

The 10th International Workshop of Advanced Plasma Processing and Diagnostics

Date : January 8 - 10, 2010

Venue : Nagasaki University, Japan

Organized by

- Plasma-Nano Technology Center (PLANT), Nagoya University, Japan
- Center for Advanced Plasma Surface Technology (CAPST), SKKU, Korea
- Brain Korea 21 Human Resource Center for Next Generation IT materials and Components, SKKU, Korea
- The Japan Society of Applied Physics, Kyushu Chapter, Japan
- Aichi Science and Technology Foundation (Tokai Region Knowledge Cluster Headquarters), Japan

Organizing Chairperson:

- M. Hori (Nagoya University, Japan)
- M. Shiratani (Kyushu University, Japan)
- J G. Han (SKKU, Korea)

Executive Chairperson:

- H. Fujiyama (Nagasaki University)

Scope : Green Plasma Technology for Flexible Electronics and Renewable Energy

Jan. 8

19:00 Welcome dinner

Jan. 9

9:30-9:35 Opening Prof. J G. Han, Prof. M. Hori

Plenary Lectures (3) (30min+15min Q&A)

9:35-10:20 Generation of Plasma in Supercritical Fluid and its Application to Reaction
M. Goto, Kumamoto University, Japan

10:20-11:05 Microplasma jets and their application
Han S. Uhm, Ajou University, Korea

11:05-11:50 Solar Cells in Infrared Range Based on Plasma-Processed Carbon

Nanotubes

T. Kaneko, T. Kato, Y. Li, T. Kato, R. Hatakeyama, Tohoku University, Japan

11:50-13:00 Lunch

Invited Talks (9) (15min +15min Q&A)

- 13:00 Simultaneous monitoring of In and Zn densities in indium-zinc-oxide magnetron sputtering plasmas
M. Ito
Meijo University, Japan
- 13:30 Design for functional film processes by plasma CVD and magnetron sputtering for flexible electronics and renewable energy
Jeon G. Han, Yoon S. Choi, In S. Choi
CAPST, SKKU, Korea
- 14:00 Nanoscale engineering for plasma etching of future device fabrication
K. Ishikawa
Nagoya University, Japan
- 14:30 Measurement of Energy Band Structure in MgO Single Crystal
Eun Ha Choi
Kwangwoon University, Korea
- 15:00 $\mu\text{c-Si:H}$ film precursors and microstructural properties
S. Nunomura
AIST, Japan
- 15:30 Break Time
- 15:45 Preparation of TaN-Cu and TaN-Ag nanocomposite thin films and their anti-wear and anti-bacteria behaviors
Joe H. Hsieh
Ming Chi University of Technology, Taiwan
- 16:15 Effect of Nitrogen Content on Friction Coefficient of Si-Containing Hydrogenated Carbon Nitride Film
H. Kosaka, H. Sakakibara, T. Tokoroyama and N. Umehara
Nagoya University, Japan

- 16:45 Functional SiO_x film synthesis on polymer by dual plasma CVD investigated by optical emission spectroscopy and FTIR analysis
Yoon S. Choi, Su B. Jin, Hye R. Kim, Jeon G. Han
CAPST, SKKU, Korea
- 17:15 Soft Materials Processing Technologies for Flexible Electronics
Yuichi Setsuhara^{1,4}, Masaharu Shiratani^{2,4}, Makoto Sekine^{3,4} and Masaru Hori^{3,4}
¹ Osaka University, Ibaraki, Japan
² Kyushu University, Fukuoka, Japan
³ Nagoya University, Nagoya, Japan
⁴ JST, CREST
- 17:45 An experimental study on CCP plasma density enhancement by the multi-hole hollow cathode electrode
Sang-Hun Seo
KAITST, Korea
- 18:15 Focussed Inert Ion Beam systems for 3D rock tomography on the nano-scale
Rod Boswell and Tim Senden
RSPE, ANU, Canberra, ACT, Australia
- 20:00 Dinner (Banquet)
- 20:00 Asian Joint Committee Meeting (AEPSE) with Dinner
The meeting will be held at the same place as the banquet place.

Jan 10

Plenary Lectures (2) (30min+15min Q&A)

- 9:00 Green Plasma Chemistry for Synthetic Fuel Manufacturing
T. Nozaki
Tokyo Institute of Technology, Japan
- 9:45 Advanced plasma source for large area processing
Hong Y. Chang
KAIST, Korea

10:30 Break Time

Invited Talks (3) (15min +15min Q&A)

10:45 Spatiotemporal Behavior of Excited Xenon Atom Density in Accordance with Xenon Mole Fraction to Neon and Helium in Alternating Current Plasma Display Panels by Laser Absorption Spectroscopy
Yong Hee Kim, Young June Hong, Philyong Oh, Kibaek Song, Guangsup Cho, Eun Ha Choi
Kwangwoon University, Korea

11:15 Towards the multiple exciton generation solar cells – Si quantum-dot sensitized solar cells –
M. Shiratani, Y. Kawashima, K. Nakahara, H. Sato, W. M. Nakamura, and K. Koga
Kyushu University, Japan

11:45 The characteristics of electrical-thermal-structural analysis of thin film transistors
Youn Jea Kim, Jin Hyo Boo, Deok Kyu Lee
CAPST, SKKU, Korea

12:15 Lunch

13:15 ITP (International Training Program) Student Workshop (12)
(7 min Talk +5min Q&A)

Organized and preceded by students (5 Japan + 5 Korea)

Micro-crystalline Si film synthesis on glass by dual frequency PECVD

Youn J. Kim, Yoon S. Choi, In S. Choi, Jeon G. Han

CAPST, SKKU, Korea

Hardness of silicon oxide films with controlling to the ion flux by PECVD

Su B. Jin, Yoon S. Choi, In S. Choi, Jeon G. Han

CAPST, SKKU, Korea

Ultra high etch selectivity and variation of line edge roughness during etching of

silicon oxynitride with patterned extreme ultra-violet resist in dual-frequency capacitively coupled plasmas

Bong Su. Kwon, W. Heo, N.-E. Lee, S. K. Lee

CAPST, SKKU, Korea

Emission characteristics of a liquid metal ion source with a suppressor

Byeong Seong Cho, Kibaek Song, Hyunjoo Oh, Eun Ha Choi

Kwangwoon University, Korea

Nano-crystalline Si film synthesis by ICP assisted magnetron sputtering at low temperature

Kyung S. Shin, Yoon S. Choi, In S. Choi, Jeon G. Han

CAPST, SKKU, Korea

Simulation of 3D gate fabrication by plasma etching for environment- friendly processing

A. Malinowski

Warsaw Institute of Technology, Poland

Development of radical source and its application to GaN growth for LED

S. Chen, H. Kondo, M. Sekine, M. Hori, H. Kano

Nagoya University, NU Eco/Engineering, Japan

Nano-particle composite ULK films deposited by plasma CVD

S. Iwashita, M. Shiratani

Kyushu University, Japan

Effects of hydrogen dilution on electron density in multi-hollow discharges with magnetic field

Kenta Nakahara, M. Shiratani

Kyushu University, Japan

Behavior of High-Energy Oxygen Negative Ions in Magnetron Plasma with Oxide Targets

K. Goto, T. Ishijima, T. Morita, N. Ohshima, K. Kinoshita, H. Toyoda

Nagoya University, Japan

- JP01 Synthesis of carbon film employing radical injection PECVD
T. Kino, H. Kondo, M. Sekine, M. Hori
Nagoya University, Japan
- KP01 Micro-crystalline Si film synthesis on glass by dual frequency PECVD
Youn J. Kim, Yoon S. Choi, In S. Choi, Jeon G. Han
CAPST, SKKU, Korea
- JP02 Synthesis of $\mu\text{c-Si}$ and diagnostics in a VHF capacitively coupled plasma
employing SiH_4/H_2
S. Kawashima, Abe, H. Kondo, M. Sekine, M. Hori
Nagoya University, Japan
- KP02 Ultra high etch selectivity and variation of line edge roughness during etching
of silicon oxynitride with patterned extreme ultra-violet resist in
dual-frequency capacitively coupled plasmas
Bong Su. Kwon, W. Heo, N.-E. Lee, S. K. Lee
CAPST, SKKU, Korea
- JP03 Dependence of emission intensities on discharge power of H atom source in H_2
+ Ar + C_7H_8 CVD plasmas
T. Nomura, M. Shiratani
Kyushu University, Japan
- KP03 Emission characteristics of a liquid metal ion source with a suppressor
Byeong Seong Cho, Kibaek Song, Hyunjoo Oh, Eun Ha Choi
Kwangwoon University, Korea
- JP04 Carbon dust formed due to interaction between graphite and H_2 plasma
H. Miyata, M. Shiratani
Kyushu University, Japan
- KP04 Toluene-TEOS hybrid plasma-polymer thin films for interlayer dielectric
materials
Sang-Jin Cho, Sang-Hun Nam, and Jin-Hyo Boo
CAPST, SKKU, Korea

- JP05 Carrier extraction from Si nanoparticles in quantum dots-sensitized solar cell
Y. Kawashima, M. Shiratani
Kyushu University, Japan
- KP05 Nano-crystalline Si film synthesis by ICP assisted magnetron sputtering at low temperature
Kyung S. Shin, Yoon S. Choi, In S. Choi, Jeon G. Han
CAPST, SKKU, Korea
- JP06 Plasma nitridation of high-k gate Ge thin films for next generation ULSI
H. Kondo, S. Zaima
Nagoya University, Japan
- KP06 Hardness of silicon oxide films with controlling to the ion flux by PECVD
Su B. Jin, Yoon S. Choi, In S. Choi, Jeon G. Han
CAPST, SKKU, Korea
- JP07 Mechanism of plasma Oxidation Process
K. Takeda, M. Hori
Nagoya University, Japan
- JP08 Fine Wire Stripping by Hybrid Plasmas at Medium Pressures
N. Goto¹, K. Tatsuishi¹, S. Nishiyama², N. Iwamoto², Y. Tokunaga², M. Shinohara¹ and H. Fujiyama¹
¹Nagasaki University, Japan
²Japan Fine Steel CO., Ltd, Japan
- JP09 Generation of Three-Phase AC Triangle Plasmas for Fine Wire Stripping
K. Tatsuishi¹, N. Goto¹, S. Nishiyama², N. Iwamoto², Y. Tokunaga², M. Shinohara¹, H. Fujiyama¹
¹Nagasaki University, Japan
²Japan Fine Steel CO., Ltd, Japan

16:30-17:30 Joint discussion on perspective of green plasma technology in Asia
(Moderators : Prof. Hori and Prof. Han)

Preceding Talks: 5min (Invited)

- Plasma innovation towards next generation Green Technology
M. Hori, M. Sekine, H. Toyoda (Nagoya University, Japan)
- Proposals towards the future plasma science and technology in Asia
H. Fujiyama (Nagasaki University, Japan)
- Green plasma source and diagnostics (Tentative)
H. S. Uhm, Ajou Univ., Korea

Followed by Discussions

17:30 Closing Prof. M. Shiratani, Prof. H. Fujiyama, Prof. J G. Han

19:00 Sayonara (Farewell) Dinner

AEPSE: Asian committee Meeting

- Prof. Jeon G. Han, Korea/hanjg@skku.edu
- Prof. H. Fujiyama, Japan/plasma@nagasaki-u.ac.jp
- Prof. M. Hori, Japan,/hori@nuee.nagoya-u.ac.jp
- Prof. Y. Setsuhara, Japan/setsuhara@jwri.osaka-u.ac.jp
- Prof. F. Z. Cui, China /cuifz@mail.tsinghua.edu.cn
- Prof. Ming-Kai Lei, China/surfing@dlut.edu.cn
- Prof. Joe Hsieh, Taiwan/jhhsieh@mail.mcut.edu.tw
- Prof. A. Rashidi, Iran/shahidish@yahoo.com
- Prof. Eun Ha Choi, Korea/ehchoi@kw.ac.kr