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 (30 min + 10 min 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 University, 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 SiOx 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