

Thursday, March 10, 2011

Opening Remarks (15:00–15:05)

- 15:05 I-01 [Invited] **Global Model of Micro Hollow Cathode Discharges in Argon**
P. Chabert, C. Lazzaroni, and A. Rousseau
Laboratoire de Physique des Plasmas, CNRS-Ecole Polytechnique, France
- 15:45 I-02 [Invited] **Plasma Propagation of a 13.56 MHz Asymmetric Surface Barrier Discharge in Atmospheric Pressure Air**
J. Dedrick¹, R.W. Boswell¹, P. Audier², H. Rabat², D. Hong², and C. Charles¹
¹The Australian National University, Australia, ²GREMI, France

Break (16:25–16:45)

- 16:45 O-01 **Weakly Magnetized Inductively Coupled Plasma Source for 450 mm Wafer Processing Tool**
H.-J. Lee and H.J. Lee
Pusan National University, Korea
- 17:05 O-02 **Optimal Aspect Ratio for Multi-hollow Microwave Discharge**
I.P. Ganachev^{1,2} and H. Sugai²
¹Shibaura Mechatronics Corporation, Japan, ²Chubu University, Japan
- 17:25 I-03 [Invited] **High Speed Surface Modification with AC Excited Ultra High Density Non-Equilibrium Atmospheric Pressure Plasma**
M. Hori^{1,2}
¹Nagoya University, Japan, ²JST-CREST, Japan

Banquet (19:00–21:00)

Friday, March 11, 2011

9:20 I-04 [Invited] **Applications of MIR-Laser Absorption Techniques for Plasma Diagnostics in Basic Research and Industry**
J. Röpcke¹, P.B. Davies², S. Glitsch¹, F. Hempel¹, M. Hübner¹, N. Lang¹, D. Lopatik¹,
A. Rousseau³, and S. Welzel^{1,4}
¹INP Greifswald, Germany, ²University of Cambridge, UK,
³LPP, Ecole Polytechnique, CNRS, France,
⁴Eindhoven University of Technology, The Netherlands

10:00 I-05 [Invited] **Application of Remote Hydrogen Plasma to Selective Processing for Ge-based Devices – Crystallization, Etching and Metallization**
S. Miyazaki
Nagoya University, Japan

Break (10:40–11:00)

11:00 O-03 **RF Waveform Tailoring to Control Film Morphology during Nanocrystalline Silicon PECVD**
J-P Booth¹, E.V. Johnson², P-A. Delattre¹, T. Verbeke¹, and J-C Vanel²
¹Laboratoire de Physique des Plasmas-CNRS, Ecole Polytechnique, France,
²LPICM-CNRS, Ecole Polytechnique, France

11:20 O-04 **Effect of Ion Biasing Energy on Growth of Carbon Nanomaterials at Low Substrate Temperature Using Microwave Plasma CVD**
R.V. Bekarevich^{1,2}, S. Miura¹, Di Lu³, A. Ogino¹, and M. Nagatsu¹
¹Shizuoka University, Japan, ²Francisk Skorina Gomel State University, Belarus,
³Suzhou Institute of Nano-tech and Nano-bionics, Chinese Academy of Science, China

11:40 O-05 **Ultra Low Resistive NM Thick AZO Films Deposited by Magnetron Sputtering Using Solid Phase Crystallization**
M. Shiratani, N. Itagaki, K. Kuwahara, K. Nakahara, D. Yamashita, G. Uchida,
K. Kamataki, and K. Koga
Kyushu University, Japan

12:00 O-06 **Light-Weighted Micromirror Fabricated Using Stacked Photoresist Masks Realized by UV Curing**
A. Hikita, T. Iwamoto, S. Kumagai, and M. Sasaki
Toyota Technological Institute, Japan

Lunch (12:20–14:00)

- 14:00 I-06 [Invited] **Benchmark Calculations of Atomic Data for Plasma Applications**
K. Bartschat
Drake University, USA
- 14:40 I-07 [Invited] **New Phenomenology in Description of Townsend Discharges and Gas Breakdown: from Standard Size to Micro discharges**
Z. Lj. Petrović, D. Marić, N. Škoro, M. Savić, J. Sivoš, M. Radmilović Rađenović,
M. Šuvakov, G. Malović
University of Belgrade, Serbia
- 15:20 O-07 **Surface Roughness Formation during Si Etching in Cl₂ and Cl₂/O₂ Plasmas: Atomic-scale Analysis of Three-dimensional Feature Profile Evolution**
H. Tsuda, Y. Takao, K. Eriguchi, and K. Ono
Kyoto University, Japan

Coffee Break (15:40–16:00)

Poster Session (16:00–18:00)

- P-01 **Generation of High Energy Electron Beams and Its Application for Cathode Luminescence Measurements of Gallium Nitride Semiconductor in Inductively-Coupled Plasmas**
J.S. Gao, T. Kondou, N. Ito, Y. Nakano, K. Nakamura, and H. Sugai
Chubu University, Japan
- P-02 **Super-hydrophilic Properties of Titanium Dioxide Thin Film Deposited by Pulse dc Magnetron Sputtering Plasma**
S. Parajulee, S. Sharma, P. Anil, and S. Ikezawa
Chubu University, Japan
- P-03 **A New Reconstruction Method of the Time-dependent Heat Flux from the Thermocouple Data**
H. Matsuura¹ and K. Nagaoka²
¹Osaka Prefecture University, Japan, ²National Institute of Fusion Science, Japan
- P-04 **Comparative Study on the Hydrophobicity Using Atmospheric Plasmas**
S.-G. Cho, K.-C. Ko, J.-W. Kim, H.-J. Woo, and K.-S. Chung
Hanyang University, Korea
- P-05 **Helium Plasma Irradiation: A Novel Bottom-up Approach for Nanofabrication of Metals**
S. Kajita¹, T. Saeki¹, Y. Hirahata¹, M. Yajima¹, T. Yokochi¹, N. Ohno¹, R. Yoshihara², N. Yoshida²
¹Nagoya University, Japan, ²Kyushu University, Japan

- P-06 **High Efficient CO₂ Decomposition by Large Flow Atmospheric Microwave Plasma (LAMP)**
S. Ikezawa, S. Parajulee, S. Sharma, and A. Pandey
Chubu University, Japan
- P-07 **The Exposure of Non-thermal Atmospheric Pressure Plasma Controls the Proliferation of Human Cells**
J. Kim¹, C.S. Ha², Y.H. Lee², H.J. Lee², and K. Song¹
¹Yonsei University, Korea, ²Pusan University, Korea
- P-08 **Adsorption Property of Graphite-coated Magnetic Nanoparticles Surface-Modified by Microwave Plasma**
A. Balmakou^{1,2}, T.E. Saraswati¹, A. Ogino¹, I. Semchenko², and M. Nagatsu¹
¹Shizuoka University, Japan, ²Francisk Skorina Gomel State University, Belarus
- P-09 **RF Thermal Plasma Synthesis of Titanium Boride Nanoparticles**
Y. Cheng and T. Watanabe
Tokyo Institute of Technology, Japan
- P-10 **Investigation of C₆H₆ Dissociation Process in a Microwave Plasma**
K. Keyamura, T. Ishijima, and H. Toyoda
Nagoya University, Japan
- P-11 **Real-time/In-situ Electron-Spin-Resonance Analysis of Surface Reactions on Organic Materials in Plasma Processes**
N. Sumi¹, K. Ishikawa¹, A. Kono², H. Horibe², K. Takeda^{1,3}, H. Kondo¹, M. Sekine¹, and M.Hori^{1,3}
¹Nagoya University, Japan, ²Kanazawa Institute of Technology, Japan, ³JST-CREST, Japan
- P-12 **Atmospheric Pressure Deposition of ZnO Films**
O.V. Penkov, H.J. Lee, S.B. Joa, and S.M. Chen
Jeju National University, Korea
- P-13 **Numerical Investigation of Bubble Formation in Solution Plasma Processing**
T. Shirafuji¹, K. Asano², J. Hieda², N. Saito², and O. Takai²
¹Osaka City University, Japan, ²Nagoya University, Japan
- P-14 **Measurement of SiH₃ Spatial Profile in H₂/SiH₄ Microwave Plasma**
M. Ikeda, T. Kuroda, T. Ishijima, and H. Toyoda
Nagoya University, Japan
- P-15 **Treatment of Flowing Organic Solution by Microwave Excited Plasma under Reduced-Pressure Condition**
K. Kanetake, T. Ishijima, and H. Toyoda
Nagoya University, Japan

- P-16 **Spatially Resolved Measurements of Ion Density and Electron Temperature in a Dual-frequency Capacitively Coupled Plasma by Improved Double Probe Technique**
W.-Q. Lu, X.-Z. Jiang, Y.-X. Liu, S. Yang, Q.-Z. Zhang, Z.-H. Bi, X.-S. Li, and Y.-N. Wang
Dalian University of Technology, China
- P-17 **NO_x Removal Using Non-thermal Surface Plasma Discharge with a Thin Layer of γ -alumina**
J. Jolibois, K. Takashima, and A. Mizuno
Toyohashi University of Technology, Japan
- P-18 **Effects of Operational Parameters on Ethylene Epoxidation Using a Cylindrical Dielectric Barrier Discharge System**
T. Suttikul¹, T. Sreethawong¹, H. Sekiguchi², and S. Chavadej¹
¹Chulalongkorn University, Thailand, ²Tokyo Institute of Technology, Japan
- P-19 **As-deposited TiO₂ films with High Photocatalytic Activity by Atmospheric-pressure Dielectric Barrier Discharge Plasma**
D.-L. Chang, X.-S. Li, L.-B. Di, J.-H. Yang, Y. Xu, and A.-M. Zhu
Dalian University of Technology, China
- P-20 **Investigation of Si Etch Reaction with F and O Radicals Using SF₆/O₂ Plasma**
S. Amasaki¹, T. Takeuchi¹, K. Takeda¹, K. Ishikawa¹, H. Kondo¹, M. Sekine¹, M. Hori¹, N. Sakurai², H. Hayashi², I. Sakai², and T. Ohiwa²
¹Nagoya University, Japan, ²Toshiba Corporation, Japan
- P-21 **Effects of Plasmacluster Ion[®] on Moisturizing Skin and Improving Skin Elasticity and Texture**
E. Nishiuchi and K. Nishikawa
Sharp Corporation, Japan
- P-22 **Deposition of P-doped a-Si:H Films of a Low Defect Density Using SiH₄+PH₃ Multi-hollow Discharge Plasma CVD**
K. Nakahara, Y. Kawashima, Y. Kim, M. Sato, T. Matsunaga, K. Yamamoto, D. Yamashita, H. Matsuzaki, K. Kamataki, G. Uchida, K. Koga, and M. Shiratani
Kyushu University, Japan
- P-23 **Observations of Plasmas and Cavitation Bubble-like Phenomena Induced by Laser Ablation in Supercritical Water**
H. Goto¹, N. Takada¹, A. Kono¹, and K. Sasaki²
¹Nagoya University, Japan, ²Hokkaido University, Japan

- P-24 **Enhancement of Burning Velocity in Premixed Gas Burner Flame by the Superposition of a Dielectric Barrier Discharge**
K. Zaima¹, N. Takada¹, A. Kono¹, and K. Sasaki²
¹Nagoya University, Japan, ²Hokkaido University, Japan
- P-25 **Chemical Modeling of Etch Process Using C₃F₆O Alternative Gas**
Y. Kondo¹, Y. Miyawaki¹, K. Takeda¹, K. Ishikawa¹, H. Kondo¹, T. Hayashi¹, H. Okamoto²,
M. Sekine¹, and M. Hori¹
¹Nagoya University, Japan, ²Asahi Glass Co., Ltd., Japan
- P-26 **Effects of Substrate Temperature on Properties of μ C-Si:H Films Deposited Using Multi-hollow Discharge Plasma CVD**
Y. Kim, T. Matsunaga, Y. Kawashima, K. Nakahara, G. Uchida, K. Kamataki, N. Itagaki, K. Koga,
and M. Shiratani
Kyushu University, Japan
- P-27 **Growth Enhancement of Plants Using Atmospheric Pressure Dielectric Barrier Discharge Irradiation**
S. Kitazaki¹, G. Uchida¹, K. Koga¹, M. Shiratani¹, and N. Hayashi²
¹Kyushu University, Japan, ²Saga University, Japan
- P-28 **Combinatorial Deposition of Surface Nitridated Si Nano-particle Composite Films by Double Multi-hollow Discharges**
M. Sato, K. Yamamoto, Y. Kawashima, K. Nakahara, T. Matsunaga, D. Yamashita, H. Matsuzaki,
G. Uchida, K. Kamataki, N. Itagaki, K. Koga, and M. Shiratani
Kyushu University, Japan
- P-29 **In-flight Melting Behavior of Granular Alkali-free Glass by Multi-phase AC Arc and Hybrid Plasma**
Y. Liu¹, M. Tanaka¹, Y. Tsuruoka¹, T. Watanabe¹, C. Tanaka², and O. Sakamoto²
¹Tokyo Institute of Technology, Japan, ²Asahi Glass Co., Ltd., Japan
- P-30 **Process Window of Microcrystalline Silicon Films Deposited Using Multi-hollow Discharge Plasma CVD**
T. Matsunaga, Y. Kim, Y. Kawashima, K. Koga, D. Yamashita, K. Nakahara, M. Sato, G. Uchida,
K. Kamataki, N. Itagaki, and M. Shiratani
Kyushu University, Japan
- P-31 **Plasma Process for Micro-Nano Hierarchically Structured Films with Hexagonal Close-Packed and Non-Close-Packed Arrangement Using Laser Ablation or Sputtering**
N. Koshizaki, S. Gao, and Y. Li
National Institute of Advanced Industrial Science and Technology (AIST), Japan

- P-32 **High-speed DLC Coating Employing High-density Near Plasma Sustained by Microwave Propagation along Plasma-sheath Interface**
T. Okamoto, H. Kousaka, and N. Umehara
Nagoya University, Japan
- P-33 **Reactive Species Measurement of an Atmosphere-pressure Plasma by a Differentially-Pumped Mass-Spectrometer**
Y. Sawaguchi, T. Ishijima, and H. Toyoda
Nagoya University, Japan
- P-34 **Improvement of Silicon Thin Film Quality for Photovoltaic Cells by Modified Microwave Antenna Structure**
Y. Ito, J. Sakai, T. Ishijima, and H. Toyoda
Nagoya University, Japan
- P-35 **Glass Panel Surface Treatment by Atmospheric Microplasma**
K. Shimizu, A. Umeda, and M. Blajan
Shizuoka University
- P-36 **Electrical Charging Characteristics of Pt-Nanodots Floating Gate in MOS Capacitors**
K. Makihara¹, N. Morisawa², M. Ikeda², K. Matsumoto², M. Yamane², S. Higashi², and S. Miyazaki¹
¹Nagoya University, Japan, ²Hiroshima University, Japan
- P-37 **Investigation of Surface Reactions in ArF Photoresist by Using Parallel Plate Structure in Conjunction with Numerical Analysis**
A. Malinowski^{1,2}, M. Sekine¹, M. Hori¹, K. Ishikawa¹, H. Kondo¹, T. Suzuki¹, T. Takeuchi¹, H. Yamamoto¹, A. Jakubowski², and L. Lukasiak²
¹Nagoya University, Japan, ²Warsaw University of Technology, Poland
- P-38 **Nucleation Control of Carbon Nanowalls Grown Using Inductively Coupled Plasma-enhanced CVD**
Y. Nihashi¹, M. Hiramatsu¹, H. Kondo², and M. Hori²
¹Meijo University, Japan, ²Nagoya University, Japan
- P-39 **Improvement of Deposition Uniformity of Aligned Carbon Nanotube Films Using Microwave Plasma-enhanced CVD**
M. Naito¹, K. Murata¹, M. Hiramatsu¹, and M. Hori²
¹Meijo University, Japan, ²Nagoya University, Japan
- P-40 **Electrical and Chemical Structures of Nanographene Nucleated at Initial Growth Processes of Carbon Nanowalls**
K. Yasuda¹, H. Kondo¹, M. Hiramatsu², M. Sekine¹, and M. Hori¹,
¹Nagoya University, Japan, ²Meijo University, Japan

- P-41 **Control of Bridging Growth and Electrical properties of Single Carbon Nanowalls**
T. Kanda¹, H. Kondo¹, K. Yamakawa², M. Hiramatsu³, K. Takeda¹, K. Ishikawa¹, M. Sekine¹, and M. Hori¹
¹Nagoya University, Japan, ²Katagiri Engineering Co., Ltd., Japan, ³Meijo University, Japan
- P-42 **Dissociations of Alternate Etching Gases in Reactive Plasma**
T. Hayashi¹, K. Ishikawa¹, M. Sekine¹, M. Hori¹, A. Kono¹, and K. Suu²
¹Nagoya University, Japan ²ULVAC Inc., Japan
- P-43 **Control of Surface and Interfacial Structures by Radical Nitridation Technique for Ge MOS Transistors**
K. Kato, H. Kondo, M. Sakashita, W. Takeuchi, O. Nakatsuka, and S. Zaima
Nagoya University, Japan
- P-44 **Gas Phase Reaction of Activated Species in O₂/Ar Nonequilibrium Atmospheric Pressure Plasma**
M. Kato, K. Takeda, K. Ishikawa, H. Kondo, M. Sekine, and M. Hori
Nagoya University, Japan
- P-45 **ECR Hyperthermal Neutral Beam Source for Low Temperature GaN Epitaxial Growth**
S.B. Kim^{1,2}, D. Ku¹, H. Chang^{1,2}, M. Cho², S.J. Yoo¹
¹National Fusion Research Institute, Korea,
²Pohang University of Science and Technology, Korea
- P-46 **Improvement on Electrical Stress Endurance of Low-Temperature Deposited SiO₂ Films by Atmospheric Pressure Thermal-Plasma-Jet Annealing**
Y. Nishida, S. Hayashi, K. Matsumoto, and S. Higashi
Hiroshima University, Japan
- P-47 **Behavior of Atomic Species in the Multi-Micro Hollow Cathode Lamp Measured by Laser Absorption Spectroscopy**
M. Inoue¹, T. Ohta¹, T. Kanae¹, N. Takota¹, M. Ito², H. Kano³, K. Yamakawa⁴, and M. Hori⁵
¹Wakayama University, Japan, ²Meijo University, Japan, ³NU Eco Engineering Co., Ltd., Japan,
⁴Katagiri Engineering Co., Ltd., Japan, ⁵Nagoya University, Japan
- P-48 **HXPES Analysis of Ar+O₂ Plasma Exposed Zn/PET Interface for Inorganic Layer Formation on Organic Materials**
K. Cho^{1,4}, K. Takenaka^{1,4}, Y. Setsuhara^{1,4}, M. Shiratani^{2,4}, M. Sekine^{3,4}, and M. Hori^{3,4}
¹Osaka University, Japan, ²Kyushu University, Japan, ³Nagoya University, Japan,
⁴Japan Science and Technology Agency, CREST, Japan
- P-49 **Mist-Plasma CVD of ZnO Films with Zn(CH₃COO)₂ Solution**
K. Takenaka, Y. Okumura and Y. Setsuhara
Osaka University, Japan

- P-50 **Temperature Measurement of Silicon Wafer Treated by Atmospheric Pressure Plasma Using Frequency Domain Low Coherence Interferometer**
T. Tsutsumi¹, T. Ohta¹, M. Ito², and M. Hori³
¹Wakayama University, Japan, ²Meijo University, Japan, ³Nagoya University, Japan
- P-51 **Passivation of Plasma Damaged GaN with Hydrogen Radical Anneal**
Sh. Chen¹, Y. Lu¹, R. Kometani¹, K. Takeda¹, K. Ishikawa¹, H. Kondo¹, H. Kano², Y. Tokuda³,
M. Sekine¹, Y. Setsuhara⁴, T. Egawa⁵, H. Amano¹, and M. Hori¹
¹Nagoya University, Japan, ²NU Eco-Engineering Co., Ltd., Japan,
³Aichi Institute of Technology, Japan, ⁴Osaka University, Japan,
⁵Nagoya Institute of Technology, Japan
- P-52 **Measurement of Atomic Oxygen in Ultrahigh Density 60 Hz Atmospheric Pressure Plasma by Two Photon Absorption Laser Induced Fluorescence**
F. Jia¹, K. Takeda¹, K. Ishikawa¹, H. Inui¹, S. Iseki¹, H. Kano², H. Kondo¹, M. Sekine¹, and
M. Hori¹
¹Nagoya University, Japan, ²NU Eco-Engineering Co., Ltd., Japan
- P-53 **Surface Analysis of GaN Irradiated by Cl₂ Plasma Beam**
Y. Lu¹, S. Chen¹, R. Kometani¹, K. Ishikawa¹, H. Kondo¹, K. Takeda¹, M. Sekine¹, T. Egawa²,
H. Amano¹, Y. Setsuhara³, and M. Hori¹
¹Nagoya University, Japan, ²Nagoya Institute of Technology, Japan, ³Osaka University, Japan
- P-54 **Space- and Time-Resolved Measurement of Electric Field in Atmospheric-pressure Pulsed Microwave Plasma**
T. Murase, A. Kamata, T. Ishijima, and H. Toyoda
Nagoya University, Japan
- P-55 **Deposition of Ti/C Nano-Multilayered Films by Magnetron DC Sputtering Using Dual Targets**
T. Sonoda, S. Nakao, and M. Ikeyama
National Institute of Advanced Industrial Science and Technology (AIST), Japan
- P-56 **Diagnostics and Surface Reaction Analysis on RF Sputtering Process for Co Nanoparticles Formation**
I-S Bae¹, K. Kuno², M. Ito², H. Kondo¹, M. Sekine¹, and M. Hori¹
¹Nagoya University, Japan, ²Meijo University, Japan
- P-57 **Experimental Study of Electric Discharge Treatment of Nanodiamond Particles in Liquid and Gas Phases**
D. Medvedev, V. Petyev, D. Sapunov, and B. Potapkin
Russian Research Center “Kurchatov Institute”, Russia

P-58

Optimization of Dense Plasma Focus Device for the Preparation of Silicon Nanostructure

M. Kotb, A.H. Sudy, S. Hassaballa, and M.M. Eloker

Physics Department, Faculty of Science, Al-Azhar University, Nasr city, Cairo, Egypt

Saturday, March 12, 2011

- 9:00 I-08 [Invited] **The Physics and Chemistry of Plasmas In and Onto Liquids**
W.G. Graham and the QUB Low Temperature Plasma Research Team
Queen's University Belfast, UK
- 9:40 I-09 [Invited] **Generation of Controlled Gas-Liquid Interfacial Plasmas for Synthesis of Novel Nano-Bio Conjugates**
T. Kaneko^{1,2}, T. Harada¹, Q. Chen¹, and R. Hatakeyama¹
¹Tohoku University, Japan, ²CREST/JST, Japan
- Break (10:20–10:35)
- 10:35 O-08 **Non Equilibrium Plasma Conversion of Pyrogas into Synthesis Gas**
F. Odeyemi, A. Rabinovich, and A. Fridman
Drexel University, USA
- 10:55 O-09 **Synthesis of Nano-graphene by Plasma in Liquid Ethanol**
T. Hagino¹, H. Kano², K. Ishikawa¹, K. Takeda^{1,3}, H. Kondo¹, M. Sekine^{1,3}, and M. Hori^{1,3}
¹Nagoya University, Japan, ²NU Eco Engineering, Japan, ³JST-CREST, Japan
- 11:15 I-10 [Invited] **Plasma Treatment of Living Tissues — How Penetrating are the Plasma-mediated Therapeutic Effects**
M.G. Kong and G. Shama
Loughborough University, UK

Closing Remarks (11:55–12:00)