presentation I ..... *Chair: Kan Nakatsuji (ISSP)*

16:10-18:10                    **Poster Session (odd #)**

# Wednesday, October 11

## Session 5: Nano-scale processes at surfaces ······ Chair: Jun Yoshinobu (*ISSP*)

- 9:00-9:30      B-1      **Hans-Joachim Freund**, *Fritz Haber Institute, Germany*  
"From Atoms to Particles: Metals on Oxide Films"
- 9:30-10:00    B-2      **Katsuyuki Fukutani**, *University of Tokyo*  
"Ortho-para Conversion of Hydrogen on Metal and Oxide Surfaces"
- 10:00-10:30   B-3      **Yoshiyasu Matsumoto**, *Institute for Molecular Science*  
"Thermal and Photochemical Reactivity of Oxygen atoms on Gold Nanocluster Surfaces"
- 10:30-10:50   ... *Coffee Break* ...

## Session 6: Low dimensional properties at surfaces

··········· Chair: Toshio Takahashi (*ISSP*)

- 10:50-11:20   B-4      **Shinichiro Hatta**, *Kyoto University*  
"Phase Transitions in Metallic Monolayers on Cu(001)"
- 11:20-11:50   B-5      **Ian Robinson**, *University College, London, UK*  
"Mapping of Interfacial Contact Forces in Nanostructures by Coherent X-ray Diffraction "
- 11:50-12:20   B-6      **Hiroshi Daimon**, *Nara Institute of Science and Technology*  
"Total Analysis of Surface Structure and Properties by UHV Transfer System"
- 12:20-14:00   ... *Lunch* ...



**Session 7: Semiconductor surfaces**

*Chair: Katsuyuki Fukutani (Univ. of Tokyo)*

- 14:00-14:30    B-7    **Jillian Buriak**, *University of Alberta, Canada*  
"Using Self-assembled Nanoscale Structures to Direct Surface  
Chemical Functionalization of Silicon"
- 14:30-14:50    B-8    **Kazuto Akagi**, *University of Tokyo*  
"Regioselective Chemisorption of Alkene Molecules on Si(100)  
Clean Surface"
- 14:50-15:10    B-9    **Yoshiyuki Yamashita**, *ISSP*  
"Site-specific Observation of Valence Electronic Structure at  
Interface: Soft X-ray Absorption and Emission Spectroscopic  
Study"
- 15:10-15:40    B-10    **Robert J. Hamers**, *The University of Wisconsin-Madison, USA*  
"Chemical Functionalization of Nanocarbon Surfaces"
- 15:40-16:00    ... *Coffee Break* ...

**Session 8 : Water at metal surfaces**

*..... Chair: Shinji Tsuneyuki (Univ. of Tokyo)*

- 16:00-16:30    B-11    **Marc Koper**, *Leiden University, The Netherlands*  
"Electrocatalysis at Nanostructured Surfaces"
- 16:30-17:00    B-12    **Osamu Sugino**, *ISSP*  
"First-Principles Molecular Dynamics Simulation of  
Electrode/Solution Interface and Electrochemical Reactions"
- 17:00-17:20    B-13    **Susumu Yamamoto**, *Stanford University, USA*  
"Different Wetting Behavior on Cu (110) and (111) at Ambient  
Conditions: in-situ Photoemission Spectroscopy Study"
- 17:20-17:40    B-14    **Tomoko Shimizu**, *Lawrence Berkeley National Lab., USA*  
"Adsorption, Dissociation and Cluster Formation of Water on  
Ru(0001)"

19:00-21:00     **Banquet** at Mitsui Garden Hotel Kashiwa

## Thursday, October 12

### Session 9: Dynamics of molecules at surfaces ·· Chair: Tetsuya Aruga (*Kyoto Univ.*)

- 9:00-9:30        C-1     **Gerald Dujardin**, *Université Paris-Sud, France*  
"Electronic Control of Single Molecule Dynamics"
- 9:30-10:00      C-2     **Maki Kawai**, *University of Tokyo and RIKEN*  
"Vibrational Excitation of Single Molecules by STM"
- 10:00-10:30     C-3     **Hiromu Ueba**, *Toyama University*  
" Adsorbate motions by vibrational mode coupling "
- 10:30-10:50     ... *Coffee Break* ...

### Session 10: New phenomena in nano-scale at surfaces

..... Chair: Hiroshi Tochihara (*Kyushu Univ.*)

- 10:50-11:20     C-4     **Se-Jong Kahng**, *Korea University, Korea*  
"Electron Bound States in Semiconducting Carbon Nanotubes"
- 11:20-11:40     C-5     **Ken-ichi Tanaka**, *Saitama Institute of Technology*  
"Controlled Growth of Nano-size Crystalline Metal Dots on the  
Si(111)-7x7 Surface Saturated with C<sub>2</sub>H<sub>5</sub>OH"
- 11:40-12:00     C-6     **Tomohiro Matsui**, *University of Hamburg, Germany*  
"STS Studies of Fe Monomers and Multimers on InAs(110)  
Surfaces"

12:00-12:30 C-7 **Qikun Xue**, *Tsinghua University, China*  
"Quantum Size Effects in Pb/Si(111) System: from 2D Films to 1D Nanobelts"

12:30-14:00 ... *Lunch* ...

**Session 11: Application of synchrotron radiation to nano materials**

..... *Chair: Hiroshi Daimon (Nara Inst. Sci. Tech.)*

14:00-14:30 C-8 **Christoph Quitmann**, *Swiss Light Source, Switzerland*  
"The Dance of the Domains: Excitations in Magnetic Micro-particles"

14:30-15:00 C-9 **Akio Kimura**, *Hiroshima University*  
"Spin-Resolved Energy Band Structure of Ultra-thin Fe Films on Co(001)"

15:00-15:20 C-10 **Takeshi Nakagawa**, *Institute for Molecular Science*  
"Magnetic Circular Dichroism on Ferromagnetic Ultra Thin Films using Laser Photoemission"

15:20-15:40 C-11 **Akira Saito**, *RIKEN Harima Inst. & Osaka University*  
"Scanning Tunneling Microscopy for Nanoscale Surface Chemical Analysis based on Synchrotron Radiation"

15:40-16:00 ... *Coffee Break* ...

**Poster Presentation II** ..... *Chair: Yoshiyuki Yamashita (ISSP)*

16:00-18:00 **Poster Session (even #)**

# Friday, October 13

## Session 12: Local interaction and electronic states at surfaces

..... Chair: Akio Kimura (*Hiroshima Univ.*)

- 9:00-9:30      D-1      **Seizo Morita**, *Osaka University*  
"Mechanical Atom Identification and Following Artificial Nanostructuring"
- 9:30-9:50      D-2      **Kan Nakatsuji**, *ISSP*  
"Superstructure Nano-manipulation through Tunneling Carrier Injection on Clean Ge(001)"
- 9:50-10:10     D-3      **Iwao Matsuda**, *University of Tokyo*  
"Two-dimensional Hume-Rothery Phase of a Metallic Monolayer on the fcc(111) Semiconductor Surface"
- 10:10-10:40    D-4      **Franz J. Himpsel**, *University of Wisconsin-Madison, USA*  
"Atomic Chains: from Low-Dimensional Electrons to the Limits of Data Storage"
- 10:40-11:00    ... *Coffee Break* ...

## Session 13: Low dimensional electronic states at surfaces

..... Chair: Shuji Hasegawa (*Univ. Tokyo*)

- 11:00-11:30    D-5      **Han Woong Yoem**, *Yonsei University, Korea*  
"Phase Transitions of Atomic Wires on Silicon Surfaces"
- 11:30-12:00    D-6      **Yukio Hasegawa**, *ISSP*  
"Real-space Observation of Screened Potential by Scanning Tunneling Spectroscopy"
- 12:00-12:20    Closing

# Poster Session

- P-001 Hydrogen atom absorption and diffusion on the Pd(111) surface and in the subsurface within the framework of quantum method**  
N. Ozawa, T. A. Roman, H. Nakanishi, H. Kasai
- P-002 Adsorbing of hydrogens on Ni(111) surface and reemitted slow positron**  
K.Hirota, M.Osawa, H.Suzuki, I.Kanazawa, K.Fukutani, K.Nozawa, F.Komori
- P-003 Trapping Silicon Surface Radicals - Chemistry on Silicon with Nanoscale Precision**  
Dong Wang, Jillian Buriak
- P-004 Regioselective cycloaddition reaction of asymmetric alkene molecules to the asymmetric dimer on Si(100)c(4x2)**  
K. Oguchi, K. Mukai, Y. Yamashita, J. Yoshinobu
- P-005 Attaching Aromatic Molecules to the Si(111) Surfaces via Conjugated Bond**  
Hideyuki Murata, Atsushi Itabashi, Toyoko Arai, Masahiko Tomitori
- P-006 Three-Dimensional Molecular Assemblies on Silicon with Si-C Covalent Bonds**  
M.Ara, M.Tsuji, H.Tada
- P-007 Adsorption of 1,3-butadiene on Si(001)c(4x2) surface at RT**  
Jaeyoon Baik, Minkook Kim, In-Kyung Song, Chong-Yun Park, Joung Real Ahn, Ki-Seok An
- P-008 Different adsorption states of 1,4-cyclohexadiene on Si(001) depending on the substrate temperature**  
H. S. Kato, M. Wakatsuchi, M. Kawai, J. Yoshinobu
- P-009 STM and HREELS study of 1D water chain on Cu(110)**  
H. Okuyama, T. Yamada, S. Tamamori, S. Hatta, T. Aruga
- P-010 Water Adsorption on  $\alpha$ -Fe<sub>2</sub>O<sub>3</sub> (0001) and TiO<sub>2</sub> (110) at Ambient Conditions**  
Susumu Yamamoto, Guido Ketteler, Tom Kendelewicz, Hendrik Bluhm, David E. Starr, Klas Andersson, Hirohito Ogasawara, Miquel Salmeron, Gordon E. Brown Jr., Anders Nilsson

- P-011 Molecular scale study of water dimers on Pt(111) surface**  
K. Motobayashi, C. Matsumoto, Y. Kim, M. Kawai
- P-012 Adsorption, desorption and microscopic structures of water on Rh(111)**  
A. Beniya, S. Yamamoto, K. Mukai, Y. Yamashita, J. Yoshinobu
- P-013 Single-molecule vibrational spectroscopy of water using STM**  
Y. Kim, K. Motobayashi, C. Matsumoto, M. Kawai
- P-014 Time-resolved SFG study on formate adsorbed on TiO<sub>2</sub> film on Pt(111)**  
Jun Kubota, Jun Chen, Kazunari Domen
- P-015 Three-Ni-atom cluster formed by sulfur adsorption on Ni(111)**  
H. Hirashima, A. Kitada, K. Izumi, M. Yamada, J. Nakamura
- P-016 Surface differential reflectance study of initial oxidation kinetics on Si(001)**  
J. Takizawa, Y. Mogawa, J. Koizumi, S. Ohno, K. Shudo, M. Tanaka
- P-017 Reflectance difference spectroscopy study of initial oxidation kinetics on Si(001)**  
Shin-ya Ohno, Hiroaki Kobayashi, Fumitake Mitobe, Takanori Suzuki, Ken-ichi Shudo, Masatoshi Tanaka
- P-018 Origin of the 97 meV-peak on H:Si(111)1x1 Surface**  
T. Taoka, H. Kato, T. Yamada, A. Kasuya, S. Suto
- P-019 Reversible electromigration and formation of (2x1)-Si structures on Tl adsorbed Si(111) surfaces**  
A. Visikovskiy, H. Tochiara, Y. Ohira, M. Yoshimura, K. Ueda
- P-020 Development of a Miniature Double Pass Cylindrical Mirror Electron Energy Analyzer (DPCMA), and Its Application for Auger-Photoelectron Coincidence Spectroscopy (APECS)**  
Eiichi Kobayashi, Junya Seo, Akira Nambu, Kazuhiko Mase

- P-021 Simultaneous measurements of mass and kinetic energy distribution of desorbed ions using a compact cylindrical mirror analyzer (CMA) and synchrotron radiation in single-bunch operation**  
Eiichi Kobayashi, Kouji K. Okudaira, Kazuhiko Mase
- P-022 Development of an Electron Electron Ion Coincidence Apparatus and its Application for a Study of Desorption Induced by Electron Transitions**  
T. Kakiuchi, E. Kobayashi, K. Oyamada, N. Okada, M. Okusawa, K. K. Okudaira, K. Mase
- P-023 CO oxidation on Pd-SnO<sub>2</sub> catalysts: XPS, XRD, TEM and TPR study**  
I. Matolinova, V. Matolin, T. Mori, M. Yoshitake
- P-024 Microscopic processes of NO migration on Pt(997)**  
Noriyuki Tsukahara, Kozo Mukai, Yoshiyuki Yamashita, Jun Yoshinobu
- P-025 Role of Steps in Cu<sub>2</sub>O Formation on Cu(410) using Hyperthermal O<sub>2</sub> Molecular Beam**  
M. Okada, L. Vattuone, K. Moritani, A. Gerbi, L. Savio, A. Yoshigoe, Y. Teraoka, M. Rocca, T. Kasai
- P-026 Effect of the internal excited states of oxygen molecule in the dissociative adsorption processes on Cu surfaces**  
K. Moritani, Y. Teraoka, M. Okada, A. Yoshigoe, T. Kasai
- P-027 One-and two-dimensional structures on Tl/Ge(111)**  
S. Hatta, C. Kato, S. Takahashi, T. Okuda, A. Harasawa, T. Kinoshita, H. Okuyama, T. Aruga
- P-028 Oscillatory behavior of the charge transport through ultrathin Pb films**  
N. Miyata, I. Matsuda<sup>1</sup>, K. Horikoshi, T. Hirahara, S. Hasegawa
- P-029 Temperature dependence of the quantum confinement effect at Cu(110)(2x1)O striped surface studied by angle resolved photoemission spectroscopy**  
M.Nagira, M.Sawada, M.Higashiguchi, K.Yaji, T.Moko, T.Ueno, Y.Miura, K.Shimada, A.Kimura, H.Namatame, M.Taniguchi
- P-030 Step-type Dependence of One-Dimensional Electronic States on Nickel Stepped Surfaces**  
Koji Ogawa, Kenryo Yamamoto, Nobuyuki Fujisawa, Koji Nakanishi, Hidetoshi Namba

- P-031 Strain-induced change in electronic structure of Cu(100)**  
D. Sekiba, Y. Yoshimoto, K. Nakatsuji, Y. Takagi, T. Iimori, S. Doi, F. Komori
- P-032 X-ray Spectromicroscopy Mapping of Metal-Induced Ordering of Semiconductor Nanostructures**  
J. T. Robinson, O. Moutanabbir\*, F. Ratto, S. Heun, M. Tonezzer, A. Locatelli, O. T. Mentis, L. Aballe, A. Liddl, K. M. Itoh, O.D. Dubon
- P-033 Electronic Properties of Platinum and Nickel on Tin(II) Porphyrin and Other Related Compounds**  
E.S. Dy, H. Kasai
- P-034 Spectrum of bulk SHG from rutile TiO<sub>2</sub>(001)**  
Ryosuke Watanabe, Miki Omote, Goro Mizutani
- P-035 Optical reflectance study of hydrogen adsorption processes on Si(001)-2x1**  
Fumitake Mitobe, Junya Koizumi, Jun-ichi Takizawa, Shin-ya Ohno, Yoshiharu Mogawa, Takanori Suzuki, Ken-ichi Shudo, Masatoshi Tanaka
- P-036 Metal-insulator transition of Si(111) 7x7 by Na adsorption**  
Keiko Takase, Iwao Matsuda, Marie D'angelo, Toru Hirahara, Shuji Hasegawa
- P-037 Photoemission Spectroscopy Study of the Interface Formation of Pentacene Molecules on Si(111) 7x7, Ag/Si(111)  $\sqrt{3}\times\sqrt{3}$ , and H/Si(111) 1x1**  
D. Y. Jung, L. Yan, J. R. Ahn, J. H. Byun, H. W. Yeom
- P-038 High-resolution photoemission study of the anisotropic phase in Pb/Si(557)**  
K. S. Kim, W. H. Choi, H. W. Yeom\*
- P-039 Metallic transport and metal-insulator transition on Si(111)- $\sqrt{7}\times\sqrt{3}$ -In surface superstructure**  
S. Yamazaki, Y. Hosomura, I. Matsuda, R. Hobara, S. Hasegawa
- P-040 Photoemission study of thallium adsorbed Si(111) surface**  
Kazuyuki Sakamoto, P.E.J. Eriksson, Nobuo Ueno, R.I.G. Uhrberg
- P-041 The electronic states of F4-TCNQ on the ethylene-terminated Si(100) surface**  
K. Mukai, Y. Kagata, Y. Yamashita, J. Yoshinobu



- P-042 Atomic orbital analysis of the Fermi surface of  $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_y$  by Two-dimensional photoelectron spectroscopy**  
C. Sakai, F. Matsui, N. Takahashi, S. N. Takeda, H. Daimon
- P-044 Atomic orbitals and geometry of the Cu(111) Fermi surface studied by two-dimensional photoelectron spectroscopy using synchrotron radiation**  
K. Nakanishi, F. Matsui, Y. Hamada, Y. Nozawa, N. Takahashi, K. Ogawa, H. Daimon, H. Namba
- P-045 Intermolecular interactions of  $\text{Ir}(\text{ppy})_3$  mediated by surface state electrons on Cu(111)**  
Tomonori Takahashi, Kazuteru Shinozaki, Takashi Yokoyama
- P-046 High-resolution angle-resolved photoemission study of the surface states in Ni(100)**  
Y. Miura, K. Shimada, M. Hoesch, M. Higashiguchi, N. Tobita, X.Y. Cui, Y. Aiura, H. Namatame, M. Taniguchi
- P-047 Atomic layer resolved two-dimensional XAFS: Ni wedged film on Cu(001)**  
F. Matsui, T. Matsushita, Y. Kato, K. Inaji, F.Z. Guo, H. Daimon
- P-048 Role of Spin-Orbit Coupling and Hybridization Effects in the Electronic Structure of Ultrathin Bi films**  
T. Hirahara, T. Nagao, I. Matsuda, G. Bihlmayer, E. V. Chulkov, Y. M. Koroteev, P. M. Echenique, M. Saito, S. Hasegawa
- P-049 Curvature Effects on Surface Electron States in Ballistic Nanostructures**  
Hisao Taira, Hiroyuki Shima
- P-050 High-resolution low-temperature angle-resolved photoemission study of the Shockley state in Ni(111)**  
M. Higashiguchi, K. Shimada, M. Arita, Y. Miura, N. Tobita, X. Y. Cui, Y. Aiura, H. Namatame, M. Taniguchi
- P-051 Molecular orientation of metal free phthalocyanine on Si substrate by soft x-ray spectroscopy**  
K. K. Okudaira, S. Hosoumi, N. Mitsuo, S. Kera, K. Mase, N. Ueno

- P-052**     **Quasi one dimensional quantized states of ultra-thin Ag films on one dimensional structure Si(111)4×1-In**  
N.Nagamura, I.Matsuda, T.Uchihashi, N.Miyata, T.Hirahara, S.Hasegawa
- P-053**     **Optical Second Harmonic Spectroscopy of Pt nanowires**  
N. Hayashi, T. Iwai, R. Okushio, K. Aratake, A. Sugawara, H. Sano, G. Mizutani
- P-054**     **Surface Plasmon Resonance in Cu Nanowires**  
K.Locharoenrat, S.Takase, A.Sugawara, H.Sano, G.Mizutani
- P-055**     **Conductance behavior of [110] gold nanowire**  
Yoshifumi Oshima, Kurui Yoshihiko, Masakuni Okamoto, Kunio Takayanagi
- P-056**     **Electric conductance of metal nanowires measured by mechanically controllable break junction under electrochemical potential control**  
M. Kiguchi, N. Sekiguchi, K. Murakoshi
- P-057**     **Fabrication of Alloy Nanotubes**  
Sin-iti Kitazawa
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