

Plenary Speakers



**Jaihyung Won**  
(Tokyo Electron Korea, Korea)  
*Plasma Enhanced Equipment Engineering for Semiconductor Devices*



**Mark J. Kushner**  
(Univ. of Michigan, USA)  
*Controlling Plasma Reactive Fluxes from mTorr to Liquid Densities*



**Hans-Robert Metelmann**  
(Univ. Medicine Greifswald, Germany)  
*Plasma Technology and Skin Cancer: Benefit of Survival in Comparison with Standard Chemotherapy.*

**Abstract Submission deadline is April 30, 2018 (Mon.)**

We have opened the abstract submission system for the 7th International Conference on Microelectronics and Plasma Tech. (ICMAP 2018) which will be held on **July 24-28, 2018 at the Songdo Convensia in Incheon, Korea.**

**Joint International conference on ICMAP 2018, APCPST 2018, and ISPB 2018.**

- APCPST 2018 (The 14th Asia-Pacific Conference on Plasma Science and Tech)
- ISPB 2018 (The 8th International Symposium on Plasma Bioscience)

Online submission system is now open. Abstract submission is only available via our system and please takes a careful look at submission guideline. Notification of acceptance will be sent by email within one month after submission.

Also, the submitted regular manuscripts will be published in JNN, SAM, JBT, Thin Solid Film, PST and PREX journals after peer reviews. In order to be included in the journals, at least one of the authors should attend the conference and make a presentation in the assigned session. For all journals, one manuscript submission per registration (regular or student) will be allowed. The manuscripts should be prepared in MS-Word format. There is no journal page limit (But, more than 3 pages of Results and Discussion in the full journal paper submission format are required) The registration fee does not include the publication charge. The accepted manuscript will be published in the journals with a fee (The exact fee will be notified later.)

Conference Topics

**Plasma Bioscience / Plasma Agriculture / Environmental Applications**

- Plasma Farming**  
Chair, Seong Bong Kim (Nat'l Fusion Research Inst., Korea)  
Co-Chair, Wonho Choe (KAIST, Korea)
- Plasma Biosciences and Medicine**  
Chair, Eun Ha Choi (Kwangwoon Univ., Korea)
- Plasma & Liquids**  
Chair, Li Oi Lun (Pusan Nat'l Univ., Korea)  
Co-Chair, Sungmo Moon (Korea Institute of Materials Science, Korea)

**Basic Plasma Science, Technology, Engineering and Related Topics**

- Plasma Assisted Process Monitoring Technologies**  
Chair, Gon Ho Kim (Seoul Nat'l Univ., Korea)
- Contamination Control in Semiconductor / Display Technologies**  
Chair, Taesung Kim (Sungkyunkwan Univ., Korea)
- Plasma Sources and Technologies**  
Chairs, Hong Young Chang (KAIST, Korea)  
Ho-Jun Lee (Pusan Nat'l Univ., Korea)
- Modeling and Simulation Techniques**  
Chair, Hae-June Lee (Pusan Nat'l Univ., Korea)
- Fundamental Processes in Plasma**  
Chair, Mi-Young Song (Nat'l Fusion Research Inst., Korea)

**Materials and Processing on Semiconductor / Display Nano-Devices**

- Plasma ALD / PECVD**  
Chair, Han-Bo-Ram Lee (Incheon Nat'l Univ., Korea)  
Co-Chair, Se Hun Kwon (Pusan Nat'l Univ., Korea)
- Sputtering / Ion Beam Deposition**  
Chair, Junghoon Joo (Kunsan Nat'l Univ., Korea)
- Plasma for Nanomaterial Processing**  
Chair, Goo-Hwan Jeong (Kangwon Nat'l Univ., Korea)
- Next Generation Plasma Etching, Ashing, and Patterning**  
Chair, Geun Young Yeom (Sungkyunkwan Univ., Korea)
- Plasmas for Environmental Technology**  
Chair, Heeyeop Chae (Sungkyunkwan Univ., Korea)

**Applications of Plasma Processing**

- Nano Devices Using 2D Materials**  
Chair, Won Jong Yoo (Sungkyunkwan Univ., Korea)
- Sensors and Actuators**  
Chair, Nae-Eung Lee (Sungkyunkwan Univ., Korea)
- Energy Related Devices**  
Chair, Il Ki Han (KIST, Korea)
- Flexible / Stretchable Display Technology**  
Chair, Munpyo Hong (Korea Univ., Korea)

Organizing Committee

Honorary Chair

**Chi Kyu Choi** (Jeju Nat'l Univ., Korea)

Registration

"Pre-registration Open Date: April 1, 2018"				
Classification		Pre	Online	On-site
Regular	Full Day	KRW 600,000	KRW 650,000	KRW 800,000
	2 days	KRW 450,000		-
Student / Retiree	Full Day	KRW 300,000	KRW 350,000	KRW 400,000

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We would greatly appreciate if your company would consider supporting this conference at whatever level is deemed appropriate.



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ICMAP 2018 Secretariat

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The 7th International Conference on Microelectronics and Plasma Technology

**ICMAP 2018**

Joint International Conference on ICMAP 2018, APCPST 2018, and ISPB 2018

The 14th Asia-Pacific Conference on Plasma Science and Technology

**APCPST 2018**

The 8th International Symposium on Plasma Bioscience

**ISPB 2018**

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**Invited Speakers**

**Session 1 Plasma Bioscience / Plasma Agriculture / Environmental Applications**

<b>Plasma Farming</b>
Won Ho Choe (KAIST, Korea) Considerations for high efficiency non-thermal atmospheric pressure plasma sources for plasma farming applications
P. J. Cullen (Univ. of Nottingham, UK) Scaling plasma systems for the Agri-Food sector
Gregory Fridman (Drexel Univ., USA) Plasma in Hydroponics and in Produce Washing
Masafumi Ito (Meijo Univ., Japan) Activity promotion of microorganisms and enzyme degradation of biomass using radical irradiations
Dong Kee Jeong (Jeju Nat'l Univ., Korea) MicroRNA-7450 and microRNA-100 regulates non-thermal DBD plasma-induced chicken Sertoli cell proliferation
Cheorun Jo (Seoul Nat'l Univ., Korea) Innovative processed meat manufacturing using cold plasma technology
Miran Mozetic (Jozef Stefan Inst., Slovenia) Disinfection and germination of cloves and bulbs by cold weakly ionized low-pressure plasma
Gyungsoon Park (Kwangwoon Univ., Korea) Effects of plasma on cellular differentiation and metabolic activity in beneficial fungi
Sanghoon Park (KAIST, Korea) Plasma-functionalized solution and its applications for Plasma Farming
Masaharu Shiratani (Kyushu Univ., Japan) Advantages of plasma treatments of seeds, plants, and fruits
Douyan Wang (Kumamoto Univ., Japan) Biological Applications Using Pulsed Power Technology

**Plasma Biosciences & Medicine**

<b>KEYNOTE</b> Alexander Fridman (Drexel Univ., USA) Chemical and Biological Mechanisms of Plasma Interaction with Biosystems
<b>KEYNOTE</b> Jean-Michel Pouvesle (GREMI, CNRS/University of Orleans, France) From single plasma jets to large atmospheric plasma sources for biological applications
<b>KEYNOTE</b> Klaus Dieter Weltmann (INP Greifswald, Germany) Research and development of plasma sources for applications in life science
Manish Adhikari (PBRC, Korea) Combined effect of cold plasma and nanoemulsion-based drug delivery system for targeting human melanoma
Pankaj Attri (Univ. of Antwerp, Belgium) Role of protein folding in plasma medicine
Ku Yeoun Baik (Kwangwoon Univ., Korea) Study of the penetration of active species from plasma jet thorough a skin model using a UV-VIS spectroscopy method
Vittorio Colombo (Univ. of Bologna, Italy) TBA

Svetlana Ermolaeva (Gamaleya Research Center of Epidemiology and Microbiology, Russia) Cold plasma assisted wound healing: from bactericidal effects to tissue regeneration
David Graves (Univ. of California, USA) Mechanisms and Control of Plasma Biomedical Processes
Satoshi Hamaguchi (Osaka Univ., Japan) Current Status and Future Challenges in Modeling and Numerical Simulation for Plasma Medicine
Ihn Han (Kwangwoon Univ., Korea) The effect of melanogenic differentiation by non-thermal atmospheric biocompatible plasma
Masaru Hori (Nagoya Univ., Japan) Elucidation of the mechanism on the selectively killing cancer cells by the plasma activated medium or lactate
Seiji Kanazawa (Oita Univ., Japan) Comparison of ROS Diagnostic Methods for Atmospheric-pressure Plasmas at Gas-Liquid Environment
Nagendra Kaushik (Kwangwoon Univ., Korea) Plasma induced immuno-modulations for medical applications
Sun Jung Kim (Dongguk Univ., Korea) Application of cold atmospheric plasma to overcome drug-resistance in cancer cells
Jae Sung Kwon (Yonsei Univ., Korea) Plasma Bioscience in Dentistry
Weontae Lee (Yonsei Univ., Korea) Plasma and ROS Effects on G-Protein Coupled Receptor Signaling
Dawei Liu (Huazhong Univ. of Tech., China) The dermal and wound healing effect of plasma activated medium
XinPei Lu (Huazhong Univ. of Tech., China) The effect of tissue and medium on the penetration of RONS generated by plasma
Kai Masur (INP Greifswald, Germany) Plasma Treatment of Chronic Wounds ? What do we know?
Jun-Seok Oh (Osaka City Univ., Japan) Long term investigation of radical activated water
Takayuki Ohta (Meijo Univ., Japn) Novel surface assisted laser desorption / ionization mass spectrometry using carbon nanowalls for analyzing bio molecule
Anke Schmidt (INP Greifswald, Germany) TBA
Debarati Shome (INP Greifswald, Germany) Comparison of cell migratory behaviors of immortalized keratinocytes, fibroblasts and co-culture upon cold plasma treatment
Hansup Uhm (Kwangwoon University, Korea) Nitrogen Monoxide Generation by Microwave Plasma Torch.
Thomas von Woedtke (INP Greifswald, Germany) Plasma in cosmetic applications: possibilities and boundary conditions

**Plasma & Liquids**

Yan Feng (Soochow Univ., China) A comprehensive study of two-dimensional dusty plasma liquids using their equation of state
Xiulan Hu (Nanjing Univ. of Tech., China) Plasma-induced synthesis of Pt/metal oxide nanocomposites with good photoelectrochemical performance

Takahiro Ishizaki (Shibaura Inst. of Tech., Japan) Corrosion resistance of Mg Alloy by plasma electrolyte oxidation
Marek Kocik (Inst. of Fluid Flow Machinery, Poland) Radical Measurement methods in Plasma Reactor for Water Treatment
Sang Yul Lee (Korea Aerospace Univ., Korea) Synthesis of various Ag-based electrocatalysts for fuel cell applications via plasma discharge in solution
Dingxin Liu (Xi'an Jiaotong Univ., China) The aqueous reactive species induced by a surface air discharge and their sterilization mechanism
Takao Namahira (Kumamoto Univ., Japan) Waste-water treatment using nanosecond discharge plasma
Nagahiro Saito (Nagoya Univ., Japan) Molecular technology and application by solution plasma process
Tetsuru Shirafuji (Osaka City Univ., Japan) Application of multi-media plasmas to nano-material treatment
Naoki Shirai (Hokkaido Univ., Japan) Investigation of reaction induced by atmospheric pressure plasma in contact with liquid
Nozomi Takeuchi (Nat'l Inst. of Advanced Industrial Science and Tech., Japan) Importance of ozone in water treatment using oxygen plasmas
Bongyoung Yoo (Hanyang Univ., Korea) TBA

**Session 2 Materials and Processing on Semiconductor/Display Nano-Devices**

<b>Plasma ALD / PECVD</b>
Sean Barry (Carleton Univ., Canada) TBA
Steven George (US Boulder, USA) BN Electron-Enhanced ALD at Room Temperature and Prospects for Selective Area Deposition
Erwin Kessels (Eindhoven Univ., Netherlands) Ion-surface interaction during plasma ALD and how it can be used to tailor film properties
Mato Knez (CIC nanoGune, Spain) ALD-induced Blending of Polymers with Ceramics for novel Functional Hybrids
Se Hun Kwon (Pusan Nat'l Univ., Korea) PEALD of protective metallic coatings for metallic bipolar plates of PEMFC
Han-Bo-Ram Lee (Incheon Nat'l Univ., Korea) Surface Energy Control for Hydrophobic Coating by Atomic Layer Deposition
Greg Parsons (NC State Univ., USA) Research in Area Selective Atomic Layer Deposition and Atomic Layer Etching for Advanced Device Patterning
<b>Sputtering/Ion Beam Deposition</b>
Seong Bong Kim (Nat'l Fusion Research Inst., Korea) ECR Plasma Assisted Sputter and Its Applications
Andreas Pflug (Fraunhofer Inst. for Surface Engineering and Thin Films IST, Germany) PIC-MC simulation study of rotational magnetron sputtering
Jun Xu (Dalian Univ. of Tech., China) The influence of interface on the dielectric and ferroelectric properties of Y-doped HfO2 films prepared by reactive sputtering

**Plasma for Nanomaterial Processing**

Tzhaq Cohen-Karni (Carnegie Mellon Univ., USA) Highly-controlled multiscale synthesis of hybrid-nanomaterials
Hyung-Mo Jeong (Kangwon Nat'l Univ., Korea) Plasma-enhanced synthesis of nanomaterials for energy storage & conversion
Toshiaki Kato (Tohoku Univ., Japan) Bottom-up synthesis of atomically-precise low-dimensional nanocarbon
<b>Next Generation Plasma Etching, Ashing, and Patterning</b>
<b>KEYNOTE</b> Kuntack Lee (Samsung, Korea) Challenges to the next generation semiconductor equipment by using plasma
Sumit Agarwal (Colorado School of Mines, USA) Plasma-assisted atomic layer deposition of SiN.
Bert Ellingboe (Dublin City Univ., Ireland) Hairpin probes absolute electron density measurements for spatio-temporal measurements: addressing the challenging requirements for industrially-relevant plasma applications
Eric A Joseph (IBM, USA) TBA
Jason Kenney (Applied Materials, USA) Plasma and Feature Scale Models for Etching of High Aspect Ratio Silicon Structures in Pulsed Inductively Coupled Plasmas.
Nam Hun Kim (APT, Korea) Some Aspects of Process Development in Plasma Etching
Thorsten Lill (Lam Research Corporation, USA) Etching of Semiconductor Devices
Alok Ranjan (Tokyo Electron Ltd. Tech. Center America, USA) Frontiers of industrial application of atomic layer etching
Fred Roozeboom (Eindhoven Univ. of Tech., Netherlands) Atomic Layer Etching of ZnO on 2D and 3D substrates, using acetylacetone and O2 plasma
Seiji Samukawa (Tohoku Univ., Japan) Atomic Layer Defect-free Etching for Future Nano-devices

**Plasmas for Environmental Technology**

Tomohiro Nozaki (Tokyo Tech, Japan) Nonthermal plasma enabled electrification of energy and materials conversion processes
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**Session 3 Basic Plasma Science, Technology, Engineering and Related Topics**

<b>Plasma Assisted Process Monitoring Technologies</b>
Shin Jae You (Chungnam Nat'l Univ., Korea) TBA
<b>Contamination control in Semiconductor/Display Technologies</b>
Seungki Chae (Sungkyunkwan Univ., Korea) Challenges of Particle Contamination Control Technology in the Semiconductor and Display Process Equipments
Woo Sik Yoo (WaferMasters, Inc., USA) Towards Automation of Quantitative Analysis of Various Digital Images for Material and Process Characterization

**Plasma Sources and Technologies**

<b>KEYNOTE</b> Uwe Czarnetzki (Ruhr Univ. of Bochum, Germany) INCA: A new scalable large area plasma source at low pressures
Rod Boswell (Australian Nat'l Univ., Australia) Challenges for future rf driven plasma systems
Sooseok Choi (Jeju Nat'l Univ., Korea) The Triple DC Plasma Torch System for Nanoparticle Synthesis
Fei Gao (Dalian Univ. of Tech., China) The experimental and numerical investigations of electron characteristics in 2 MHz and 13.56 MHz inductively coupled hydrogen plasmas
Jaeho Kim (Advanced Industrial Science and Tech., Japan) Microwave plasma sources based on microstrip line for material processing
Yong-Xin Liu (Dalian Univ. of Tech., China) Experimental and computational investigation on striations in electronegative capacitively couple rf discharges
Takafumi Okuma (Panasonic Corporation, Japan) Investigation of temperature characteristics of multiphase AC arc by high-speed visualization
Hyyong Suk (GIST, Korea) Inductively-coupled plasma and laser-produced plasma source researches at GIST
Keisuke Takashima (Tohoku Univ., Japan) Generation of vibrationally excited nitrogen in a DC discharge sustained by repetitive nanosecond pulses
Hai-Xing Wang (Beihang Univ., China) Investigation of carbon dioxide decomposition in a micro-slit discharge at low pressures
Meng Xian (Inst. of Mechanics, Chinese Academy of Sciences, China) Performance and plasma characteristics of Low-Power Ammonia Arcjet Thruster
Yuantao Zhang (Shandong Univ., China) Numerical study on generation of large currents in atmospheric very high frequency discharges modulated by pulses

**Modeling and Simulation Techniques**

Ho Jun Kim (Dong-A Univ., Korea) Plasma simulation for the control of the edge uniformity in deposition reactors
Julian Schulze (Ruhr Univ. of Bochum, Germany) Realistic treatment of plasma-surface interactions in simulations of low temperature plasmas
Yuan-Hong Song (Dalian Univ. of Tech., China) Fluid and PIC simulation on electronegative SiH4 and O2 discharges in RF CCPs
Anbang Sun (Xi'an Jiaotong University, China) 3D particle simulations and analysis of streamer discharge in atmospheric air
Kosuke Yamamoto (Tokyo Electron Tech., Japan) Modeling of plasma-enhanced ALD for silicon oxide films as clarification of fundamental deposition mechanism
<b>Fundamental Processes in Plasma</b>
Yoshiharu Nakamura (Keio Univ., Japan) Electron collision cross sections and electron swarm parameters in gases

Qiu-Yue Nie (Harbin Inst. of Tech., China) Studies on the Separate Control of Plasma Parameters in Atmospheric Pressure Dielectric Barrier Discharge System Based on Dual-frequency Modulation
Jonathan Tennyson (Univ. College London, UK) Electron-molecule collision calculations for plasma physics applications

**Session 4 Applications of Plasma Processing**

<b>Nano Devices Using 2D Materials</b>
Jeong Ho Cho (Sungkyunkwan Univ., Korea) Ion Gel-Gated Graphene Schottky Barrier Transistors
Suk-Ho Choi (Kyung Hee Univ., Korea) Use of doped-graphene transparent conductive electrodes for optoelectronic device
Gwan-Hyoung Lee (Yonsei Univ., Korea) Electrically tunable 2D devices with exceptional functions
Ji-Ung Lee (CNSE, USA) Reconfigurable 2D Devices for Artificial Neural Network Applications
Chunxiang Zhu (Nat'l Univ. of Singapore, ) 2D materials based ISFETs for pH sensing applications
<b>Sensors and Actuators</b>
Sunkook Kim (Sungkyunkwan Univ., Korea) Flexible 2D Semiconductor based Sensor Applications
Hyunhyb Ko (UNIST, Korea) Flexible Physical Sensors for Wearable Healthcare Devices
Tran Quang Trung (Sungkyunkwan Univ., Korea) Stretchable sensors for wearable electronics and healthcare monitoring
<b>Energy Related Devices</b>
Kyoungsik Kim (Yonsei Univ., Korea) Self-aggregated AAO nanowire structures for solar energy harvesting
Taewam Kim (KRISS, Korea) Multinary III-V materials for high efficiency multi-junction solar cells

**Flexible/Stretchable Display Technology**

Jong-Hyun Ahn (Yonsei Univ., Korea) 2D Materials based wearable electronics
Gerhard Domann (Fraunhofer Inst. for Silicate Research ISC, Germany) Hybrid polymers as key enabling material for flexible and stretchable displays
Byung Hee Hong (Seoul Nat'l Univ., Korea) Graphene-Based Encapsulation Technology for Flexible and Stretchable Displays
Yong-Jin Kim (Korea Inst. of Machinery & Materials, Korea) Direct-imaging Metal Interconnection and User Targeted Reliability Techniques for Stretchable Displays and FHE(Flexible Hybrid Electronic) Devices
Chi Hwan Lee (Purdue Univ., USA) Sticker-like thin film electronics for flexible and stretchable applications