

The 11th International Workshop on Advanced Plasma Processing and Diagnostics

Major Scope: *Green Plasma Technology for Energy Harvesting, Flexible Electronics and Bio-medical materials*

Dates : July 8th(Thur) – 9th(Fri)

Place: Ramada Jeju Hotel, Jeju, Korea

Organized by

- Center for Advanced Plasma Surface Technology (CAPST), SKKU, Korea
- Plasma Nanotechnology Research Center (PLANT), Nagoya University, Japan
- Brain Korea 21 Human Resource Center for Next Generation IT materials and Components, SKKU, Korea
- Korean Joint Committee for Applied Plasma Science and Engineering, Korea
- Advanced PDP Collaboration Research Center, Kwangwoon University, Korea
- Convergence Plasma Research Center, National Fusion Research Institute (NFRI), Korea
- Korea Institute of Materials Science(KIMS), Korea
- Aichi Science and Technology Foundation (Tokai Region Knowledge Cluster Headquarters), Japan

Supported by

- Korea Vacuum Society, Korea
- The Japan Society of Applied Physics, Kyushu Chapter, Japan
- Asian Joint Committee for Applied Plasma Science and Engineering

Organizing Chairpersons:

J. G. Han (SKKU, Korea) and Masaru Hori (Nagoya University, Japan)

Executive Chairpersons:

Eun Ha Choi (Kwangwoon University , Korea)

Masaharu Shiratani (Kyusyu University, Japan)

Organizing Committee:

Members from Korea, Japan and other countries

July 8(Thur.)

**14:00 – 14:10 Opening remarks (Prof. Chi Kyu, Choi, Jeju University, and
Prof. Masaru Hori, Nagoya University)**

2 Plenary Lectures(30min+10min Q&A)

**Session chairperson Prof. Hong Young Chang, KAIST, Korea
Prof. Kazunori Koga, Kyushu University, Japan**

**14:10-14:50 Utilization of clean synthesis gas from plasma gasification and
vitrification of wastes**

Dr. Soon Mo, Hwang, GSplatech, Korea

**14:50-15:30 Micro-Spot Atmospheric Pressure Plasma Production for the
Bio-Medical Application**

Prof. Takamichi Hirata, Tokyo City University, Japan

15:30-15:40 Break

7 Invited Talks(20 min +10 min Q&A)

**15:40-16:10 Numerical Modelling: a Tool for 450 mm Wafer Processing
Equipments**

Prof. Jung Hoon Joo, Kunsan National University, Korea

16:10-16:40 Plasma Fluctuations in Pristine and Reactive Plasmas

Prof. Kunihiro Kamataki, Kyushu Univeristy, Japan

**16:40-17:10 Properties of tin and zinc doped indium oxide films prepared on
flexible substrates**

Dr. Do-Geun Kim, Korea Institute of Materials Science (KIMS), Korea

- 17:10-17:40 Self-organizing growth of carbon nanomaterials by plasma and its application to energy harvesting devices
Prof. Hiroki Kondo, Nagoya University, Japan**
- 17:40-18:10 Wave-Cutoff Method for real time measurement of plasma parameter with high time resolution
Prof. Hong Young Chang, Korea Advanced Institute of Science and Technology, Korea**
- 18:10-18:40 Soft Plasma Processing Science for Flexible Electronics
Prof. Yuichi Setsuhara, Osaka University, Japan**
- 18:40-19:10 Improvement of biocompatibility of metallic dental material by metal plasma source ion implantation
Dr. Eungsun Byon, Korea Institute of Materials Science (KIMS),Korea**
- 19:20 Welcome Dinner**

July 9(Fri)

2 Plenary Lectures(30min+10min Q&A)

**Session chairperson Prof. Eun. Ha. Choi, Kwangwoon University, Korea
Prof. Makoto Sekine, Nagoya University, Japan**

- 09:00-09:40 Recent Development of Non-thermal Plasma Technologies in Environmental Remediation and Bacterial Inactivation
Dr. Hirofumi Kurita, Toyohashi University of Technology, Japan**
- 09:40-10:20 Green Plasma Technologies at National Fusion Research Institute (NFRI)
Dr. Seok Jae Yoo, Convergence Plasma Research Center,
National Fusion Research Institute, Korea**

10:20-10:30 Break

5 Invited Talks (20 min +5 min Q&A)

**10:30-10:55 Microwave Steam Torch and Reforming of Hydrocarbon Fuel
Prof. Han Sup Uhm, Kwangwoon University, Korea**

**10:55-11:20 Evolution of green plasma nanotechnology for harvesting energy devices
Prof. Masaharu Shiratani, Kyushu University, Japan**

**11:20-11:45 Generation of plasma from underwater discharge and its application to disinfection of microorganisms
Dr. Yong Chul Hong, Convergence Plasma Research Center, National Fusion Research Institute, Korea**

**11:45-12:10 Organic Solute Decomposition using Microwave excited Plasma
Prof. Tatsuo Ishijima, Nagoya University, Japan**

**12:10-12:35 Green plasma technology for the synthesis of nanofluids with high heat transfer efficiency
Prof. Sang Yul Lee, Korea Aerospace University, Korea**

12:35 – 14: 00 Lunch

***ITP (International Training Program) Student Workshop (10 min Talk +5min Q&A)*
Organized and preceded by students**

**Session chairperson Mr. Kyung Sik Shin, SKKU, Korea
Mr. Hiroshi Yamamoto, Nagoya University, Japan**

12 students presentation(10min +5 min Q&A)

- 14:00-14:15** **Analysis of three-dimensional infrared emission in accordance with driving frequency and discharge gap in prism-inserted plasma display panel**
Yong Gyu Han, Kwangwoon University, Korea
- 14:15-14:30** **Generation of Si particles and their nitridation using double multihollow discharges**
Muneharu Sato, Kyushu University, Japan
- 14:30-14:45** **Polyimide Surface Treatment by Using Atmospheric Pressure Plasma to Improve Metal adhesion**
Jae Beom Park, SKKU, Korea
- 14:45-15:00** **Measurement of silicon substrate temperature by optical lowcoherence interferometry using Super-Continuum light**
Takehiro Hiraoka, Nagoya University, Japan
- 15:00-15:15** **Nano-crystalline Si film synthesis on glass and polymer by ICP assisted magnetron sputtering at low temperature**
Kyung Sik Shin, SKKU, Korea
- 15:15-15:30** **Effects of Irradiations with Ions and Photoemissions in UV-VUV Regions on Chemical Bonding States of Polymers Exposed to Plasmas**
Ken Cho, Osaka University, Japan
- 15:30-15:40** **Break**
- 15:40-15:55** **A study on the characteristics of multi-hole electrode RF capacitive Discharge**
Yun Seong, Lee, KAIST, Korea

- 15:55-16:10** **Modification of Si-O-Si Structure in Porous SiOCH Films by O₂ plasma**
Hiroshi Yamamoto, Nagoya University, Japan
- 16:10-16:25** **Synthesis and characterization of gold nanoparticles through**
Solution Plasma Process
Yong-Kang Heo, Korea Aerospace University, Korea
- 16:25-16:40** **Stimulation of plant growth using discharge plasmas**
Satoshi Kitazaki, Kyushu University, Japan
- 16:40-16:55** **Effect of plasma pretreatment on nucleation and gap-filling during**
metalorganic chemical vapor deposition of Cu on Ru barrier
Hock Key Moon, SKKU, Korea
- 16:55-17:10** **Control of hydrophilic and hydrophobic properties of carbon**
nanowalls using plasma surface treatment
Hitoshi Watanabe, Nagoya University, Japan
- 17:10-18:10** **Poster Session & Closing Remark**
- 18:30-** **Sayonara (Farewell) Dinner &**
Joint discussion on promotion of Applied Plasma Science and
Engineering in Asia : Education and next topical workshop in Asian
country etc.

Poster Session

- PO-01** **Effect of secondary higher excitation frequency plasma source base**
on conventional RF-PECVD for large area fast growth microcrystalline
silicon films
Youn Joon Kim, SKKU, Korea

- PO-02** **Generation of Si particles and their nitridation using double multihollow discharges**
Muneharu Sato, Kyushu University, Japan
- PO-03** **Analysis of three-dimensional infrared emission in accordance with driving frequency and discharge gap in prism-inserted plasma display panel**
Yong Gyu Han, Kwangwoon University, Korea
- PO-04** **Measurement of silicon substrate temperature by optical lowcoherence interferometry using Super-Continuum light**
Takehiro Hiraoka, Nagoya University, Japan
- PO-05** **Characterization of SiO_x and SiON multi-layer gas barrier films with controlling to the plasma process parameters by PECVD**
Su Bong Jin, SKKU, Korea
- PO-06** **Effects of Irradiations with Ions and Photoemissions in UV-VUV Regions on Chemical Bonding States of Polymers Exposed to Plasmas**
Ken Cho, Osaka University, Japan
- PO-07** **A study on the characteristics of multi-hole electrode RF capacitive Discharge**
Yun Seong, Lee, KAIST, Korea
- PO-08** **Modification of Si-O-Si Structure in Porous SiOCH Films by O₂ plasma**
Hiroshi Yamamoto, Nagoya University, Japan
- PO-09** **Polyimide Surface Treatment by Using Atmospheric Pressure Plasma to Improve Metal adhesion**
Jae Beom Park, SKKU, Korea

- PO-10** **Stimulation of plant growth using discharge plasmas**
Satoshi Kitazaki, Kyushu University, Japan
- PO-11** **Effect of plasma pretreatment on nucleation and gap-filling during**
metalorganic chemical vapor deposition of Cu on Ru barrier
Hock Key Moon, SKKU, Korea
- PO-12** **Control of hydrophilic and hydrophobic properties of carbon**
nanowalls using plasma surface treatment
Hitoshi Watanabe, Nagoya University, Japan
- PO-13** **Synthesis and characterization of gold nanoparticles through**
Solution Plasma Process
Yong-Kang Heo, Korea Aerospace University, Korea
- PO-14** **Spatiotemporal Behavior of Excited Xe Atom Density in the 1s₅**
Metastable State According to the Hoof Type Electrodes Structure in
Alternating Current Plasma Display Panel
Yong Hee Kim, Kwangwoon University, Korea
- PO-15** **Nano-crystalline Si film synthesis on glass and polymer by ICP**
assisted magnetron sputtering at low temperature
Kyung Sik Shin, SKKU, Korea