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# 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

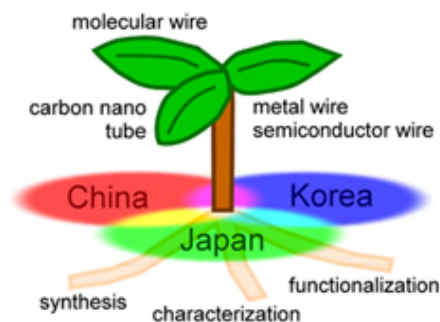
JSPS-KOSEF-NSFC A3 Foresight Program

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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, Tomihiro Hashizume, Taro Hitosugi (Tohoku University)

*“Investigation of Single-Crystal and Thin Film Surfaces of SrTiO<sub>3</sub> 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 SrTiO<sub>3</sub>(001)-( $\sqrt{13}\times\sqrt{13}$ ) 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 Nakatsuji, 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) $\sqrt{3}\times\sqrt{3}$ -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”*

16:45- 17:00 J. Wen, X. G. Zhu, G. Wang, L. L. Wang, X. C. Ma, K. He, X. Chen, J. F. Jia, Q. K.  
Xue (Tsinghua University)

*“Double Dirac cone” of Bi<sub>2</sub>Te<sub>3</sub> 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 Bi<sub>2</sub>Te<sub>3</sub> 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

**July 6 (Tuesday), 2010**

**Session V: SPM and manipulation**

Chaired by Xianqiang Liu

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, Yousoo 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**

Chaired by Fumio Komori

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 1**

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

**July 7 (Wednesday), 2010**

**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)

*“Novel Co-Axial Pd-Nanowire/Carbon Nanotube Heterostructures Grown by Plasma-Enhanced Chemical Vapor Deposition: Growth Mechanism and Applications”*

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)

*" MgB<sub>2</sub> 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 Komorida, Shin-ich Kimura, Akito Kakizaki, Shuji Hasegawa (University of Tokyo)  
*“Electronic structure of topological insulator Bi<sub>2</sub>Se<sub>3</sub> 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  $3 \times 3 - \sqrt{3} \times \sqrt{3}$  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)- $\sqrt{7} \times \sqrt{3}$ -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)4×1-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”*

P2-10 Takahiro Nishio, T. Kozakai, M. Larsson, H. A. Nilsson, H. Q. Xu, G. Zhang, K. Tateno, H. Takayanagi, and K. Ishibashi (RIKEN)

- “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”*