SSSJ-A3 Foresight Joint Symposium on Nanomaterials and Nanostructures

July 5(Mon)-7(Wed), 2010

Koshiba Hall in Science Building No. 1, Hongo Campus, The University of Tokyo

Organized by
JSPS-KOSEF-NSFC A3 Foresight Program
http://www-surface.phys.s.u-tokyo.ac.jp/A3Foresight/
and
The Surface Science Society of Japan
http://www.sssj.org/

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Program of SSSJ-A3 Foresight Joint Symposium on Nanomaterials and Nanostructures

**July 5 (Monday), 2010**

9:00-9:30 Registration

9:30-9:45 Opening Session Chaired by Shuji Hasegawa
- Welcome Address from SSSJ Seizo Morita
- Welcome Address from A3 Foresight Young Kuk

**Session I: Graphene** Chaired by Se-Jong Kahng

9:45-10:15 Young Kuk (Seoul National University)
   "Charge Puddles and Edge Effect in a Graphene Device Studied by Scanning Gate Microscope"

10:15-10:45 Tomohiro Matsui and Hiroshi Fukuyama (University of Tokyo)
   "STS Observation of Dirac Fermion Topologically appeared on Graphite Surface"

10:45-11:00 Xiaosong Wu, Ming Ruan, Yike Hu, Nerasoa K. Madiomanana, Claire Berger, Walt A de Heer (Peking University)
   "Thermoelectric study of high mobility epitaxial graphene on SiC"

11:00-11:15 Yangbo Zhou, Zhimin Liao, Qiang Fu, Dapeng Yu (Peking University)
   "The Structural and Electrical Transition of Ion-irradiated Graphene"

11:15-11:30 Yi-Lin Wang, Jun Ren, Can-Li Song, Ye-Ping Jiang, Li-Li Wang, Ke He, Xi Chen, Jin-Feng Jia, Sheng Meng, Efthimios Kaxiras, Xu-Cun Ma, and Qi-Kun Xue (Institute of Physics, China)
   "Selective Adsorption and Electronic Interaction of F16CuPc on Epitaxial Graphene"

11:30-12:00 Break

**Session II: Surface-Molecular Systems with STM** Chaired by Ji-Yong Park

12:00-12:30 Nori Takagi (University of Tokyo)
   "Molecular magnetism at surface from a single molecule to two-dimensional lattice"

12:30-12:45 H. Howon Kim, Kyung-hoon Chung, Jong Keon Yoon, and Se-Jong Kahng (Korea University)
   "Anisotropic Kondo screening behaviors of metallo-molecules on Au(111)"

12:45-13:00 Takeo Ohsawa, Katsuya Iwaya, Ryota Shimizu, Tomohiro Hashizume, Taro Hitosugi (Tohoku University)
   "Investigation of Single-Crystal and Thin Film Surfaces of SrTiO3 using Low-temperature STM/STS"

13:00-14:00 Lunch
Session III: Surfaces with Advanced Measurements  
Chaired by Xiaosong Wu

14:00-14:15 R. Shimizu, T. Ohsawa, K. Iwaya, T. Hasegawa, T. Hashizume, and T. Hitosugi  
(Tohoku University)

“Investigation of an atomically-ordered SrTiO₃(001)-(√13×√13) step/terrace substrate”

14:15-14:30 Wei-Wei Zhao, Qingyan Wang, Zhi Li, Lili Wang, Yang Guo, Ke He, Xucun Ma,  
Qi-Kun Xue (Institute of Physics, China)

“Observation of oxygen vacancies in single layer ZnO by STM”

14:30-14:45 Kan Nakatsuiji, Ryota Niikura, Yuya Motomura, Yuki Shibata, Masamichi Yamada,  
Takushi Iimori, Yasuhiro Oda, Akira Ishii and Fumio Komori (University of Tokyo)

“Two dimensional metallic state and its modification on Ge(111)√3×√3:Au surface”

14:45-15:00 W. Voegeli, T. Takayama, T. Shirasawa, M. Abe, K. Kubo, T. Takahashi, K. Akimoto,  
H. Sugiyama (University of Tokyo)

“Structure of gold atomic chains on the Si(553) surface and their low-temperature structural changes”

15:00-15:15 Susumu Shiraki, Tetsuya Nakamura, Hideki Fujisawa, Masashi Nantoh, Maki  
Kawai (Tohoku University)

“Magnetic ordering and fluctuation in one-dimensional Fe nanowires”

15:15-15:45 Break

Session IV: Rashba and Topological Surfaces  
Chaired by Young Kuk

15:45-16:15 Tetsuya Aruga (Kyoto University)

“Rashba Spin Splitting at Semiconductor Surfaces”

16:15-16:45 Shuichi Murakami (Tokyo Institute of Technology)

“Bismuth and bismuth-antimony alloy as topological insulators”

Xue (Tsinghua University)

“Double Dirac cone” of Bi₂Te₃ film”

17:00-17:15 Xie-Gang Zhu, Jing Wen, Guang Wang, Lili Wang, Ke He, Xucun Ma, Xi Chen,  
Jin-Feng Jia, Qi-Kun Xue (Tsinghua University)

“Novel Surface Bands of Copper Doped Bi₂Te₃ Thin Films Revealed by Angle Resolved  
Photoemission Spectroscopy”

17:15-17:45 T. Hirahara, Y. Sakamoto, Y. Saisyu, H. Miyazaki, S. Kimura, T. Okuda, I. Matsuda,  
S. Murakami, and S. Hasegawa (University of Tokyo)

“The physics of topological insulators studied using ultrathin films”

17:45-19:00 Poster Session 1 with Exhibition

19:00-20:30 Banquet at the entrance of Koshiba Hall
Session V: SPM and manipulation

9:15-9:45 S. Seizo Morita, Masayuki Abe, Yoshiaki Sugimoto (Osaka University)
   “Toward Atom-by-Atom Creation and Evaluation of Composite Nanostructures at RT based on AFM”

9:45-10:15 K. Tomatsu, K. Nakatsuji, M. Yamada, B. Yan, C. Yam, Y. Xu, T. Frauenheim, W. Duan and F. Komori (University of Tokyo)
   “Remote and reversible atom manipulation through electron-phonon coupling at Ge(001) surface”

10:15-10:30 Hyo Won Kim, Mina Han, Masahiko Hara, Vousoo Kim, Maki Kawai, Young Kuk (Seoul National University)
   “Reversible Switching of a Molecular Rotor by Selection of Anchoring Sites”

10:30-11:00 Jong Keon Yoon, Won-joon Son, Kyung-Hoon Chung, Howon Kim, Seungwu Han, and Se-Jong Kahng (Korea University)
   “Visualizing Halogen Bondings in Planar Supramolecular Systems”

11:00-11:30 Coffee Break

Session VI: Molecular manipulation

11:30-12:00 Jun Yoshinobu (University of Tokyo)
   "Making the well-defined contacts between molecules and Si surfaces: electronic properties and vibrational characterization"

12:00-12:15 Jong Keon Yoon, Won-joon Son, Kyung-Hoon Chung, Howon Kim, Seungwu Han, and Se-Jong Kahng (Korea University)
   “Prochiral Domain Structures of Two Isomer Molecules on Au(111)”

12:15-12:30 Hongjun Liu, Run-Wei Li, Jyh-Pin Chou, Ching-Ming Wei, and Kazushi Miki (NIMS)
   "Formation Process of Al magic clusters on Si(111)-7x7 surface and its template application"

12:30-12:45 A. Masago, M. Tsukada, and M. Shimizu (Tohoku University)
   “A Simulation Method of Kelvin Probe Force Microscopy and Its Application”

12:45-13:00 Ryota Mishima and Hirokazu Tada (Osaka University)
   “Electrostatic Properties of Organic Films on Silicon Oxides Studied by Kelvin Probe Force Microscopy”

13:00-13:15 Masaaki Araidai, Masaru Tsukada (Tohoku University)
   "Theoretical Calculations on Inflection Behavior in Fowler-Nordheim Plot in Molecular Junction"
13:15-14:30 Lunch

**Session VII: Nanotubes and nanowires I**

Chaired by Zhengguang Yan

14:30-15:00 Hisanori Shinohara (Nagoya University)

*Putting Nanowires into Carbon Nanotubes*

15:00-15:15 Hongqin Zhu, Yong Xu, Wenhui Duan (Tsinghua University)

*Tuning Thermal Conductance of Carbon Nanotubes with Radial Compression*

15:15-15:30 Kentaro Sato, Ahmad R.T. Nugraha, Riichiro Saito (Tohoku University)

*Excitonic effects on Raman intensity of single wall carbon nanotubes*

15:30-15:45 Ahmad R.T. Nugraha, Kentaro Sato, Riichiro Saito (Tohoku University)

*Excitonic environmental effects on optical transition energies of single wall carbon nanotubes*

15:45-16:00 Asako Terasawa, Keiji Tobimatsu, Tomofumi Tada, Takahiro Yamamoto and Satoshi Watanabe (University of Tokyo)

*Simulation of four-probe resistance measurements in nanoscale*

16:00-16:30 Coffee Break

**Session VIII: Structure and function of nanomaterials**

Chaired by Masamichi Yoshimura

16:30-16:45 Pan Liu, Xiaodong Han, Shengcheng Mao, Lihua Wang, Yonghai Yue, Ze Zhang (Beijing University of Technology)

*Dynamic Time and Positional Resolved Atomic Mechanisms of Strain-Induced Plastic Deformation Mechanism in Nanocrystalline Gold thin films*

16:45-17:00 Zheng Liu, Jian Wu, Wenhui Duan, Max G. Lagally, Feng Liu (Tsinghua University)

*Electronic Phase Diagram of Silicon Single-Element Strain Superlattices*

17:00-17:15 Xinli Zhu, Yang Zhang, Jiasen Zhang, Jun Xu, Yue Ma, and Dapeng Yu (Peking University)

*Ultrafine and Smooth Full Metal Nanostructures for Plasmonics*

17:15-17:30 Lihua Wang, Xiaodong Han, Pan Liu, Yonghai Yue and Ze Zhang (Beijing University of Technology)

*In Situ Observation of Dislocation Behavior in Nanometer Grains*

17:30-17:45 Lei Zhang, Xianqiang Liu, Xiao Dong Han, Zhengguang Yan, Ze Zhang, Ting Zhang, Bo Liu, Zhi Tang Song, and Song Lin Feng (Beijing University of Technology)

*Structural investigation on phase-change materials GeSbTe*

17:45-19:15 Poster Session 2 with Exhibition
Session IX: Nanotubes and nanowires 2  Chaired by Kazushi Miki

9:15-9:45 S. Takhee Lee (Gwangju Institute of Science and Technology)
“Characterization of Molecular Transistors with Orbital Gating”

9:45-10:15 K. Lee See Kei, Shoji Tanaka, Ryo Yamada and Hirokazu Tada (Osaka University)
“Charge Transport in Single Oligothiophene Molecular Wires”

10:15-10:30 Jingyun Gao, Qing Zhao, Yanghui Sun, Jingmin Zhang, and Dapeng Yu (Peking University)
“Growth of phosphorus-doped ZnO nanowires by decomposing zinc phosphate powder”

10:30-10:45 Ian Thomas Clark, Gemma Rius, Yuki Matsuoka, Masamichi Yoshimura
(Toyota Technological Institute)

10:45-11:15 Coffee Break

Session X: Nanowires and nanostructures  Chaired by Hirokazu Tada

11:15-11:30 Yanghui Sun, Jingyun Gao, Rui Zhu, Jun Xu, Li Chen, Qing Zhao and Dapeng Yu
(Peking University)
“In situ observation of ZnO nanowire growth on zinc film in environmental scanning electron microscope”

11:30-11:45 Fu Qiang, Han Xiaobing, Zhu Xinli, Gao Jingyun, Zhao Qing and Yu Dapeng
(Peking University)
“Optical properties of semiconductor nanowires under strain”

11:45-12:00 Yazhou Wang, Jinyun Gao, Zhimin Liao, Dapeng Yu (Peking University)
“MgB2 Superconducting Whiskers”

12:00-12:15 Tomofumi Tada, Takahiro Yamamoto, and Satoshi Watanabe (University of Tokyo)
“Wave Packet dynamics on Spin-Flip Transport through Nanocontact”

12:15-12:30 Haiming Yu, Simon Granville, Dapeng Yu, J-Ph Ansermet (Peking University)
“Evidence for thermal spin-transfer torque in Nanostructures”

12:30-12:45 Closing
Poster Sessions

July 5 (Monday), 2010

P1-1 Masamichi Yamada, Shin-ya Ohno, Yuma Iwasaki, Kazuma Yagyu, Kan Nakatsuji, Fumio Komori (University of Tokyo)
“Simple models for boundaries between N-adsorbed islands on Cu(001)”

P1-2 Yusuke Sakamoto, Toru Hirahara, Hidetoshi Miyazaki, Yasuo Takeichi, Taku Komorita, Shin-ich Kimura, Akito Kakizaki, Shuji Hasegawa (University of Tokyo)
“Electronic structure of topological insulator Bi2Se3 ultrathin films on a Si surface”

P1-3 Y. Saishu, T. Hirahara, R. Hobara, S. Hasegawa (University of Tokyo)
“SMOKE measurements of Cobalt thin films”

P1-4 Fumitaka Nakamura, Katsuyoshi Kobayashi, Shuji Hasegawa, Ayahiko Ichimiya, and Iwao Matsuda (University of Tokyo)
“Energy and phase-shift analyses of $\sqrt{21} \times \sqrt{21}$ phase of Si surface with pseudopotential approach”

P1-5 Hiroko Kaji, and Kiminori Kakitani (Okayama University of Science)
“Temperature dependence of surface states with 3x3$\sqrt{3}x\sqrt{3}$ phase transition on Sn adsorbed Ge (111) surface”

P1-6 Jeong Heum Jeon, Kyung-hoon Chung, Howon Kim, Se-jong Kahng (Korea University)
“Epitaxial Bismuth Thin Films on Au(111) studied using Scanning Tunneling Microscopy”

P1-7 T. Hiroe, W. Voegeli, T. Shirasawa, M. Abe, T. Takahashi, K. Akimoto, H. Sugiyama (University of Tokyo)
“Phase Transition of the Si(111)$-\sqrt{7}x\sqrt{3}$-Pb surface studied by X-ray diffraction”

P1-8 Kyung-hoon Chung, Hak-Hyun Kim, Howon Kim, Jong Keon Yoon, and Se-Jong Kahng (Korea University)
“Supramolecular Structures by Halogen Interactions on noble metal surfaces”

P1-9 Howon Kim, Minhui Chang, Jeong Heum Jeon, and Se-Jong Kahng (Korea University)
“Depopulation of Surface States on Au(111) studied using Scanning Tunneling Spectroscopy”

P1-10 T. Uetake, N. Nagamura, R. Hobara, T. Hirahara, S. Hasegawa (University of Tokyo)
“Transport properties of Ag quantum films formed on Si(111)4x1-In measured by low-temperature four-tip STM”

P1-11 Takeshi Tono, Toru Hirahara, Shuji Hasegawa (University of Tokyo)
“In situ detection of the spin Hall effect in ultrathin bismuth films”

P1-12 Manami Ogawa, Susumu Yamamoto, Yuka Kousa, Fumitaka Nakamura, Akiko Fukushima, Ayumi Harasawa, Hiroshi Kondo, Yoshihito Tanaka, Iwao Matsuda (University of Tokyo)
“Development of Laser – Synchrotron Radiation combined time resolved photoemission spectroscopy system and researches of dynamics of semiconductor surface”

P1-13 Shinya Yoshimoto, Kozo Mukai, and Jun Yoshinobu (University of Tokyo)

“Investigation of surface transfer doping by organic molecules using independently driven four-probe method”

P1-14 Rei Hobara, Naoka Nagamura, Tono Takeshi, Uetake Tomoya, Ueda Yoichi, Toru Hirahara, Shuji Hasegawa, and Toshihiko Nagamura (University of Tokyo)

“Development of Ultra-Low Temperature Four tip STM in combination with FIB”

July 6 (Tuesday), 2010

P2-1 Sho Koga, Ikufumi Katayama, Jun Takeda, Toru Shimada, S Hishita, Daisuke Fujita, Masahiro Kitajima (Yokohama National University)

“Enhancement of Coherent D-mode phonons in Au-deposited Highly-Oriented Pyrolytic Graphite”

P2-2 Hongwoo Baek, Beomyong Hwang, Jeonghoon Ha, Toyoaki Eguchi, Yukio Hasegawa, and Young Kuk (Seoul National University)

“CVD Growth of Graphene and Confirmation with Scanning Probe Microscopy”

P2-3 Kodai Tokunaga, Ryo Kitaura, Hisanori Shinohara (Nagoya University)

“Chasing of reaction process for CNT nano-reactor”

P2-4 Satoru Sonae, Kaoru Kajiwara, Masato Ara and Hirokazu Tada (Osaka University)

“Modulation of Electrical Properties of Silicon Nanowires Using Organic Molecules Anchored to Their Surfaces”

P2-5 Yosuke Takeda and Hirokazu Tada (Osaka University)

“Modification of Interface Structures between Ferromagnetic Metals and Organic Films in Layered Spin-valve Devices”

P2-6 Sung-Kwon Shin, Shaoyun Huang, Naoki Fukata, Koji Ishibashi (RIKEN)

“Single-electron transport in Ge nanowires”

P2-7 Nguyen Thanh Quy, Hui Seong Jeong, and Ji-Yong Park (Ajou University)

“Identifying and Differentiating Carbon Nanotubes and Graphene Based on Force Spectroscopic Measurements with an Atomic Force Microscope”

P2-8 Motoki Noguchi, Ryo Yamada, and Hirokazu Tada (Osaka University)

“Magnetoresistance in Metal-Molecule-Metal Structures Studied by A Mechanically Controllable Break Junction Method”

P2-9 Takayuki Nishino, Ryota Negishi, Koji Ishibashi (RIKEN)

“Fabrication of nanogap electrode using molecular ruler technique”

“Fabrication of superconducting transistors with InAs nanowires”
P2-11 Takuya Nakayama, Ryo Kitaura, Yasumitsu Miyata, Hisanori Shinohara (Nagoya University)
“Chemical vapor deposition growth of carbon nanotubes using molecular cluster templates”

P2-12 Wei Liu, Kenji Sasaoka, Takahiro Yamamoto, Satoshi Watanabe (University of Tokyo)
“Theoretical study on the transient current behavior of a multi-level device”

P2-13 Huiseong Jeong, Hyang Myoung Gwon, Jong Hyuk Yim, Nguyen Thanh Quy, Y. H. Ahn, Soonil Lee, and Ji-Yong Park (Ajou University)
“Effects of Acid Treatments on the Electrical Transport Characteristics of Networks of Single-Walled Carbon Nanotube Devices”

P2-14 Yuki Iijima, Kazunori Ohashi, Naoki Imazu, Ryo Kitaura, Ken Kanazawa, Osamu Takeuchi, Hidemi Shigekawa, Hisanori Shinohara (Nagoya University)
“STM/STS Studies on the Electronic Structure of Hetero-Fullerenes Peapods”

P2-15 Hyang Myoung Gwon, Jong Hyuk Yim, Huiseong Jeong, Soonil Lee, Y.H.Ahn, Ji-Yong Park (Ajou University)
“Effects of UV exposure on the electrical transport characteristics of single walled carbon nanotube network devices”