



[WA1] Contamination Control in Semiconductor / Display Technologies	
Date / Time	July 25 (Wed.), 2018 / 09:00-10:00, 13:00-13:40
Place	Room A (#104~106)
Session Chair(s)	Taesung Kim (Sungkyunkwan Univ., Korea)

WA1-1 [Invited]

09:00-09:30

Challenges of Particle Control Technology in the Semiconductor and Display Process Equipments

Seungki Chae

Sungkyunkwan Univ., Korea

WA1-2 [Invited]

09:30-10:00

Towards Automation of Quantitative Analysis of Various Digital Images for Material and Process Characterization

Woo Sik Yoo

WaferMasters, Inc., USA

WA1-3

13:00-13:20

Characterization of Atmospheric Electrodeless Microwave Plasma in Nitrogen

Hojoong Sun, Jungwun Lee, and Moon Soo Bak

Sungkyunkwan Univ., Korea

WA1-4

13:20-13:40

Mechanism Analysis of NH_3/NF_3 Remote Plasma Dry Cleaning Reactions Using TOF-MASS

Jiheon Kim¹, Shin Kim¹, Kyoungwoo Kwon¹, Byeonghwa Jeong¹, Kiyounghyun¹, Seoungki Chae²,
and Kyunghwan Jeong²

¹ULVAC KOREA, Co., Ltd., Korea, ²Sungkyunkwan Univ., Korea



[WB1] Plasma Medicine for Skin Applications I	
Date / Time	July 25 (Wed.), 2018 / 09:00-10:30
Place	Room B (#113)
Session Chair(s)	Klaus Dieter Weltmann (INP Greifswald, Germany) Sun Jung Kim (Dongguk Univ., Korea)

Introduction for ISPB	09:00-09:30
------------------------------	--------------------

Eun Ha Choi (*Kwangwoon Univ., Korea*)

WB1-1 [Invited]	09:30-10:00
------------------------	--------------------

Plasma Induced Immuno-Modulations for Medical Applications

Nagendra Kaushik¹, Neha Kaushik², Manish Adhikari¹, Bhagirath Ghimire¹, Rizwan Wahab³,
Abdulaziz A. Al-Khedhairi³, Su-Jae Lee², and Eun Ha Choi¹

¹*Kwangwoon Univ., Korea*, ²*Hanyang Univ., Korea*, ³*King Saud Univ., Saudi Arabia*

WB1-2 [Invited]	10:00-10:30
------------------------	--------------------

Cold Plasma Promotes Angiogenesis in Acute Rodent Wounds

Anke Schmidt¹, Sander Bekeschus¹, Brigitte Vollmar², Sybille Hasse¹, and Thomas von Woedtke¹

¹*INP Greifswald, Germany*, ²*Univ. of Rostock, Germany*



[WC1] Plasma and Liquid I	
Date / Time	July 25 (Wed.), 2018 / 09:00-10:20
Place	Room C (#114)
Session Chair(s)	Takao Namihira (Kumamoto Univ., Japan)

WC1-1 [Invited]

09:00-09:30

Withdrawn

WC1-2 [Invited]

09:30-10:00

Importance of Ozone in Water Treatment Using Oxygen Plasma

Nozomi Takeuchi¹, Naoto Ishibashi², and Hyun-Ha Kim¹

¹AIST, Japan, ²Tokyo Inst. of Tech., Japan

WC1-3

10:00-10:20

Purification of Waste Water-Soluble Cutting Fluid via Ozone Treatment Using an Air Dielectric Barrier Discharge

Sukhwal Ma¹, Kangil Kim¹, Seyoun Moon², and Yongcheol Hong¹

¹NFRI, Korea, ²Chonbuk Nat'l Univ., Korea



[WD1] Modeling and Simulation of Plasma-Surface Interaction	
Date / Time	July 25 (Wed.), 2018 / 09:00-10:30
Place	Room D (#115)
Session Chair(s)	Hae June Lee (Pusan Nat'l Univ., Korea) Yuan-Hong Song (Dalian Univ. of Tech., China)

WD1-1 [Invited]	09:00-09:30
------------------------	--------------------

Realistic Treatment of Plasma-Surface Interactions in Simulations of Low Temperature Plasmas

Julian Schulze¹, Aranka Derzsi², Manaswi Daksha¹, Benedek Horvath³, Birk Berger⁴, Ihor Korolov¹,
Steven Brandt², Mark Koepke², Zoltan Donko³, and Peter Awakowicz¹

¹Ruhr-Univ. Bochum, Germany, ²West Virginia Univ., USA, ³Hungarian Academy of Sciences, Hungary,

⁴Brandenburg Univ. of Tech., Germany

WD1-2 [Invited]	09:30-10:00
------------------------	--------------------

Modeling of Plasma-Enhanced ALD for Silicon Oxide Films as Clarification of Fundamental Deposition Mechanism

Kosuke Yamamoto, Ayuta Suzuki, Munehito Kagaya, Hu Li, Masaaki Matsukuma, and Tsuyoshi Moriya
Tokyo Electron Tech. Solutions Ltd., Japan

WD1-3 [Invited]	10:00-10:30
------------------------	--------------------

Importance of Consideration of Thermal Diffusion Effects in a Non-Isothermal Capacitively Coupled Plasma Reactor

Ho Jun Kim

Dong-A Univ., Korea



[WE1] Nano Devices Using 2D Materials I	
Date / Time	July 25 (Wed.), 2018 / 09:00-10:30
Place	Room E (#107~108)
Session Chair(s)	Myung-Ho Bae (KRISS, Korea)

WE1-1 [Invited]	09:00-09:30
------------------------	--------------------

Reconfigurable 2D Devices for Artificial Neural Network Applications

Ji-Ung Lee

SUNY Polytechnic Inst., USA

WE1-2 [Invited]	09:30-10:00
------------------------	--------------------

Electrically Tunable 2D Devices with Exceptional Functions

Gwan-Hyoung Lee

Yonsei Univ., Korea

WE1-3 [Invited]	10:00-10:30
------------------------	--------------------

Electrolyte-Gated Flexible Graphene Schottky Barrier Transistors

Jeong Ho Cho

Sungkyunkwan Univ., Korea



[WA2] Plasmas for Environmental Technology	
Date / Time	July 25 (Wed.), 2018 / 13:40-15:10
Place	Room A (#104~106)
Session Chair(s)	Heeyeop Chae (Sungkyunkwan Univ., Korea)

WA2-1 [Invited]

13:40-14:10

Nonthermal Plasma Enabled Electrification of Energy and Materials Conversion Processes

Tomohiro Nozaki, Seigo Kameshima, and Zunrong Sheng

Tokyo Inst. of Tech., Japan

WA2-2

14:10-14:30

Plasma Etching of SiO₂ Perfluorinated and Partially Fluorinated Fluoro Ethers

Jun-Hyun Kim, Jin-Su Park, and Chang-Koo Kim

Ajou Univ., Korea

WA2-3

14:30-14:50

Realistic Surface Reaction Modeling of Fluorocarbon Plasma Etch Process

Hae Sung You, Yeong Geun Yook, Jae Hyeong Park, and Yeon Ho Im

Chonbuk Nat'l Univ., Korea

WA2-4

14:50-15:10

Ethylene Treatment Using Nanosecond Pulsed Streamer Discharge

Asuki Iwasaki, Yasuaki Torigoe, Douyan Wang, and Takao Namihira

Kumamoto Univ., Japan



[WB2] Plasma Medicine for Skin Applications II	
Date / Time	July 25 (Wed.), 2018 / 13:20-15:00
Place	Room B (#113)
Session Chair(s)	Sybille Hasse (INP Greifswald, Germany) Ku Youn Baik (Kwangwoon Univ., Korea)

WB2-1 [Keynote]	13:20-14:00
------------------------	--------------------

Research and Development of Plasma Sources for Applications in Life Science

Klaus-Dieter Weltmann, Thomas von Woedtke, Kai Masur, and Torsten Gerling
INP Greifswald, Germany

WB2-2 [Invited]	14:00-14:30
------------------------	--------------------

The Effect of Melanogenic Differentiation by Non-Thermal Atmospheric Biocompatible Plasma

Ihn Han¹, Ying Li¹, Sybille Hasse², and Eun Ha Choi¹
¹Kwangwoon Univ., Korea, ²INP Greifswald, Germany

WB2-3 [Invited]	14:30-15:00
------------------------	--------------------

Plasma in Cosmetic Applications: Possibilities and Boundary Conditions

Thomas von Woedtke¹, Hans-Robert Metelmann², and Klaus-Dieter Weltmann¹
¹INP Greifswald, Germany, ²Greifswald Univ. Medicine, Germany



[WC2] Plasma and Liquid II	
Date / Time	July 25 (Wed.), 2018 / 13:20-14:40
Place	Room C (#114)
Session Chair(s)	Nozomi Takeuchi (AIST, Japan)

WC2-1 [Invited]

13:20-13:50

Investigation of Reaction Induced by Atmospheric Pressure Plasma in Contact with Liquid

Naoki Shirai

Hokkaido Univ., Japan

WC2-2 [Invited]

13:50-14:20

The Aqueous Reactive Species Induced by a Surface Air Discharge and Their Sterilization Mechanism

Dingxin Liu, Weitao Wang, Li Guo, and Michael Kong

Xi'an Jiaotong Univ., China

WC2-3

14:20-14:40

Effects of Electrode Parameters on Water Sterilization Using Pulsed Arc Electrohydraulic Discharge

ZhengHao He and Jin Yang

Huazhong Univ. of Science and Tech., China



[WD2] Modeling and Simulation of CCP and ICP	
Date / Time	July 25 (Wed.), 2018 / 13:20-14:50
Place	Room D (#115)
Session Chair(s)	Kosuke Yamamoto (Tokyo Electron Tech., Japan) Julian Schulze (Ruhr Univ. of Bochum, Germany)

WD2-1 [Invited]	13:20-13:50
------------------------	--------------------

Fluid and PIC Simulations on Electronegative SiH_4 and O_2 Discharges in RF CCPs

Wen-Zhu Jia, Li Wang, Yuan-Hong Song, and You-Nian Wang

Dalian Univ. of Tech., China

WD2-2	13:50-14:10
--------------	--------------------

GEC-CCP Modelling Using Two-Dimensional Fluid Simulation Base on Stabilized Finite Element Method

Hyonu Chang

NFRI, Korea

WD2-3	14:10-14:30
--------------	--------------------

Deduction of a Novel Electron Energy Equation in Fluid Model and Its Applications in Predicting the Electron Temperature Behavior of Inductive Coupled Plasmas

Shu-Xia Zhao

Dalian Univ. of Tech., China

WD2-4	14:30-14:50
--------------	--------------------

Energy Relaxation Kinetics for the Control of Electron Energy Distributions and Electron Heating Modes in a Capacitively Coupled RF Plasma

Jung Yeol Lee, Chang Ho Kim, and Jung Yeol Lee

Pusan Nat'l Univ., Korea



[WE2] Nano Devices Using 2D Materials II	
Date / Time	July 25 (Wed.), 2018 / 13:20-15:00
Place	Room E (#107~108)
Session Chair(s)	Won Jong Yoo (Sungkyunkwan Univ., Korea)

WE2-1 [Invited]

13:20-13:50

2D Materials Based ISFETs for pH Sensing Applications

Chunxiang Zhu

Nat'l Univ. of Singapore, Singapore

WE2-2 [Invited]

13:50-14:20

Energy Dissipation and Light Emission in Graphene

Myung-Ho Bae

KRISS, Korea

WE2-3

14:20-14:40

Top-Gated MoS₂ Field-Effect Transistor with Ultra-Thin HfO₂ Gate Dielectric Formed by Hf-Seeded Atomic Layer Deposition

Hoijoon Kim¹, Taejin Park¹, Seongjae Park¹, Mirine Leem¹, Wonsik Ahn¹, Seong-Jun Jeong², Seongjun Park², Yunseok Kim¹, and Hyongsub Kim¹

¹*Sungkyunkwan Univ., Korea*, ²*Samsung Advanced Inst. of Tech., Korea*

WE2-4

14:40-15:00

Characterization of Defects in 2D Materials with Tip Enhanced Raman Scattering

Byeong Geun Jeong¹, Chanwoo Lee¹, Seung Mi Lee², and Mun Seok Jeong¹

¹*Sungkyunkwan Univ., Korea*, ²*KRISS, Korea*



[WA3] Sensors for Wearable Electronics	
Date / Time	July 25 (Wed.), 2018 / 15:30-17:40
Place	Room A (#104~106)
Session Chair(s)	Hyoun Woo Kim (Hanyang Univ., Korea) Hyunhyub Ko (UNIST, Korea)

WA3-1 [Invited]	15:30-16:00
------------------------	--------------------

Flexible and Multifunctional Electronic Skins for Wearable Devices

Hyunhyb Ko
UNIST, Korea

WA3-2 [Invited]	16:00-16:30
------------------------	--------------------

2D Semiconducting Electronic Devices for Sensor Applications

Hee Kyung Park, Seongin Hong, Hae Lin Im, Na Liu, Sriniva Gandla, Jung Joon Lee, and Sunkook Kim
Sungkyunkwan Univ., Korea

WA3-3 [Invited]	16:30-17:00
------------------------	--------------------

Stretchable Sensors for Wearable Electronics and Healthcare Monitoring

Tran Quang Trung
Sungkyunkwan Univ., Korea

WA3-4	17:00-17:20
--------------	--------------------

Explosive Microwave Irradiation to Graphene/Metal Oxides Nanocomposites for High-Performance Gas Sensors

Hyoun Woo Kim, Myung Sik Choi, Jae Hoon Bang, Wansik Oum, and Han Gil Na
Hanyang Univ., Korea

WA3-5	17:20-17:40
--------------	--------------------

A Tough, Stretchable, Durable, Ultrathin, Self-Limiting and Skin-Like Substrate with Sensing Capability

Nae Eung Lee, Adeela Hanif, Tran Quang Trung, Saqib Siddiqui, and Phan Tan Toi
Sungkyunkwan Univ., Korea



[WB3] Plasma Medicine for Skin Applications III	
Date / Time	July 25 (Wed.), 2018 / 15:30-17:40
Place	Room B (#113)
Session Chair(s)	Thomas von Woedtke (INP Greifswald, Germany) Nagendra Kaushik (Kwangwoon Univ., Korea)

WB3-1 [Invited]	15:30-16:00
------------------------	--------------------

Development and Application of Skin Equivalents for the Investigation of Atmospheric Pressure Plasma
Ku Youn Baik, Se Hoon Ki, Myoung-Won Chae, and Eun Ha Choi
Kwangwoon Univ., Korea

WB3-2 [Invited]	16:00-16:30
------------------------	--------------------

Cold Atmospheric Pressure Plasma Mediated Wound Healing
Kai Masur¹, Vladimir Urubschurov¹, Debarati Shome¹, Thomas von Woedtke¹, Hans-Robert Metelmann²,
Wolfgang Motz³, and Klaus-Dieter Weltmann¹
¹INP Greifswald, Germany, ²Univ. Medicine Greifswald, Germany, ³Clinic Karlsburg, Dr. Guth GmbH & Co. KG,
Germany

WB3-3 [Invited]	16:30-17:00
------------------------	--------------------

Cold Atmospheric Plasma for the Treatment of Intraoral (Precancerous) Lesions - in Vitro and in Vivo
Investigations
Sybille Hasse¹, Christian Seebauer¹, Maria Segebarth¹, Sander Bekeschus¹, Thomas von Woedtke²,
and Hans-Robert Metelmann²
¹INP Greifswald, Germany, ²Univ. Medicine Greifswald, Germany

WB3-4	17:00-17:20
--------------	--------------------

Introduction of International Standardization for Plasma Medical Devices
Seung-Ho Yi¹, Eun Ha Choi¹, K.-D. Weltmann², and Kai Masur²
¹Kwangwoon Univ., Korea, ²INP Greifswald, Germany

WB3-5	17:20-17:40
--------------	--------------------

Development of Plasma Skincare Devices for Human and Animal and It's Applications
Buil Jeon and MyoungSoo Yun
Plabio Co. Ltd., Korea



[WC3] Plasma and Liquid III	
Date / Time	July 25 (Wed.), 2018 / 15:30-17:40
Place	Room C (#114)
Session Chair(s)	Naoki Shirai (Hokkaido Univ., Japan)

WC3-1 [Invited]	15:30-16:00
------------------------	--------------------

A Comprehensive Study of Two-Dimensional Dusty Plasma Liquids Using Their Equation of State

Yan Feng

Soochow Univ., China

WC3-2 [Invited]	16:00-16:30
------------------------	--------------------

Waste-Water Treatment Using Nanosecond Discharge Plasma

Takao Namihira and Douyan Wang

Kumamoto Univ., Japan

WC3-3 [Invited]	16:30-17:00
------------------------	--------------------

Crystalline Microporous Materials for Separation and Purification

Takeshi Hagio, Hiroto Kunishi, Yuki Kamimoto, and Ryoichi Ichino

Nagoya Univ., Korea

WC3-4	17:00-17:20
--------------	--------------------

Production of Recycled Fine Aggregate by Underwater Pulse Power Discharge

Masaaki Yano, Naoki Matsumoto, Kosuke Kawaoka, Mikiya Matsuda, Mitsuhiro Shigeishi, Douyan Wang,
and Takao Namihira

Kumamoto Univ., Japan

WC3-5	17:20-17:40
--------------	--------------------

In-Liquid Thermal Plasma Processing Combined with Fenton-Like Reaction for Decomposition of Phenol

Dong-Wook Kim, Eun Seo Jo, and Dong-Wha Park

Inha Univ., Korea



[WD3] Atmospheric Pressure Discharges and Thermal Plasmas	
Date / Time	July 25 (Wed.), 2018 / 15:30-17:30
Place	Room D (#115)
Session Chair(s)	Jong-Shinn Wu (Nat'l Chao Tung Univ., Taiwan) Ho Jun Kim (Dong-A Univ., Korea)

WD3-1 [Invited]	15:30-16:00
------------------------	--------------------

3D Particle Simulations and Analysis of Streamer Discharge in Atmospheric Air

Anbang Sun

Xi'an Jiaotong Univ., China

WD3-2	16:00-16:20
--------------	--------------------

Simulation of Nanosecond Pulse Discharge in Air Using Advanced Plasma Models

Bernard Parent

Pusan Nat'l Univ., Korea

WD3-3	16:20-16:40
--------------	--------------------

Modelling of Plasma-Species Mixing in Argon-Steam Arc Discharge for Broad Range of Currents and Argon Mass Flow Rates

Jiri Jenista¹, Hidemasa Takana², Satoshi Uehara², Hideya Nishiyama², Milada Bartlova³, Vladimir Aubrecht³, and Anthony Murphy⁴

¹*Inst. of Plasma Physics ASCR, v.v.i., Czech*, ²*Inst. of Fluid Science, Japan*, ³*Brno Univ. of Tech., Czech*,

⁴*CSIRO Materials Science and Engineering, Australia*

WD3-4	16:40-17:00
--------------	--------------------

Study on the Influence of the Turbulent-Dominated Gas Flow on the Characteristics of Atmospheric Pressure Plasma Jet

Yanhui Wang¹, Yuanyuan Jiang¹, Qinglin Wen¹, Yuantao Zhang², and Dezhen Wang¹

¹*Dalian Univ. of Tech., China*, ²*Shandong Univ., China*

WD3-5 [Invited]	17:00-17:30
------------------------	--------------------

Numerical Study on Generation of Very Large Currents in Atmospheric Pulsed VHF Discharges

Yuantao Zhang and Shuhan Gao

Shandong Univ., China



[WE3] Nano Devices Using 2D Materials III	
Date / Time	July 25 (Wed.), 2018 / 15:30-17:00
Place	Room E (#107~108)
Session Chair(s)	Haeseong Lee (Jeonju Univ., Korea)

WE3-1 [Invited]	15:30-16:00
------------------------	--------------------

Use of Doped-Graphene Transparent Conductive Electrodes for Optoelectronic Devices

Suk-Ho Choi

Kyung Hee Univ., Korea

WE3-2 [Invited]	16:00-16:30
------------------------	--------------------

Synthesis and Characterization of Atomic and Electronic Properties of Graphene-Based Heterostructure

Young Jae Song

Sungkyunkwan Univ., Korea

WE3-3 [Invited]	16:30-17:00
------------------------	--------------------

Evaluation of Layer Number of Graphene with AFM, Reflectance, and Raman Scattering

Mun Seok Jeong

Sungkyunkwan Univ., Korea



[WE4] Nano Devices Using 2D Materials IV	
Date / Time	July 25 (Wed.), 2018 / 17:00-18:30
Place	Room E (#107~108)
Session Chair(s)	Young Chul Choi (KCTECH, Korea)

WE4-1 [Invited]	17:00-17:30
------------------------	--------------------

Normalization of Work Function of a Conducting Tip for Electrical Scanning Probe Microscopy (ESPM)
Haeseong Lee, Inseob Im, and Jongjun An
Jeonju Univ., Korea

WE4-2 [Invited]	17:30-18:00
------------------------	--------------------

Protocol for the Electrical Characterization of Powder-Type Graphene Materials
Ha-Jin Lee¹, Ji Sun Kim¹, Haeseong Lee², Kyung Ho Park³, and Mahfuza Mubarak¹
¹Korea Basic Science Inst., Korea, ²Jeonju Univ., Korea, ³Korea Advanced Nano Fab Center, Korea

WE4-3 [Invited]	18:00-18:30
------------------------	--------------------

Measurement of EMI Shielding Effectiveness with Near Field Probe for CNT
Soon Il Yeo
ETRI, Korea



Poster Session I

Date / Time	July 25 (Wed.), 2018 / 17:30-19:00
Place	Room F (#117~118)

WP-001

Effects of Non-Thermal Plasma on Cell Differentiation and Protein Secretion in *Aspergillus Oryzae*

Mayura Veerana, Eun Ha Choi, and Gyungsoon Park

Kwangwoon Univ., Korea

WP-002

Formation of Nanocluster by Sputtering with Cluster Source for Fabricating a Hierarchical Nanoporous Ag Films

Sungho Yun¹, Junyeop Lee², Jaemoon Yang³, Dongin Lee⁴, Bonghwan Kim⁵, and Chanseob Cho¹

¹Kyungpook Nat'l Univ., Korea, ²Kwang-Lim Precision Inc., Korea, ³Yonsei Univ., Korea, ⁴Yeungnam Univ., Korea,

⁵Daegu Catholic Univ., Korea

WP-003

Atmospheric Pressure Pulsed Plasma Induces Cell Death in Photosynthetic Organs via Intracellularly Generated ROS

Youbin Seol, Jaewook Kim, Se-Hong Park, and Hong Young Chang

KAIST, Korea

WP-004

Non-Thermal Atmospheric Pressure Soft Jet Plasma: A Potential Novel Therapy for Apoptosis in Brain Cancer Cells

Mahmuda Akter, Ying Li, Eun Ha Choi, and Ihn Han

Kwangwoon Univ., Korea

WP-005

Experimental Study of Atmospheric Pressure Plasma Jet in Mixture of a Noble Gas and Atmospheric Pressure Natural Air

Pradeep Lamichhane, Bhagirath Ghimire, and Euh Ha Choi

Kwangwoon Univ., Korea



WP-006

Comparative Study on Osteogenic Differentiation of Human Bone Marrow Derived and Human Periodontal Ligament Derived Mesenchymal Stemcells by Non-Thermal Bio-Compatible Plasma

Ying Li, Eun Ha Choi, and Ihn Han

Kwangwoon Univ., Korea

WP-007

Nanotube Formation on Ti-Ta and Ti-Nb Alloy Surface

Seung-Pyo Kim and Han-Cheol Choe

Chosun Univ., Korea

WP-008

Plasma Activated Medium by Non-Thermal Biocompatible Jet Plasma Induced in Activation Involves Apoptotic Cell Death in Ovarian Cancer Cells

Byeong Jin Kim, Li Ying, Eun ha Choi, and Ihn Han

Kwangwoon Univ., Korea

WP-009

Sputtered Hydroxyapatite Coatings on PEO-Treated Ti-40Ta-xNb Alloy in Solution Containing Mg and Zn Ions

Han-Cheol Choe and Sang-Gyu Lim

Chosun Univ., Korea

WP-010

Morphologies of RF-Sputtered Zinc Coatings and Cell Proliferation on PEO-Treated Ti-6Al-4V Alloy

Han-Cheol Choe and In-Jo Hwang

Chosun Univ., Korea

WP-011

Cell Culture on the Nano-Sized and Functionalized Ti-6Al-4V Alloy by Plasma Electrolytic Oxidation

Ji-Min Yu and Han-Cheol Choe

Chosun Univ., Korea

WP-012

Bone-Like Apatite Formation on Hydroxyapatite Coating on Ti-40Nb-xHf Alloy

Min-Gyu Park and Han-Cheol Choe

Chosun Univ., Korea



WP-013

Enhancing the Power of High Power Microwaves and Investigations for the Position of Virtual Cathode Oscillator Inside the Drift Tube by Using Zone Plate

Sohail Mumtaz, Jun Sup Lim, Suk Woo Lee, Bhagirath Ghimire, and Sohail Mumtaz
Kwangwoon Univ., Korea

WP-014

Investigation of Surface Properties of Atmospheric Air Plasma Treated Polystyrene and Study Its Antibacterial Properties

Ramhari Paneru, Jin Sung Choi, and Eun Ha Choi
Kwangwoon Univ., Korea

WP-015

Development of Thin Film Transistors Using Gate Dielectric Organic-Inorganic Hybrid Layers for Chemical & Bio-Sensing Applications

Hyeon Jin Seo, Jung-Hoon Yu, Dong In Kim, Ji Won Lee, Rak Hyun Jeong, Sang-Hun Nam, Ananth Antony, and Jin-Hyo Boo
Sungkyunkwan Univ., Korea

WP-016

Effect of Cold Atmospheric Plasma Seed Priming on Plant Pathogen Defense System

Bhawana Adhikari and Eun Ha Choi
Kwangwoon Univ., Korea

WP-017

Surface Modification of Stratum Corneum for Drug Delivery and Skin Care by Microplasma Discharge Treatment

Kristof Jaroslav, Aoshima Tomomichi, Blajan Marius, and Shimizu Kazuo
Shizuoka Univ., Japan

WP-018

The Mode of Plasma Jet Delivery of Reactive Species in Biological Tissues

Bhagirath Ghimire¹, Endre Szili², Pradeep Lamichhane¹, Robert D. Short³, Young June Hong¹, Pankaj Attri¹, Kai Masur⁴, Klaus-Dieter Weltmann⁴, Sun-Ha Hong², and Eun Ha Choi¹
¹Kwangwoon Univ., Korea, ²Univ. of South Australia, Australia, ³The Univ. of Lancaster, UK, ⁴INP Greifswald, Germany



WP-019

Evaluation of Resistance of Microbes against Plasma Mediated Oxidative Stress

Myoung-Won Chae¹, Ku-Youn Paik¹, Masur Kai², and Eun-Ha Choi¹

¹Kwangwoon Univ., Korea, ²INP Greifswald, Germany

WP-020

Degradation of Carboxymethyl Chitin by Solution Plasma Treatment and Evaluation of Anticancer Activity of the Degraded Products

Kanokwan Trakoolnuch¹, Nagahiro Saito², and Ratana Rujiravanit¹

¹Chulalongkorn Univ., Thailand, ²Nagoya Univ., Japan

WP-021

Preparation and Characterization of Bacterial Cellulose Composites Reinforced with Albumin-Coated Cotton Fabric

Pawitchaya Chomsiri and Ratana Rujiravanit

Chulalongkorn Univ., Thailand

WP-022

Effects of Grounded Electrode on the APPJ Treatment for Improving Water Permeability of a Bone-Regeneration Scaffold

Yuki Hamamoto, Masato Oshiro, Jun-Seok Oh, Kumi Orita, Hiromitsu Toyoda, and Tatsuru Shirafuji

Osaka City Univ., Japan

WP-023

XPS-Depth Analysis of Plasma Polymerized Coatings for Biomedical Applications

Iuliia Onyshchenko, Mahtab Asadian, Ke Vin Chan, Nathalie De Geyter, and Rino Morent

Ghent Univ., Belgium

WP-024

Effects of Flexible Plasma Conditions on Transdermal Delivery Behaviors into Tissue Model

Yu Ri Lee, Seunghun Lee, and Do-Geun Kim

KIMS, Korea

WP-025

Biological Safety Assessment of Activated Saline Solution Exposed to Atmospheric Flexible Surface Dielectric Barrier Discharges Using Sputtered-Type Flexible Copper Clad Laminates

Sang-You Kim¹, InSun Park¹, Gil-Tae Gang², Ha-Young Jang², Woo-Sung Choi², and Kyu-Sun Chung¹

¹Hanyang Univ., Korea, ²Osong Medical Innovation Foundation, Korea



WP-026

Study of the Penetration of Active Species from Non-Thermal Atmospheric Pressure Plasma Jet thorough a Skin Model Using a UV-Vis Spectroscopy Method

Se Hoon Ki, Ku Woun Baik, and Eun Ha Choi

Kwangwoon Univ., Korea

WP-027

Withdrawn

WP-028

Withdrawn

WP-029

A Novel Synthesis of Metal Nanoparticles in Aqueous Solution by Cold Atmospheric Plasma Jet

Nhat Linh Nguyen, Nagendra Kumar Kaushik, and Eun Ha Choi

Kwangwoon Univ., Korea

WP-030

Study of Transient Spark Discharge in Atmospheric Pressure Ar Plasma

Junsup Lim, Bhagirath Ghimire, and Eun Ha Choi

Kwangwoon Univ., Korea

WP-031

Ultra Sharp Tungsten Tips for Field Emission Electron Beam by Using Etching Solution NaOH and KOH

Bishwa Chandra Adhikari, Ju Sung Kim, and Eun Ha Choi

Kwangwoon Univ., Korea

WP-032

Time-Dependence Monitoring of Sterilization Effects and RONS Concentrations in Radical-Activated Water

Naoyuki Iwata¹, Jun-Seok Oh², Takayuki Ohta¹, Masaru Hori³, and Masafumi Ito¹

¹Meijo Univ., Japan, ²Osaka City Univ., Japan, ³Nagoya Univ., Japan

WP-033

Investigation of Robust Superhydrophobic Surface Using Atmospheric Pressure Plasma Jet

Md. Mokter Hossain¹, Quang Hung Trinh², Duc Ba Nguyen¹, Sudhakaran M.S.P.¹, and Young Sun Mok¹

¹Jeju Nat'l Univ., Korea, ²Le Quy Don Technical Univ., Vietnam



WP-034

Highly Stable Robust Superhydrophobic Coating Deposited on Glass Substrate Using Atmospheric Pressure Plasma Jet

Md. Mokter Hossain¹, Quang Hung Trinh², Duc Ba Nguyen¹, Sudhakaran M.S.P.¹, and Young Sun Mok¹

¹Jeju Nat'l Univ., Korea, ²Le Quy Don Technical Univ., Vietnam

WP-035

Key Chemical Pathways of Hydroxyl Radicals in the Plasma-Liquid System

Joo Young Park, Sanghoo Park, Hyungyu Lee, and Wonho Choe

KAIST, Korea

WP-036

Radio Frequency Plasma Slit Jet as Novel Atmospheric Pressure Plasma Source

Lenka Zajickova¹, Milos Klima¹, Pavel Fiala², Lukas Dostal², and Petr Jelinek¹

¹Masaryk Univ., Czech, ²Brno Univ. of Tech., Czech

WP-037

Laser Induced Fluorescence System for Measurement of Argon Ion Temperature in an Atmospheric-Pressure Plasma Jet

I.J. Kang, M.-K. Bae, I.S. Park, S.H. Lee, S.J. Jeong, and K.-S. Chung

Hanyang Univ., Korea

WP-038

Intensified Optical Emission and Afterglow in Atmospheric Pressure Argon Plasma Driven by Pulsed Microwave

Woo Jin Nam, Seok Yong Jeong, Jae Koo Lee, and Gunsu Yun

POSTECH, Korea

WP-039

Biocompatibility and Antibacterial Behaviors of TaON(Porous)/TaN/TaN-Ag/Ta Multi-Layered Thin Films

Jang-Hsing Hsieh, S. C. Lin, and C. C. Hsu

Ming Chi Univ. of Tech., Taiwan

WP-040

Angular Dependence of SiO₂ Etch Rates in Hexafluoroisopropanol Plasmas

Jin-Su Park, Jun-Hyun Kim, and Chang-Koo Kim

Ajou Univ., Korea



WP-041

Fabrication and Characterization of Cellulose-Based Hydrophobic Absorbents Derived from Banana Trunks for Separation of Cyclohexane from Cyclohexane/Water Mixture

Sittipong Khongtanachalotorn¹, Nagahiro Saito², and Ratana Rujiravanit¹

¹Chulalongkorn Univ., Thailand, ²Nagoya Univ., Japan

WP-042

Etching Characteristics of SiON Thin Films in CF₄+CHF₃+O₂ Inductively Coupled Plasma

Jihun Kim, Junmyung Lee, and Kwang-Ho Kwon

Korea Univ., Korea

WP-043

A Comparative Study of CF₄, C₄F₈ and C₇F₁₄ Plasma for Dry Etch Processing

Da In Sung, Hyun Woo Tak, Kyung Chae Yang, Dong Woo Kim, and Geun Young Yeom

Sungkyunkwan Univ., Korea

WP-044

Dry Etching of SiO₂ Layers Using Low Global Warming Potentials Gases

Yongjae Kim, Taehwan Cha, Sangin Lee, Yegeun Cho, and Heeyeop Chae

Sungkyunkwan Univ., Korea

WP-045

A Study on the Etching Residues of Silicon Dioxide Sidewalls after Contact-Hole Etching in C₄F₈+CH₂F₂+O₂+Ar Plasma

Changmok Kim, Jaemin Lee, Junmyung Lee, Jihun Kim, and Kwang-Ho Kwon

Korea Univ., Korea

WP-046

SiO₂ Etch Characteristics and Environmental Impact of Ar/C₃F₆O and Ar/C₄F₈/O₂

Soo Gang Kim, Kyung Che Yang, Da In Sung, Ye Ji Shin, Hyun Woo Tak, Jun Ki Jang, and Geun Young Yeom

Sungkyunkwan Univ., Korea

WP-047

Study on Recovery System for Perfluorocarbon Gases

Junyoung Park, Byoungmoon Oh, Kwangjin Oh, Yoonjong Kim, Youngheum Yeon, and Kyongnam Kim

Daejeon Univ., Korea



WP-048

Study on the Steam Effect as Oxidizing Agent on Decomposition of Fluorinated Compounds Gas Using Microwave Plasma Torch

Ji Hun Kim, Chang Hyun Cho, and Hee Chol Choi

NFRI, Korea

WP-049

Characterization of SiO₂ Plasma Etching with Different Liquid Fluorocarbon Precursor Using Quadrupole Mass Spectroscopy

Seung-Wan Yoo¹, Chul-Hee Cho¹, Hee-Jung Yeom², Jung-Hyung Kim², and ShinJae You¹

¹*Chungnam Nat'l Univ., Korea*, ²*KRISS, Korea*

WP-050

Plasma-Enhanced Chamber Cleaning with CF₃I Gas

In-Sung Park, Seon Yong Kim, Taehoon Lee, Jinho Ahn, Jinseong Park, and Tae-Hun Shim

Hanyang Univ., Korea

WP-051

Synthesis and Characterization of Hydrofluoroether as an Environmentally Friendly Replacement of Perfluorocarbon Gases in Etching Process

Sang Goo Lee¹, Jong-Wook Ha¹, In Jun Park¹, Soo-Bok Lee¹, Chang-Goo Kim², and Heeyeop Chae³

¹*KRICT, Korea*, ²*Ajou Univ., Korea*, ³*Sungkyunkwan Univ., Korea*

WP-052

Atmospheric-Pressure Plasma-Assisted Selective Catalyst Reduction of NO_x with Hydrocarbon in Early State

Duc Ba Nguyen and Young Sun Mok

Jeju Nat'l Univ., Korea

WP-053

Atmospheric Pressure Plasma Jet Treatment of Textile for Hydrophobic Property

Heesoo Jung, Myung Kyu Park, Sung Hun Kim, Min Kun Kim, Juno Lee, and Hyunsook Jung

Agency for Defense Development, Korea

WP-054

Withdrawn



WP-055

Uncertainty and Accuracy Evaluation of Flat-Top Beam Adjusted in-Situ Particle Monitor

Jongho Kim, Jihun Mun, and Sang-Woo Kang

KRISS, Korea

WP-056

Semiconductor Surface Changes after $\text{NF}_3/\text{H}_2\text{O}$ Plasma Cleaning Processing

Seran Park¹, Hoonjung Oh², Gyoodong Kim³, and Dae-Hong Ko¹

¹Yonsei Univ., Korea, ²BIT Micro Fab Research Center, Korea, ³Advanced Cleaning Network, Korea

WP-057

Super Water-Repellent Characteristics for Aluminium Surfaces Coated by Two-Step Chemical Process

Hwa-Min Kim¹, Bonghwan Kim¹, Jaewoong Choi¹, Jiseon Kwon¹, Chang-Hyun Lee¹, Taewoo Kim¹, and Sunyoung Sohn²

¹Daegu Catholic Univ., Korea, ²POSTECH, Korea

WP-058

Withdrawn

WP-059

The Reproducibility Verification of Edge Bead Removal (EBR) Process for Contamination Control in Lithography

Jaeyoung Park

Sungkyunkwan Univ., Korea

WP-060

Effect of Secondary Electron Emission on Plasma Characteristics in RF Atmosphere Argon Glow Discharges

Yue Liu¹, Yuan-Zhen Wang¹, Tagra Samir¹, and Yi-Nan Wang²

¹Dalian Univ. of Tech., China, ²Shihua Univ., China

WP-061

Studies on Neutral Gas Flow and Heat Effects in Argon Inductively Coupled Plasma

Fang-Zong Lu, Wen-Li Cui, and Shu-Xia Zhao

Dalian Univ. of Tech., China



WP-062

Investigation of Micro-Arcing in a Capacitively Coupled Plasma with a 2D Particle-In-Cell Simulation

Chang Ho Kim, Jin Seok Kim, and Hae June Lee

Pusan Nat'l Univ., Korea

WP-063

Validity Analysis of Ion Drift Diffusion Approximation for Fluid Dynamics Simulation Model in CCP Discharge

Wenli Cui and Shuxia Zhao

Dalian Univ. of Tech., China

WP-064

The Pulse Polarity Influence on the Atmospheric Pressure Plasma Jet

Yuanyuan Jiang, Yanhui Wang, and Dezhen Wang

Dalian Univ. of Tech., China

WP-065

Study on Plasma Condition for High Neutralization Efficiency of Negative Ion Beam

JangJae Lee, SiJun Kim, YoungSeok Lee, ChulHee Cho, HeeJung Yeom, and ShinJae You

Chungnam Nat'l Univ., Korea

WP-066

Computational Study on Photochemistry in Plasma-Liquid Systems

HyunGyu Lee, SangHoo Park, JooYoung Park, and Wonho Choe

KAIST, Korea

WP-067

Comparison of Electron and Chemistry Properties between 0-D Global Model and 1-D Fluid Model for Parallel Plate Dielectric Barrier Discharges in Humid Air of Atmospheric Pressure

Changho Yi, Sung-Young Yoon, Sangheum Eom, Seungil Park, Seungmin Ryu, and Seong Bong Kim

NFRI, Korea

WP-068

Effect of Pulse Parameters on Discharge Characteristics in Pulse-Modulate Radio-Frequency Atmospheric Pressure Discharges with Argon-Oxygen Mixture

Xue-Chun Li, Hui Liu, and You-Nian Wang

Dalian Univ. of Tech., China



WP-069

Analysis of the Effect of Target Erosion Magnetron Sputtering on Deposition Profile Using 2D and 3D Particle-in-Cell Simulation Combined with a Ghost Fluid Method

Sehun Oh, Min Young Hur, and Hae June Lee

Pusan Nat'l Univ., Korea

WP-070

Two-Dimensional Simulation of an Inductively Coupled Plasma Discharge of Ar/O₂ Including Heat Transfer, Gas Flow, and EEDF

Donggil Kim¹, EunHee Choi¹, YeJin Shon¹, Deuk-Chul Kwon², Jae-Hong Jeon¹, and HeeHwan Choe¹

¹Korea Aerospace Univ., Korea, ²NFRI, Korea

WP-071

A Study of Asymmetric Effect in the 3D ICP Discharge Simulation Considering EEDF, Flow and Heat Transfer

EunHee Choi¹, YeJin Shon¹, Dong-Gil Kim¹, Deuk-Chul Kwon², Jae-Hong Jeon¹, and HeeHwan Choe¹

¹Korea Aerospace Univ., Korea, ²NFRI, Korea

WP-072

Numerical Analysis of a Low Power Non-Transferred Arc Plasma Reactor for Methane Conversion

Byeong-Il Min, Tae-Hee Kim, and Sooseok Choi

Jeju Nat'l Univ., Korea

WP-073

Numerical Analysis of a Thermal Plasma Scrubber for CF₄ Decomposition

Juyoung Ko, Sooseok Choi, and Tae Hee Kim

Jeju Nat'l Univ., Korea

WP-074

Pulse Parameter Dependence of Reactive Species Generation in Global Simulation of Atmospheric Argon/Oxygen Plasma

Seokyong Jeong, Woojin Nam, Gunsu Yun, and Jaekoo Lee

POSTECH, Korea

WP-075

Effects of Temperature Gradient by Chemical Reactions in Ar/H₂ Inductively Coupled Plasma Using Fluid Simulation

Kwon-Sang Seo, Dong-Hyun Kim, and Ho-Jun Lee

Pusan Nat'l Univ., Korea



WP-076

Three-Dimensional Computation of Thermal Plasma including the Influence of Metal Electrodes by Arc Discharge

Won-Ho Lee and Jong-Chul Lee

Gangneung-Wonju Nat'l Univ., Korea

WP-077

Modeling of Optical Emission Spectroscopy for Low Temperature Argon Plasma

Myeong-Geon Lee¹, Namjae Bae¹, Jiwon Kwon¹, Gon-Ho Kim¹, and Hyun-Kyung Jung²

¹Seoul Nat'l Univ., Korea, ²GIST, Korea

WP-078

Numerical Simulation of Aemperature and Chemical Species Distributions in HFCVD for Diamond Film

Yong Hee Lee¹, Chang Won Song², Tae-Hee Kim¹, Kwang Ho Kim², and Sooseok Choi¹

¹Jeju Nat'l Univ., Korea, ²Pusan Nat'l Univ., Korea

WP-079

Polarity Control of 2D TMDC via Plasma Doping

Sungwon Lee, Inyong Moon, Myeongjin Lee, and Won Jong Yoo

Sungkyunkwan Univ., Korea

WP-080

Characteristics of Tungsten Disulfide Thin Films by RF Sputtering on Soda-Lime Glass Substrate and Subsequent Rapid Thermal Annealing

In Hwan Kim, Hanyeob Nam, Sang Jik Kwon, and Eou-Sik Cho

Gachon Univ., Korea

WP-081

N-Type Doping of Tungsten Diselenide by Oxygen Plasma Treatment

Hyeongjun Kim and Jin-Hong Park

Sungkyunkwan Univ., Korea

WP-082

Tungsten Diselenide(WSe₂) Biosensor Field Effect Transistor(BioFET) with a High Sensitivity

Ji Wan Koo and Jin Hong Park

Sungkyunkwan Univ., Korea



WP-083

Stability of High-Performance Multilayer MoS₂ Field-Effect Transistor Improved by O₂ Plasma Pretreatment and Al₂O₃ Encapsulation

Na Liu, Soo Ho Choo, Jeong Hun Kim, Naqi Siddiqi, Quang Trung Nguyen, and Sunkook Kim
Sungkyunkwan Univ., Korea

WP-084

Electrical Performance of Al₂O₃-Encapsulated Multilayer MoS₂ Thin-Film Transistor with Different Temperature Environments

Seok Hwan Jeong, Na Liu, Heekyeong Park, and Sunkook Kim
Sungkyunkwan Univ., Korea

WP-085

Type-Converted N-Doping of Tungsten Diselenide through Thermal and Optical Activation

Hyeongjun Kim and Jin-Hong Park
Sungkyunkwan Univ., Korea

WP-086

A Study of High Voltage Oxide Breakdown Voltage Drop Induced by Etch Damage in NAND Flash Memory

Sungjin Jang¹ and Byoung-Deog Choi²
¹*Samsung Electronics Co., Ltd., Korea*, ²*Sungkyunkwan Univ., Korea*

WP-087

Flexible Thin Film MoS₂ Transistor Embedded on Polyimide Substrate Using 2D Silver Nanowire Random Network

Uihyun Jung¹, Muhammad Naqi¹, Hyeokju Chae¹, Srinivas Gandla¹, Seonju Kang¹, Hyuk-Jun Kwon², Costas P. Grigoropoulos³, and Sunkook Kim¹
¹*Sungkyunkwan Univ., Korea*, ²*DGIST, Korea*, ³*Univ. of California, USA*

WP-088

Poly-4-Vinylphenol and Poly(melamine-co-formaldehyde) - Based Atomic Switching Device

Hyeongjun Kim and Jin-Hong Park
Sungkyunkwan Univ., Korea

WP-089

A Novel Vertical-Cell Transistor DRAM to Suppress the Floating Body Effect by Buried-Body Diode Structure (BDS)

Young Seung Cho¹, Young Hwan Hyeon², Hyun Jin Ji², Yoo Sang Hwang¹, and Byoung Deog Choi²
¹*Samsung Electronics Co., Ltd., Korea*, ²*Sungkyunkwan Univ., Korea*



WP-090

Noble Au-Functionalized WS₂ Nanosheets Gas Sensors

Jae-Hun Kim, Jae-Hyoung Lee, Jin-Young Kim, and Sang Sub Kim

Inha Univ., Korea

WP-091

P-Type Molybdenum Disulfide by Fermi Level De-Pinning Effect of Edge-Contact

Kwang Young Lee, Changsik Kim, and Won Jong Yoo

Sungkyunkwan Univ., Korea

WP-092

Surface Characteristics of Self-Assembled Monolayers Forming of Carbon and Fluorine in Alkyl Chain Length

Tae Wan Kim¹, Won Jae Lee², and Sang-Geon Park³

¹*Hongik Univ., Korea*, ²*Gachon Univ., Korea*, ³*Silla Univ., Korea*

WP-093

A Mobile Phone Imaging-Based Fluorescent Mercury Sensor with Minimal User Intervention and High Sensitivity

Won-Il Lee and Nae-Eung Lee

Sungkyunkwan Univ., Korea

WP-094

Improved Gas Sensing Performance of 1-D Nanowire with Branch and Metal Nanoparticle

Hyoun Woo Kim, Myung Sik Choi, Jae Hoon Bang, Wansik Oum, and Han Gil Na

Hanyang Univ., Korea

WP-095

Flexible Piezocapacitive Pressure Sensors Fabricated by All-Solution-Process for Human-Machine Interfaces

Byeong-Cheol Kang¹, Jae-Ho Han², and Tae-Jun Ha¹

¹*Kwangwoon Univ., Korea*, ²*Korea Univ., Korea*

WP-096

Stretchable Touch/Force Sensor as a Multi-Functional Input Device for Wearable Electronics

Byeong-Ung Hwang, Tran Quang Trung, Young-In Choi, Ju Hyun Kim, and Nae-Eung Lee

Sungkyunkwan Univ., Korea



WP-097

Stretchable Transparent Network PU/rGO/AgNPs Electrode via Electrospinning

Young-In Choi, Byeoung-Ung Hwang, and Nae-Eung Lee

Sungkyunkwan Univ., Korea

WP-098

Design and Fabrication of Silicon Photonics Grating Couplers for Spatially Resolved Plasma Uniformity Monitoring Sensor

Minhee Lee and Sang Jeon Hong

Myongji Univ., Korea

WP-099

CO Sensing Properties of Au-Functionalized ZnO Nanowires with Self-Heating Effect

Jae-Hyoung Lee, Jae-Hun Kim, Jin-Young Kim, and Sang Sub Kim

Inha Univ., Korea

WP-100

Textile-Based Passive Microfluidic Channel for Handling of Biofluids

Tan Toi Phan, Adeela Hanif, and Nae-Eung Lee

Sungkyunkwan Univ., Korea

WP-101

Development of a Parallel Multi-Physics Modeling Platform: Rigorous Advanced Plasma Integration Testbed (RAPIT)

Y.-M. Lee¹, M.-H. Hu¹, C.-C. Su², K.-L. Chen², M.-F. Tzeng², and J.-S. Wu²

¹Plasma Taiwan Innovation Corp., Taiwan, ²Nat'l Chiao Tung Univ., Taiwan



[TA1] Sputtering Technologies	
Date / Time	July 26 (Thu.), 2018 / 09:00-10:30
Place	Room A (#104~106)
Session Chair(s)	Junghoon Joo (Kunsan Nat'l Univ., Korea)

TA1-1 [Invited]	09:00-09:30
------------------------	--------------------

PIC-MC Simulation Study of Rotational Magnetron Sputtering

Andreas Pflug, Michael Siemers, Thomas Melzig, and Michael Vergöhl
Fraunhofer Inst. for Surface Engineering and Thin Films IST, Germany

TA1-2 [Invited]	09:30-10:00
------------------------	--------------------

ECR Plasma Enhanced Sputtering and Applications

Seong Bong Kim¹, Seungil Park¹, Changho Yi¹, Wan-Woo Park², Jeong-Rak Lee², Jae-Chul Do², Woo-Jin Choi²,
and Sung Haeng Cho³
¹NFRI, Korea, ²AVACO Co., LTD., Korea, ³ETRI, Korea

TA1-3 [Invited]	10:00-10:30
------------------------	--------------------

Effect of Interface on the Structure and Ferro-Electric Property of Y-Doped HfO₂ Thin Films Prepared by Reactive Magnetron Co-Sputtering

Jun Xu¹, Yu Zhang¹, Da-Yu Zhou¹, Wen-Qi Lu¹, Hang-Hang Wang¹, and Chi Kyu Choi²
¹Dalian Univ. of Tech., China, ²Jeju Nat'l Univ., Korea



[TB1] Plasma Medicine for Skin Applications IV	
Date / Time	July 26 (Thu.), 2018 / 09:00-10:30
Place	Room B (#113)
Session Chair(s)	Kai Masur (INP Greifswald, Germany) Jun-Seok Oh (Osaka City Univ., Japan)

TB1-1 [Keynote]	09:00-09:40
------------------------	--------------------

Chemical and Biological Mechanisms of Plasma Interaction with Biosystems

Alexander Fridman
Drexel Univ., USA

TB1-2 [Invited]	09:40-10:10
------------------------	--------------------

Nitrogen Monoxide Generation by Microwave Plasma Torch

Hansup Uhm
Ajou Univ., Korea

TB1-3	10:10-10:30
--------------	--------------------

The Effect of Cold Atmospheric Pressure Plasma (CAP) on Cell Migratory Behaviors and Molecular Markers of Wound Healing Machinery

Debarati Shome¹, Niklas Hohmann¹, J Schmidt², Thomas von Woedtke¹, and Kai Masur¹

¹INP Greifswald, Germany, ²Clinic Karlsburg, Dr. Guth GmbH & Co. KG, Germany



[TC1] Plasma and Liquid IV	
Date / Time	July 26 (Thu.), 2018 / 09:00-10:00
Place	Room C (#114)
Session Chair(s)	Sungmo Moon (KIMS, Korea)

TC1-1 [Invited]

09:00-09:30

Solution Plasma Catalyst and the Reactions

Nagahiro Saito, Sang-Woo Chae, Kyu-Sung Kim, Yukihiro Muta, and Maria Antoaneta Bratescu
Nagoya Univ., Japan

TC1-2 [Invited]

09:30-10:00

Synthesis of Various Ag-Based Electrocatalysts for Fuel Cell Applications via Plasma Discharge in Solution

SangYul Lee¹, SungMin Kim², and JungWan Kim³

¹Korea Aerospace Univ., Korea, ²KAITECH, Korea, ³Incheon Nat'l Univ., Korea



[TD1] Plasma Sources and Technologies I	
Date / Time	July 26 (Thu.), 2018 / 09:00-10:40
Place	Room D (#115)
Session Chair(s)	Heesoo Jung (ADD, Korea)

TD1-1 [Keynote]

09:00-09:40

INCA: A New Scalable Large Area Plasma Source at Low Pressures

Uwe Czarnetzki, Philipp Ahr, Tsanko Tsankov, and Jahn Kuhfeld

Ruhr-Univ. Bochum, Germany

TD1-2 [Invited]

09:40-10:10

Challenges for Future rf Driven Plasma Systems

Rod Boswell

Australian Nat'l Univ., Australia

TD1-3 [Invited]

10:10-10:40

Microwave Plasma Sources Based on Microstrip Line for Material Processing

Jaeho Kim and Hajime Sakakita

AIST, Japan



[TA2] Plasma Farming I	
Date / Time	July 26 (Thu.), 2018 / 13:20-15:10
Place	Room A (#104~106)
Session Chair(s)	Cheorun Jo (Seoul Nat'l Univ., Korea)

TA2-1 [Invited]	13:20-13:50
------------------------	--------------------

Requirements and Considerations for Atmospheric Pressure Plasma Sources for Plasma Farming
Wonho Choe
KAIST, Korea

TA2-2 [Invited]	13:50-14:20
------------------------	--------------------

Scaling Plasma Systems for the Agri-Food Sector
P. J. Cullen
Univ. of Nottingham, UK

TA2-3 [Invited]	14:20-14:50
------------------------	--------------------

Plasma in Hydroponics and in Produce Washing
Gregory Fridman
Drexel Univ., USA

TA2-4	14:50-15:10
--------------	--------------------

The Synergetic Disinfection Effect Analysis on Different Microorganisms Using Underwater Plasma Discharge
Seungmin Ryu, Eun Jeong Hong, Yong Seong Byeon, and Junghyun Lim
NFRI, Korea



[TB2] Plasma Medicine for Cancer Applications	
Date / Time	July 26 (Thu.), 2018 / 13:20-14:50
Place	Room B (#113)
Session Chair(s)	Hans-Robert Metelmann (Greifswald Univ. Medicine, Germany) Alexander Fridman (Drexel Univ., USA)

TB2-1 [Invited]	13:20-13:50
------------------------	--------------------

Application of Cold Atmospheric Plasma to Overcome Drug-Resistance in Cancer Cells

Sun Jung Kim¹, Sunbin Park¹, Hyeon Woo Kim¹, Dawoon Jeong¹, Juyeon Ham¹, and Eun Ha Choi²

¹Dongguk Univ., Korea, ²Kwangwoon Univ., Korea

TB2-2 [Invited]	13:50-14:20
------------------------	--------------------

Cold Plasma Assisted Wound Healing : From Bactericidal Effects to Tissue Regeneration

Svetlana Ermolaeva

Gamaleya Research Center for Epidemiology and Microbiology, Russia

TB2-3 [Invited]	14:20-14:50
------------------------	--------------------

Combined Effect of Cold Plasma and Nanoemulsion Based Drug Delivery System for Targeting Human Melanoma

Manish Adhikari¹, Nagendra Kaushik¹, Neha Kaushik², Bhagirath Ghimire¹, Sanjula Baboota³, Rizwan Wahab⁴, Abdulaziz A. Al-Khedhairi⁴, Su-Jae Lee², and Eun Ha Choi¹

¹Kwangwoon Univ., Korea, ²Hanyang Univ., Korea, ³Jamia Hamdard, India, ⁴King Saud Univ., Saudi Arabia



[TC2] Next Generation Plasma Etching I	
Date / Time	July 26 (Thu.), 2018 / 13:20-15:00
Place	Room C (#114)
Session Chair(s)	Thorsten Lill (Lam Research Corp., USA) Alok Ranjan (Tokyo Electron, USA)

TC2-1 [Invited]	13:20-13:50
------------------------	--------------------

Some Aspects of Process Development in Plasma Etching

Nam Hun Kim

Adaptive Plasma Tech. Corp., Korea

TC2-2	13:50-14:10
--------------	--------------------

Development of the Virtual Metrology Using a Plasma Information Variable (PI-VM) for Monitoring SiO₂ Etch Depth

Yunchang Jang, Hyun-Joon Roh, Sangwon Ryu, Ji-Won Kwon, and Gon-Ho Kim

Seoul Nat'l Univ., Korea

TC2-3	14:10-14:30
--------------	--------------------

Withdrawn

TC2-4 [Invited]	14:30-15:00
------------------------	--------------------

Plasma and Feature Scale Models for Etching of High Aspect Ratio Silicon Structures in Pulsed Inductively Coupled Plasmas

Jason Kenney, Jun-Chieh Wang, Wei Tian, Shahid Rauf, Samaneh Sadighi, Phillip Stout, Vinay Vidyarthi,

Janny Guo, Kenneth Delfin, and Nicole Lundy

Applied Materials, Inc., USA



[TD2] Plasma Sources and Technologies II	
Date / Time	July 26 (Thu.), 2018 / 13:20-15:10
Place	Room D (#115)
Session Chair(s)	Junghoon Joo (Kunsan Nat'l Univ., Korea)

TD2-1 [Invited]	13:20-13:50
------------------------	--------------------

The Experimental and Numerical Investigations of Electron Characteristics in 2 MHz and 13.56 MHz Inductively Coupled Hydrogen Plasmas

Fei Gao, Hong Li, De-Qi Wen, and You-Nian Wang
Dalian Univ. of Tech., China

TD2-2 [Invited]	13:50-14:20
------------------------	--------------------

Inductively-Coupled Plasma and Laser-Produced Plasma Source Researches at GIST

Hyyong Suk, Keekon Kang, and Sihyeon Lee
GIST, Korea

TD2-3 [Invited]	14:20-14:50
------------------------	--------------------

Experimental and Computational Investigations on Striations in Electronegative Capacitively Couple rf Discharges

Yong-Xin Liu¹, Ihor Korolov², Edmund Schüngel³, Zoltán Donkó⁴, Julian Schulze², and You-Nian Wang¹
¹*Dalian Univ. of Tech., China*, ²*Ruhr-Univ. Bochum, Germany*, ³*Evatec AG, Switzerland*, ⁴*Hungarian Academy of Sciences, Hungary*

TD2-4	14:50-15:10
--------------	--------------------

Modulation of Electron Energy Distribution Functions and Plasma Parameters in a Dual-Frequency Cylindrical Inductively Coupled Plasma Source

Yue Hua, Jian Song, Zeyu Hao, Gailing Zhang, and Chunsheng Ren
Dalian Univ. of Tech., China



[TE1] Plasma for Nanomaterial Processing I	
Date / Time	July 26 (Thu.), 2018 / 13:20-15:00
Place	Room E (#107~108)
Session Chair(s)	Toshiaki Kato (Tohoku Univ., Japan)

TE1-1 [Invited]	13:20-13:50
------------------------	--------------------

Nanowire-Mesh Templated Growth of Out-of-Plane Three-Dimensional Fuzzy Graphene

Raghav Garg¹, Sahil K. Rastogi¹, Michael Lamparski², Sergio C. de la Barrera¹, Gordon T. Pace¹, Noel T. Nuhfer¹, Benjamin M. Hunt¹, Vincent Meunier², and Tzahi Cohen-Karni¹

¹Carnegie Mellon Univ., USA, ²Rensselaer Polytechnic Inst., USA

TE1-2 [Invited]	13:50-14:20
------------------------	--------------------

Plasma-Enhanced Synthesis of Nanomaterials for Energy Storage & Conversion

Hyung Mo Jeong

Kangwon Nat'l Univ., Korea

TE1-3	14:20-14:40
--------------	--------------------

Layer-by-Layer Oxidation of MoS₂ Using Oxygen Plasma Treatment

Sojung Kang¹, Junyoung Kwon¹, Jaehwan Jeong¹, Jianwu Shi², and Gwan-Hyoung Lee¹

¹Yonsei Univ., Korea, ²Henan Univ., China

TE1-4	14:40-15:00
--------------	--------------------

Synthesis of Parallelized Carbon Nanowalls by ECR Plasma

Shinsuke Mori, Ryo Suzuki, Yusei Matsumura, and Yohei Anekawa

Tokyo Inst. of Tech., Japan



[TA3] Plasma Farming II	
Date / Time	July 26 (Thu.), 2018 / 15:30-17:10
Place	Room A (#104~106)
Session Chair(s)	Gyungsoon Park (Kwangwoon Univ., Korea)

TA3-1 [Invited]

15:30-16:00

Plasma-Functionalized Solution and Its Applications for Plasma Farming

Sanghoo Park, Wonho Choe, Joo Young Park, Hyungyu Lee, and Jinwoo Kim

KAIST, Korea

TA3-2 [Invited]

16:00-16:30

Activity Promotion of Microorganisms and Enzyme Degradation of Biomass Using Radical Irradiations

Masafumi Ito

Meijo Univ., Japan

TA3-3

16:30-16:50

Ethylene Removal from Post-Harvest Agricultural Storages Using Adsorption and Plasma-Catalytic Oxidation

Seung-Gun Kim¹, Ho Won Lee¹, Y.S. Mok¹, and Seong Bong Kim²

¹*Jeju Nat'l Univ., Korea*, ²*NFRI, Korea*

TA3-4

16:50-17:10

Disinfection and Germination of Cloves and Bulbs by Weakly Ionized Low-Pressure Plasma

Matej Holc, Ita Junkar, Gregor Primc, and Miran Mozetič

Jozef Stefan Inst., Slovenia



[TB3] Plasma Characterization I	
Date / Time	July 26 (Thu.), 2018 / 15:30-17:00
Place	Room B (#113)
Session Chair(s)	Jean-Michel Pouvesle (GREMI, CNRS/Univ. of Orleans, France) Manish Adhikari (Kwangwoon Univ., Korea)

TB3-1 [Invited]	15:30-16:00
------------------------	--------------------

Mechanisms and Control of Advanced Plasma Biomedical Processes

David Graves

Univ. of California at Berkeley, USA

TB3-2 [Invited]	16:00-16:30
------------------------	--------------------

Comparison of ROS Diagnostic Methods for Atmospheric-Pressure Plasmas at Gas-Liquid Environment

Seiji Kanazawa¹, Suguru Matsuo¹, Koshuke Tachibana¹, Takashi Furuki¹, Shuichi Akamine¹, Ryuta Ichiki¹,
and Marek Kocik²

¹*Oita Univ., Japan*, ²*Polish Academy of Science, Poland*

TB3-3 [Invited]	16:30-17:00
------------------------	--------------------

Long-Term Investigation of Radical-Activated Water

Jun-Seok Oh¹, Naoyuki Iwata², Takayuki Ohta², Masaru Hori³, and Masafumi Ito²

¹*Osaka City Univ., Japan*, ²*Meijo Univ., Japan*, ³*Nagoya Univ., Japan*



[TC3] Next Generation Plasma Etching II	
Date / Time	July 26 (Thu.), 2018 / 15:30-17:00
Place	Room C (#114)
Session Chair(s)	Nam Hun Kim (Adaptive Plasma Tech. Corp., Korea) Jason Kenney (Applied Materials, Inc., USA)

TC3-1 [Invited]	15:30-16:00
------------------------	--------------------

Etching of Semiconductor Devices

Thorsten Lill, Vahid Vahedi, and Richard A. Gottscho
Lam Research Corp., USA

TC3-2 [Invited]	16:00-16:30
------------------------	--------------------

Methods to Enable Plasma Etching of Transition Metals with Atomic Scale Precision

Eric A Joseph, Hiroyuki Miyazoe, Nathan Marchack, John M. Papalia, Robert Bruce, and Sebastian U. Engelmann
IBM Thomas J. Watson Research Center, USA

TC3-3 [Invited]	16:30-17:00
------------------------	--------------------

Absolute Electron Density Measurements for Manufacturing-Worthy Equipment and Processes

Albert Ellingboe
Dublin City Univ., Ireland



[TD3] Plasma Sources and Technologies III	
Date / Time	July 26 (Thu.), 2018 / 15:30-17:40
Place	Room D (#115)
Session Chair(s)	Hae June Lee (Pusan Nat'l Univ., Korea)

TD3-1 [Invited]	15:30-16:00
------------------------	--------------------

Performance and Plasma Characteristics of Low-Power Ammonia Arcjet Thruster

Xian Meng, Wenxia Pan, Chunling Yang, and Chengkang Wu

Chinese Academy of Sciences, China

TD3-2 [Invited]	16:00-16:30
------------------------	--------------------

The Triple DC Plasma Torch System for Nanoparticle Synthesis

Tae-Hee Kim, Jeong-Hwan Oh, Byeong-Il Min, Juyoung Ko, Minseok Kim, Yong Hee Lee, and Sooseok Choi

Jeju Nat'l Univ., Korea

TD3-3 [Invited]	16:30-17:00
------------------------	--------------------

Investigation of Characteristics of Multiphase AC Arc by High-Speed Visualization

Takafumi Okuma¹, Hisao Nagai¹, Takeshi Koiwasaki¹, Manabu Tanaka², and Takayuki Watanabe²

¹Panasonic Corporation, Japan, ²Kyushu Univ., Japan

TD3-4	17:00-17:20
--------------	--------------------

Fluctuation Phenomena of Plasma Jet in Long DC Arc with Ring-Shaped Anode

Manabu Tanaka¹, Hirohiko Soeda¹, Takayuki Watanabe¹, and Tomohiro Koga²

¹Kyushu Univ., Japan, ²Clean Tech., Japan

TD3-5	17:20-17:40
--------------	--------------------

Study on Uniform Plasma Generation in Electron Cyclotron Resonance Plasma Etching Reactor

Hitoshi Tamura¹, Tsutomu Tetsuka², Daisuke Kuwahara³, and Shunjiro Shinohara³

¹Hitachi High-Technologies Corporation, Japan, ²Hitachi Ltd., Japan, ³Tokyo Univ. of Agriculture and Tech., Japan



[TE2] Plasma for Nanomaterial Processing II	
Date / Time	July 26 (Thu.), 2018 / 15:30-17:20
Place	Room E (#107~108)
Session Chair(s)	Hyung-Mo Jeong (Kangwon Nat'l Univ., Korea)

TE2-1 [Invited]	15:30-16:00
------------------------	--------------------

Bottom-Up Synthesis of Atomically-Precise Low-Dimensional Nanocarbon Materials by Nanoscale Plasma Processing

Toshiaki Kato and Toshiro Kaneko
Tohoku Univ., Japan

TE2-2	16:00-16:20
--------------	--------------------

Heterogeneity of Hard Skin Layer in Wrinkled PDMS Surface Fabricated by Ar Ion Beam Irradiation

Seunghun Lee, Eunyeon Byeon, Sunghoon Jeong, and Do-Geun Kim
KIMS, Korea

TE2-3	16:20-16:40
--------------	--------------------

Synthesis of Metal-Boride Nanoparticles Using Triple Thermal Plasma Jet System

Minseok Kim¹, Jeong-Hwan Oh¹, Tae-Hee Kim², Yong Hee Lee¹, Seung-Hyun Hong¹, and Sooseok Choi¹
¹*Jeju Nat'l Univ., Korea*, ²*Inst. for Nuclear Science and Tech., Korea*

TE2-4	16:40-17:00
--------------	--------------------

Preparation of Catalyst with Microwave Induced Plasma Jet Combined with Spouted Bed

Jai Young Chung, Satoshi Kodama, and Hidetoshi Sekiguchi
Tokyo Inst. of Tech., Japan

TE2-5	17:00-17:20
--------------	--------------------

Surface Treatment of Two-Dimensional $\text{Ti}_3\text{C}_2\text{T}_x$ Using Radio-Frequency Remote Plasma System

Byeong-Joo Lee, Yoon-Jeong Chae, Yong-Hee Lee, and Chi Won Ahn
Nat'l NanoFab Center, Korea



Poster Session II

Date / Time	July 26 (Thu.), 2018 / 17:30-19:00
Place	Room F (#117~118)

TP-001

Non-Thermal DBD Plasma Treatment Improves Chicken Sperm Motility via the Regulation of Demethylation Levels

Jiao Jiao Zhang¹, Nisansala Chandimali¹, Tae Yoon Kang¹, Hyebin Koh¹, Do Luong Huynh¹, Seong Bong Kim², Taeho Kwon¹, and Dong Kee Jeong¹

¹Jeju Nat'l Univ., Korea, ²NFRI, Korea

TP-002

Development of Freshness Preservation Technology for Cultured Yellowtail Using Pulsed Power Technology

Kosuke Kawaoka, Masaaki Yano, Mikiya Matsuda, Douyan Wang, and Takao Namihira

Kumamoto Univ., Japan

TP-003

The Conversion of Ginsenoside in Ginseng Extract by Plasma Treated Water (PTW)

Sunkyoung Jung and Jin-Hwan Kim

NFRI, Korea

TP-004

Study on the Disinfection of Rice Seeds Using Surface DBD Plasma

Min Ho Kang¹, Sangheum Eom², Hyung Won Jeon², Jung Woo Yoon², Seong Bong Kim², Suk Jae Yoo², Eun Ha Choi¹, Seungmin Ryu², and Gyungsoon Park¹

¹Kwangwoon Univ., Korea, ²NFRI, Korea

TP-005

Non-Thermal Dielectric Barrier Discharge Plasma Technology for Agriculture Food

Jiao Jiao Zhang, Hyebin Koh, Nameun Kim, Mrinmoy Ghosh, Meeta Gera, Taeho Kwon, and Dong Kee Jeong

Jeju Nat'l Univ., Korea

TP-006

Fungicidal Effects of Atmospheric Pressure Plasma on Plant Pathogens in Panax Ginseng

Jong-Seok Song, Sang Hye Ji, Sangheum Eom, Jin-Hwan Kim, Sunkyoung Jung, Jaesung Oh, Seungmin Ryu, Yong-Seong Byeon, Min-Ho Kang, and Seong Bong Kim

NFRI, Korea



TP-007

Development of Customized Power Supply Device for the Array Typed DBD Plasma Generating at Atmospheric Pressure

Sangheum Eom, Changho Yi, Sang Hye Ji, Seong Bong Kim, and Seungmin Ryu
NFRI, Korea

TP-008

The Study of Micro DBD Plasma with the Seedling Growth and Antioxidant Activity in Panax Ginseng C. A.Meyer

Sang Hye Ji, Seungryul Yoo, Seong Bong Kim, Suk Jae Yoo, and Jaesung Oh
NFRI, Korea

TP-009

Removal of Stench in Livestock Production Facility Using a Pulsed Corona Discharge Plasma

InSun Park¹, DongChan Seok², InJe Kang¹, Min-Keun Bae¹, Yong-Sup Choi², Taihyeop Lho², Sang-Eun Oh³, JaeE Yang³, and Kyu-Sun Chung¹
¹*Hanyang Univ., Korea*, ²*NFRI, Korea*, ³*Kangwon Nat'l Univ., Korea*

TP-010

Control of Nitric Oxide Production in a Surface Dielectric Barrier Discharge Plasma at Atmospheric Pressure

S. Park, C. Yi, J.H. Kim, S.Y. Yoon, S. Ryu, and S.B. Kim
NFRI, Korea

TP-011

The Physical and Chemical Characteristics of Non-Thermal Plasma Treated Solution-Mist Spray: A First Step toward Optimization in Disinfection Process

Yong-Seong Byeon, Eun Jeong Hong, Seong Bong Kim, and Junghyun Lim
NFRI, Korea

TP-012

Proposed a Method of Plasma Treated Water(PTW) Generation; PTW Characteristic with Hybrid of Pin-to-Water and Underwater Capillary Discharge

Yong-Seong Byeon, Eun Jeong Hong, Junghyun Lim, Seong Bong Kim, and Yong-Seong Byeon
NFRI, Korea



TP-013

Effects of Rotational Speed on Inactivation of E.Coli in Red Pepper Powder by DBD Plasma

Eunjeong Hong, Junghyun Lim, Yong-Seong Byeon, Seong Bong Kim, and Seungmin Ryu
NFRI, Korea

TP-014

The Study of Residual Pesticides Removal in Fresh Food Using the Plasma Reactive Species

Hyeongwon Jeon, Sangheum Eom, Junghyun Lim, Jungwoo Yoon, Changho Yi, Jongseok Song,
and Seungmin Ryu
NFRI, Korea

TP-015

Chemical Probe Calibration for Reactive Oxygen Radicals with Hydrogen Peroxide and Low Energy X-Ray

Hiroto Matsuura, Yoshiki Matsui, Jin Sakamoto, Tran Trung Nguyen, Kheim Do Duy, and Masafumi Akiyoshi
Osaka Prefecture Univ., Japan

TP-016

Plasma Assisted Preparation of ZnS and ZnO Nanomaterials and Plasma-Nano Treatment of Pollutant Dyes

Ananth Antony, Won Chang Lee, Hyeon Jin Seo, Jin-Hyo Boo, and Byung You Hong
Sungkyunkwan Univ., Korea

TP-017

Chemical Agent Destruction Using Flexible Surface DBD Plasma with Metaloxide Nanoparticles

Heesoo Jung
Agency for Defense Development, Korea

TP-018

Effects of Argon Micro-Bubble Assistance on the Performance of 3D Integrated Micro Solution Plasma

Reiya Nakagawa, Hiroto Masunaga, Jun-Seok Oh, and Tatsuru Shirafuji
Osaka City Univ., Japan

TP-019

Effects of Pulse Voltage Polarity on GNP-Embedded Polymer Formation on Aqueous Solution Irradiated with Ar DBD Plasma

Shunta Hirano¹, Shiori Azuma¹, Yusuke Nakamura¹, Jun-Seok Oh¹, Toshiyuki Isshiki², and Tatsuru Shirafuji¹
¹Osaka City Univ., Japan, ²Kyoto Inst. Tech., Japan



TP-020

Synthesis of Carbon Coated TiO₂ by Underwater Discharge with Capillary Carbon Electrode

HyunJae Park, Seungryul Yoo, and Kangil Kim

NFRI, Korea

TP-021

Effect of Pulse Current on Formation Behavior of Plasma Electrolytic Oxidation Films on Al Alloy

Juseok Kim¹, Sungmo Moon¹, and Heon-Cheol Shin²

¹KIMS, Korea, ²Pusan Nat'l Univ., Korea

TP-022

Solution Plasma Synthesis of Nitrogen and Cobalt-Containing Carbon Materials

Shuhei Kato, Amane Kaneko, Camelia Miron, and Takahiro Ishizaki

Shibaura Inst. of Tech., Japan

TP-023

Synthesis of SiC Nanoparticles by Solution Plasma

Ryo Iwano, Camelia Miron, and Takahiro Ishizaki

Shibaura Inst. of Tech., Japan

TP-024

Anodic Oxidation Behavior of AZ31 Mg Alloy in Na₂SnO₃ Solutions Containing Various Anions

Yeajin Kim and Sungmo Moon

KIMS, Korea

TP-025

Characteristic Comparison between Positive and Negative Nanosecond Pulsed Discharges

Hitoshi Yamaguchi, Terumasa Ryu, Takao Namihira, and Douyan Wang

Kumamoto Univ., Japan

TP-026

Two-Bit-Per-Cell Resistive Switching Memory Device with ITO/Zn₂TiO₄/Pt Structure

Shi-Xiang Chen, Shouu-Jinn Chang, Sheng-Po Chang, Cheng-Han Lin, and Kuan-Jen Chen

Nat'l Cheng Kung Univ., Taiwan



TP-027

Ion Energy Distribution in High Power Impulse Magnetron Sputtering Discharge Using Carbon Target

Kazunori Iga¹, Akinori Oda², Hiroyuki Kousaka³, and Takayuki Ohta¹

¹Meijo Univ., Japan, ²Chiba Inst. of Tech., Japan, ³Gifu Univ., Japan

TP-028

Co Liner for Enhancement of Cu Damascene Interconnections

Byeonghwa Jeong¹, Yongseok Jang¹, Eungjoon Lee¹, Masamichi Harada², Yutaka Kokaze²,
and Geunyoung Yeom³

¹ULVAC KOREA, Ltd, Korea, ²ULVAC, Inc., Japan, ³Sungkyunkwan Univ., Korea

TP-029

Properties of Very Thin Tungsten Film Deposited Using Inductively Coupled Plasma Assisted Sputtering

Soo Jung Lee, Tae Hyung Kim, Byeong Hwa Jeong, Chang Hoon Song, Won Oh Lee, You Jin Ji,
and Geun Young Yeom

Sungkyunkwan Univ., Korea

TP-030

Growth of Titanium Suboxide Thin Films by Reactive DC Magnetron Sputtering

Jin-Soo Kim, Hyeok Jee, and Hye-Won Seo

Jeju Nat'l Univ., Korea

TP-031

Substrate Temperature and Sputtering Power Effect on the Growth of MgO Thin Films

Jitendra Pal Singh and Keun Hwa Chae

KIST, Korea

TP-032

Characteristics of Films Prepared by Various Inner Magnet Arrangements in Facing Targets Sputtering

Sang Min Lee¹, Yu Jin Kim¹, Dae San Lee¹, Sangmo Kim¹, Min Jong Keum², and Kyung Hwan Kim¹

¹Gachon Univ., Korea, ²Junsung Engineering, Korea

TP-033

TiO₂ Thin Film by Reactive Sputtering

Pyeong Seob Song, Sang Ho Hwang, Yeong Jo Baek, In Hye Kang, Min Su Kang, Seok Jun Kang, Ye Lin Han,
and Byung Seong Bae

Hoseo Univ., Korea



TP-034

Effects of High-Intensity Pulsed Ion Beam Irradiation on the Structural Thermal Stability of Fe-Based and Ni-Based Metallic Glasses

Xianxiu Mei¹, Qi Zhang¹, Xiaonan Zhang¹, Younian Wang¹, Gennady E. Remnev², and Sergey K. Pavlov²

¹Dalian Univ. of Tech., China, ²Nat'l Research Tomsk Polytechnic Univ., Russia

TP-035

Preparation and Characterization of the Sputtered TiAlN Coatings Using a Ti-Al Alloy Metal Target

Jiseon Kwon¹, Hwa-Min Kim¹, Chang-Hyun Lee¹, Changhwan Park¹, Jaewoong Choi¹, Taewoo Kim¹, Sunyoung Sohn², and Seongcheol Choi¹

¹Daegu Catholic Univ., Korea, ²POSTECH, Korea

TP-036

Characteristics of TiC/a-C Nanocomposite Films Prepared by Closed-Field Unbalanced Magnetron Sputtering for Bio-Medical Application

Yong Seob Park¹ and Jaehyeong Lee²

¹Chosun College of Science and Tech., Korea, ²Sungkyunkwan Univ., Korea

TP-037

Roll-to-Roll Sputtered ZnSnO/AgPdCu/ZnSnO Multilayer Electrodes for Flexible Thin-Film Heaters and Heat-Shielding Films

Haejun Seok¹, Hyeonwoo Jang², Dongyeop Lee², Beomgwon Son², And Hanki Kim¹

¹Sungkyunkwan Univ., Korea, ²LG Chem Co., Ltd., Korea

TP-038

Spectroscopic Ellipsometry Study of Transition Metal Chalcogenide Thin Films Grown by RF Magnetron Sputtering

Younghun Hwang¹, Manil Kang², and Hyoyeol Park¹

¹Ulsan College, Korea, ²Univ. of Ulsan, Korea

TP-039

Electrical, Optical, and Magnetic Properties of Magnetron-Sputtered and RTAed NiO:Nd Thin Films

Seongha Oh¹, Yong Seob Park², and Nam-Hoon Kim¹

¹Chosun Univ., Korea, ²Chosun College of Science and Tech., Korea



TP-040

Dependence of the Characteristics of Aluminum-Doped Zinc Oxide Films on the Reversed Pulse Times and Oxygen Gas Ratio in the Pulsed-DC Sputtering

Hyungseok Ryu, Zhenqian Zhao, Sang Jik Kwon, and Eou-Sik Cho
Gachon Univ., Korea

TP-041

Optical Properties of Reversible Phase-Change Silver Selenide Thin Films by Co-Sputtering for Smart Window Applications

Sakal Pech, Myoung Han Yoo, Pil Ju Ko, and Nam-Hoon Kim
Chosun Univ., Korea

TP-042

Effect of Silicon Content in Diamond-Like Carbon Film Deposited by Magnetron Sputtering

Yuki Miwa¹, Akinori Oda², Hiroyuki Kousaka³, and Takayuki Ohta¹
¹*Meijo Univ., Japan*, ²*Chiba Inst. of Tech., Japan*, ³*Gifu Univ., Japan*

TP-043

Effect of Annealing on Surface Morphology and Wettability of NC-FeSi₂ Films Produced via Facing-Target Direct-Current Sputtering

Peerasil Charoenyuenyao¹, Nathaporn Promros¹, Rawiwan Chaleawpong¹, Bunpot Saekow²,
Supanit Porntheeraphat², and Tsuyoshi Yoshitake³
¹*King Mongkut's Inst. of Tech. Ladkrabang, Thailand*, ²*Nat'l Electronics and Computer Tech. Center, Thailand*,
³*Kyushu Univ., Japan*

TP-044

Physical Properties of Diamond-Like Carbon Films Fabricated by Utilization of Magnetron Sputtering Source with Changing Outer Permanent Magnets

Peerasil Charoenyuenyao¹, Rawiwan Chaleawpong¹, Sakmongkon Teekchaicum¹, Nathaporn Promros¹,
Phongsaphak Sittimart¹, and Boonchoat Paosawatyanong²
¹*King Mongkut's Inst. of Tech. Ladkrabang, Thailand*, ²*Chulalongkorn Univ., Thailand*

TP-045

A Parametric Model for Temperature Dependence of Dielectric Function of AlSb Film

Van Long Le, Tae Jung Kim, Han Gyeol Park, Hoang Tung Nguyen, Jeoung Min Ji, Xuan Au Nguyen,
and Young Dong Kim
Kyung Hee Univ., Korea



TP-046

Study on the Surface Contact Angle of YBCO Thin Film Superconducting Wire by Sputter Surface Treatment

Hyeon-Gi Jeong, Ho-Ik Du, and Sung-Chae Yang

Chonbuk Nat'l Univ., Korea

TP-047

Local Electronic Structure of Radio Frequency Sputtered MgO Thin Film under Swift Heavy Ion Irradiation

Jitendra Pal Singh¹, Weon Cheol Lim¹, Manish Kumar², Richa Bhardwaj³, Sanjeev Gautam³, H. H. Lee²,
K. Asokan⁴, Navdeep Goyal³, and Keun Hwa Chae¹

¹KIST, Korea, ²PAL, Korea, ³Panjab Univ., India, ⁴IUAC, India

TP-048

Investigation of Deuterium and Helium Plasma Irradiation Effect on Tungsten Erosion

Myeong-Geon Lee¹, Jaemin Song², Ki-Baek Roh¹, Nam-Kyun Kim¹, and Gon-Ho Kim¹

¹Seoul Nat'l Univ., Korea, ²NFRI, Korea

TP-049

Enhancement of Crack through the Depth of Grain Growth on Tungsten under Transient High Heat Flux

Ki-Baek Roh¹, Nam-Kyun Kim¹, Jaemin Song¹, Kyungmin Kim², Myung-gun Lee¹, and Gon-Ho Kim¹

¹Seoul Nat'l Univ., Korea, ²NFRI, Korea

TP-050

Experimental Study on Preparation of Spherical Alumina Powder by Laminar Plasma Jet

Hui Jiang, Deping Yu, and Jin Yao

Sichuan Univ., China

TP-051

Low Temperature Growth of Single-Walled Carbon Nanotubes Using Plasma-Assisted Chemical Vapor Deposition System

Sung-Il Jo and Goo-Hwan Jeong

Kangwon Nat'l Univ., Korea

TP-052

Surface Structuration and Control of the CuS Particle Size by the Discharge Mode of Inductively Coupled Plasma and Vapor-Phase Sulfurization

Daehan Choi¹, Tae-Wan Kim¹, Rauf Shahzad¹, Hyeji Park¹, H.J. Yeom¹, J.H. Kim¹, D.J. Seong¹, Sang-Woo Kang¹,
Euijoon Yoon², and Hyo-Chang Lee¹

¹KRISS, Korea, ²Seoul Nat'l Univ., Korea



TP-053

C-V-f, G-V-f and Z"-Z' Characteristics of n-Type Si/B-doped p-Type Ultrananocrystalline Diamond Heterojunctions Formed via Pulsed Laser Deposition

Rawiwan Chaleawpong¹, Nathaporn Promros¹, Peerasil Charoenyuenyao¹, Weerasaruth Kaenrai¹,
Adison Nopparuchikun¹, Takanori Hanada², Shinya Ohmagari³, and Tsuyoshi Yoshitake²

¹King Mongkut's Inst. of Tech. Ladkrabang, Thailand, ²Kyushu Univ., Japan, ³AIST, Japan

TP-054

Surface Morphology and Wettability of Ultrananocrystalline Diamond Films

Rawiwan Chaleawpong¹, Nathaporn Promros¹, Peerasil Charoenyuenyao¹, Eslam Abubakr², Satoshi Takeichi²,
Abdelrahman Zkria², Kenji Hanada², and Tsuyoshi Yoshitake²

¹King Mongkut's Inst. of Tech. Ladkrabang, Thailand, ²Kyushu Univ., Japan

TP-055

Grain Boundary Observation of CVD Graphene Based on Oxygen Plasma

Gwan-Hyoung Lee, Jong-Young Lee, and Min Jung Kim

Yonsei Univ., Korea

TP-056

Defect-Free Doping on Graphene Using Horizontal Inductively Coupled Plasma System

Sung-Il Jo¹, Byeong-Joo Lee², and Goo-Hwan Jeong¹

¹Kangwon Nat'l Univ., Korea, ²Nat'l NanoFab Center, Korea

TP-057

The Effect of Fluorine Plasma Treatment on β -Ga₂O₃ Transistors

Janghyuk Kim and Jihyun Kim

Korea Univ., Korea

TP-058

Non-Equilibrium Condensation Process for Synthesis of Cosmic Dust Analogues by Triple Thermal Plasma Jet

Tae-Hee Kim¹, Jeong-Hwan Oh¹, Minseok Kim¹, Yong Hee Lee¹, Akira Tsuchiyama², Junya Matsuno²,
Aki Takigawa², and Sooseok Choi¹

¹Jeju Nat'l Univ., Korea, ²Kyoto Univ., Korea



TP-059

Atmospheric Plasma Deposited Titanium Dioxide Thin Films: Surface and Plasma Chemistry

Rodolphe Mauchauffé, Seongchan Kang, and Se Youn Moon

Chonbuk Nat'l Univ., Korea

TP-060

Synthesis of Tungsten Carbide Nanoparticles in Triple Thermal Plasma Jet System

Jeong-Hwan Oh, Minseok Kim, Young Hee Lee, Seung-Hyun Hong, Tae-Hee Kim, and Sooseok Choi

Jeju Nat'l Univ., Korea

TP-061

Electrical Discharge in Liquid Nitrogen for Particle Preparation

Yoon Sik Park¹, Dong-Wook Kim², Satoshi Kodama¹, and Hidetoshi Sekiguchi¹

¹Tokyo Inst. of Tech., Japan, ²Inha Univ., Korea

TP-062

Withdrawn

TP-063

Purification and Doping of Nano-Thin Exfoliated(NTE) Graphite for EMI Shielding by RF Thermal Plasma System

Kyu-Hang Lee¹, Myung-Sun Shin¹, Byung-Koo Son¹, Soon-Jik Lee², Jeong-Mi Yeon², and Sun-Yong Choi²

¹Kwangwoon Univ., Korea, ²Cheorwon Plasma Research Inst., Korea

TP-064

Molecular Dynamics Simulation of Nanometer-Scale Hole Etching

Charisse Marie Donato Cagomoc, Michiro Isobe, and Satoshi Hamaguchi

Osaka Univ., Japan

TP-065

ALE of SiO₂ by Alternating CF₄ Plasma with Energetic Ar⁺ Plasma Beams

Wan Dong, Zhongling Dai, Yuanhong Song, and Younian Wang

Dalian Univ. of Tech., China



TP-066

Investigation of Plasma-Surface Reactions in a Large Scale Very-High-Frequency(162MHz) CCP for Atomic Layer Processing of SiO₂

Cleo Harvey, Nishant Sirse, Cezar Gaman, and Bert Ellingboe
Dublin City Univ., Ireland

TP-067

Modeling of Dry Cleaning Processes of Semiconductor Surfaces Using Fluorine-Based Etchant Gases

Tanzia Chowdhury, Romel Hidayat, Tirta Rona Mayangsari, Jiyeon Gu, Hye-Lee Kim, Jongwan Jung, and Won-Jun Lee
Sejong Univ., Korea

TP-068

Etch Characteristics of Nanoscale Patterned Magnetic Tunnel Junction Stacks Using Pulse-Modulated RF Source Plasma

Jae Yong Lee, Eun Taek Lim, Jin Su Ryu, Jae Sang Choi, and Chee Won Chung
Inha Univ., Korea

TP-069

Effect of Non-Corrosive Gas Mixture on Etching of Cu Thin Film Using Inductively Coupled Plasma Reactive Ion Etching

Eun Taek Lim, Jin Su Ryu, Jae Sang Choi, and Chee Won Chung
Inha Univ., Korea

TP-070

Dry Etching of Copper Thin Films in High Density Plasma of Organic Acids

Jin Su Ryu, Eun Taek Lim, Jae Sang Choi, and Chee Won Chung
Inha Univ., Korea

TP-071

Plasma Chemistry Study of Hydrogen/Oxygen Mixture (H₂/O₂), Hydrogen Peroxide (H₂O₂), Water Vapor (H₂O), and Isopropyl Alcohol (IPA) in Inductively Coupled Plasma (ICP)

Shuang Meng and Shawming Ma
Mattson Tech., Inc., USA



TP-072

Profile Characteristics of Sintered SiC Line Etching by Atmospheric Pressure Plasma

Yong Ho Jung, Dong Chan Seok, Gangil Lee, and Seungryul Yoo

NFRI, Korea

TP-073

Measurements of Plasma Density and Downstream Etching of Silicon and Silicon Oxide in Ar/NF₃ Mixture Remote Plasma Source

HeeJung Yeom¹, YeongSeok Lee², SiJun Kim², DaeHan Choi¹, DaeJin Seong¹, JungHyung Kim¹, ShinJae You², and Hyo Chang Lee¹

¹KRISS, Korea, ²Chungnam Nat'l Univ., Korea

TP-074

ClF₃/H₂-Plasma Assisted Thermal Etching of Si₃N₄

Won Oh Lee¹, Jin Woo Park¹, Doo San Kim¹, Soo Jung Lee¹, Han Dock Song², and Geun Young Yeom¹

¹SungKyunKwan Univ., Korea, ²Wonik Materials, Korea

TP-075

Improvement of Productivity through Time Reduction by Using Cleaning Process Optimization Using OES Wavelength of Semiconductor Plasma Equipment

In Young Back

Samsung Electronics Co., Ltd., Korea

TP-076

The Enhancement of the Flash Memory Boosting Efficiency by Adding Deep N- Phosphorous Implantation

Youngho Kwon¹, Hyoungsun Park², Ikhyung Joo², Sungjin Jang¹, and Byoungdeog Choi¹

¹Sungkyunkwan Univ., Korea, ²Samsung Electronics Co., Ltd., Korea

TP-077

Electrical Characterization, Heat Flux and the Reactive Oxygen Radical Production of Argon Atmospheric Pressure Plasma Jet with Alcohol

Trung Nguyen Tran¹, Hiroto Matsuura¹, Yoshiki Matsui¹, Jian Chen¹, and Yuichiro Takemura²

¹Osaka Prefecture Univ., Japan, ²Kindai Univ., Japan



TP-078

Observation of the Standing Wave Effect in Large-Area, Very-High-Frequency Capacitively Coupled Plasmas by Using a Fiber Bragg Grating Sensor and Hairpin Resonance Probe

Dao-Man Han, Yong-Xin Liu, Fei Gao, and You-Nian Wang

Dalian Univ. of Tech., China

TP-079

Electron Impact Excitation Diagnostics in Pulse-Modulated Ar/O₂ Inductively Coupled Plasma

Chan Xue, Fei Gao, De-Qi Wen, and You-Nian Wang

Dalian Univ. of Tech., China

TP-080

100 kW Dc Arc Generator with a Divergent Channel of Inter-Electric Inserter and Anode

Wenxia Pan, Xian Meng, and Yong Zhang

Chinese Academy of Sciences, China

TP-081

Dynamics of Energetic Electrons at the Igniting Phase in a Pulsed Capacitively Coupled Plasma

Xiang-Yu Wang and Yong-Xin Liu

Dalian Univ. of Tech., China

TP-082

Numerical Simulation of Electromagnetic Effects in Very High Frequency Capacitively Coupled Plasma

Jian-Kai Liu, De-Qi Wen, Yu-Ru Zhang, and You-Nian Wang

Dalian Univ. of Tech., China

TP-083

Characteristic Study of Radio-Frequency Inductively Coupled Hydrogen and Deuterium Plasma Operated at High Power and Low Pressure

Peng-Cheng Du, Fei Gao, Hong Li, and You-Nian Wang

Dalian Univ. of Tech., China

TP-084

PIC/MC Simulation of Breakdown Dynamic Near High Power Microwave Out-Put Window Inside

Chun-Yan Zuo, Fei Gao, Zhong-Ling Dai, and You-Nian Wang

Dalian Univ. of Tech., China



TP-085

Integrated Initiation Carrier Injection for Low Voltage Plasma Generation

Hyunho Park, Changhun Hong, and Youngmin Kim
Hongik Univ., Korea

TP-086

PIC Simulation on the Effects of Secondary Electron Emission in Capacitive Oxygen Discharges

Li Wang, Yuan-Hong Song, and You-Nian Wang
Dalian Univ. of Tech., China

TP-087

Pressure Effect on Polycrystalline Diamond Film Deposition Using Modulated to Non-Modulated Induction Thermal Plasmas

Takashi Arai, Betsuin Toshiki, Yasunori Tanaka, Yoshihiko Uesugi, and Tatsuo Ishijima
Kanazawa Univ., Japan

TP-088

Characteristics of Inkjet-Printed Dielectric Barrier Discharge Source

Jinwoo Kim, SangHoo Park, JooYoung Park, and Wonho Choe
KAIST, Korea

TP-089

Miniaturization of Nanosecond Pulsed Discharge System for Industrial Application

Takehiro Yamaguchi, Ryuki Matsukawa, Mikiya Matsuda, Douyan Wang, and Takao Namihira
Kumamoto Univ., Japan

TP-090

Investigation of Capacitively Coupled Plasma with Electron Beam by Impedance Analysis

Inshik Bae, Hongyoung Chang, and Hohyun Song
KAIST, Korea

TP-091

Etch Characteristics of Superimposed Multi-Frequency Inductively Coupled Plasma Source

Kyung Chae Yang, Ye Ji Shin, Soo Gang Kim, Jun Ki Jang, Da In Sung, Hyun Woo Tak, and Geun Young Yeom
Sungkyunkwan Univ., Korea



TP-092

Demonstration of an Atmospheric Pressure Capacitively-Coupled-Plasma Driven at VHF(162MHz) for Recycling of CO₂ into Renewable Fuels

Cleo Harvey, Saoirse Vandenberg, and Bert Ellingboe
Dublin City Univ., Ireland

TP-093

Discharge Characteristics of Water Thermal Plasmas

Hiroki Munekata, Manabu Tanaka, and Takayuki Watanabe
Kyushu Univ., Japan

TP-094

Sheath and Bulk Expansion in Atmospheric Pressure Microwave Plasma via RF Field Induction

Jimo Lee, Woo Jin Nam, Seung Taek Lee, Jae Koo Lee, and Gunsu Yun
POSTECH, Korea

TP-095

Experimental Investigation on Control of Plasma Density Distribution in Inductively Coupled Plasma

Juho Kim And Chinwook Chung
Hanyang Univ., Korea

TP-096

Improved Deinking Efficiency Using Atmospheric Helium Plasma: Effect of Inkjet Printed Paper

Seung Jun Lee, Isaac Han, Yong Sung You, and Se Youn Moon
Chonbuk Nat'l Univ., Korea

TP-097

Experimental Investigation of Discharge of Transitoion by RF Bias Power in Inductively Coupled Plasma

Howon Lee and Chin-Wook Chung
Hanyang Univ., Korea

TP-098

Control of Plasma Density Distribution by Adding LC Parallel Circuit to Antenna in an Inductively Coupled Plasma

Tae-Woo Kim and Chin-Wook Chung
Hanyang Univ., Korea



TP-099

An Atmospheric Low-Power Microwave Plasma Using Two-Parallel-Wires Transmission Line Resonator

Ju Young Park¹, Ho Jun Lee¹, and Jun Choi²

¹Pusan Nat'l Univ., Korea, ²KITECH, Korea

TP-100

Development of the Cs-Seeded RF Negative Ion Beam Source

Min Park¹, Tae-Seong Kim¹, Seung Ho Jeong¹, and ByungKeun Na²

¹KAERI, Korea, ²NFRI, Korea

TP-101

High-Speed Visualization Of Electrode Phenomena in Nitrogen DC Arc

Masaki Yoshida¹, Naoki Sakura¹, Manabu Tanaka¹, Takayuki Watanabe¹, Seiichiro Shimizu², and Koji Fujii²

¹Kyushu Univ., Japan, ²Nippon Tungsten Co., Ltd., Japan

TP-102

A Novel Linear Microwave Plasma Source Using Circular TE₁₁ Mode and Continuous Line Slot Antenna

Ju-Hong Cha, Jeehun Jeong, Goonho Kim, and Ho-Jun Lee

Pusan Nat'l Univ., Korea

TP-103

A Study on Optimization in Large Area Inductively and Magnetized Inductively Coupled Plasma

Eui-Jeong Son, Sung Hwan Cho, and Ho-Jun Lee

Pusan Nat'l Univ., Korea

TP-104

Nitridation of SiO₂ Surface by VHF (162 MHz) Multi-Tile Push-Pull Plasma Source

You Jin Ji¹, Ki Seok Kim¹, Ki Hyun Kim¹, Ji Young Byun¹, Soo Jung Lee¹, Albert Rogers Ellingboe², and Geun Young Yeom¹

¹Sungkyunkwan Univ., Korea, ²Dublin City Univ., Ireland

TP-105

Fabrication and Characterization of HfC/TiC Multilayer Coating by Vacuum Plasma Spraying

Ho-Seok Kim, Bo-Ram Kang, Se-Youn Moon, and Seong-Man Choi

Chonbuk Nat'l Univ., Korea



TP-106

Zirconium Carbide Coatings Fabricated by Vacuum Plasma Spraying

Boram Kang¹, Seyoun Moon¹, Hoseok Kim¹, Jongkyoo Park², and Jungmin Lee²

¹Chonbuk Nat'l Univ., Korea, ²Agency for Defense Development, Korea

TP-107

Effective Ammonia Synthesis by Synchronizing of Pressure Swing and Discharge Switching

Yuya Fujimoto and Shinsuke Mori

Tokyo Inst. of Tech., Japan



[FA1] Sputtering / Ion Beam Applications	
Date / Time	July 27 (Fri.), 2018 / 09:00-10:20
Place	Room A (#104~106)
Session Chair(s)	Andreas Pflug (Fraunhofer Inst. for Surface Engineering and Thin Films IST, Germany) Jun Xu (Dalian Univ. of Tech., China)

FA1-1

09:00-09:20

Effect of Deposition Temperature on the Ferroelectric Properties of Y-Doped HfO₂ Thin Film Prepared by Medium-Frequency Reactive Magnetron Co-Sputtering

Yu Zhang¹, Jun Xu¹, Da-Yu Zhou¹, Hang-Hang Wang¹, Wen-Qi Lu¹, Chi-Kyu Choi², Jeong-Yong Lee³, and Sung-Kyu Kim³

¹Dalian Univ. of Tech., China, ²Jeju Nat'l Univ., Korea, ³KAIST, Korea

FA1-2

09:20-09:40

EXAFS Study of Zinc Ferrite Thin Film on Glass Substrate

Jitendra Pal Singh and Keun Hwa Chae

KIST, Korea

FA1-3

09:40-10:00

Magnetron Sputtering System Design for TSV(through silicon via) Applications

Junghoon Joo

Kunsan Nat'l Univ., Korea

FA1-4

10:00-10:20

Damage Control for Transistor Junction Engineering by Using Aromatic Hydrocarbon Ion Implantation

Kyungwon Lee¹, DaeHo Yoon¹, Dwight Roh², Michael Ameen², Ronald Reece², and Rimpyo Hong²

¹Sungkyunkwan Univ., Korea, ²Axcelis Technologies, Inc., USA



[FB1] Plasma Characterization II	
Date / Time	July 27 (Fri.), 2018 / 09:00-10:40
Place	Room B (#113)
Session Chair(s)	Eun Ha Choi (Kwangwoon Univ., Korea) Vittorio Colombo (Univ. of Bologna, Italy)

FB1-1 [Keynote]	09:00-09:40
------------------------	--------------------

From Single Plasma Jets to Large Atmospheric Plasma Sources for Biological Applications

Jean-Michel Pouvesle¹, Xavier Damany¹, Audoin Hamon¹, Azadeh Valinattajomran¹, Giacomo Marcelli^{1,2}, Augusto Stancampiano¹, Thomas Maho¹, Claire Douat¹, Sébastien Dozias¹, and Eric Robert¹

¹GREMI, CNRS, Université d'Orléans, France, ²Università di Bologna, France

FB1-2 [Invited]	09:40-10:10
------------------------	--------------------

Cold Atmospheric Pressure Plasma Treatment to Assist Bacterial Inactivation and Tooth Restoration in Endodontic Procedures

Vittorio Colombo¹, A. Bisag¹, M. Gherardi¹, R. Laurita¹, E. Simoncelli¹, A. Stancampiano², and R. Tonini³

¹Univ. of Bologna, Italy, ²AlmaPlasma srl, Italy, ³Univ. of Brescia, Italy

FB1-3 [Invited]	10:10-10:40
------------------------	--------------------

Current Status and Future Challenges in Modeling and Numerical Simulation for Plasma Medicine

Satoshi Hamaguchi¹, Kazumasa Ikuse¹, Michiro Isobe¹, Anjar Anggraini Harumningtyas¹, Tomoko Ito¹, Satoshi Ikuse¹, and Lenka Zajíčková²

¹Osaka Univ., Japan, ²Masaryk Univ., Czech



[FC1] Plasma & Atomic Layer Etching I	
Date / Time	July 27 (Fri.), 2018 / 09:10-10:40
Place	Room C (#114)
Session Chair(s)	Eric A Joseph (IBM Thomas J. Watson Research Center, USA) Fred Roozeboom (Eindhoven Univ. of Tech., Netherlands)

FC1-1 [Keynote]	09:10-09:50
------------------------	--------------------

Challenges to the Next Generation Semiconductor Equipment by Using Plasma

Kuntack Lee

Samsung Electronics Co., Ltd., Korea

FC1-2	09:50-10:10
--------------	--------------------

Plasma-Assisted Atomic Layer Etching of Si-Based Dielectric Films Studied Using in Situ Surface Diagnostics

Sumit Agarwal¹, Ryan J. Gasvoda¹, Scott Wang², Ranadeep Bhowmick², and Eric A. Hudson²

¹Colorado School of Mines, USA, ²Lam Research Corporation, USA.

FC1-3 [Invited]	10:10-10:40
------------------------	--------------------

Frontiers of Industrial Application of Atomic Layer Etching

Alok Ranjan¹ and Peter Ventzek²

¹TEL Tech. Center, America, LLC, USA, ²Tokyo Electron America, Inc., USA



[FD1] Fundamental Processes in Plasma I	
Date / Time	July 27 (Fri.), 2018 / 09:00-10:40
Place	Room D (#115)
Session Chair(s)	Mi-Young Song (NFRI, Korea)

FD1-1 [Invited]**09:00-09:30****Electron-Molecule Collision Calculations for Plasma Physics Applications**

Jonathan Tennyson

*Univ. College London, UK***FD1-2 [Invited]****09:30-10:00****Electron Collision Cross Sections and Electron Swarm Parameters in Gases**

Yoshiharu Nakamura

*Keio Univ., Japan***FD1-3****10:00-10:20****The Role of Density Functional Theory in Plasma Diagnostics and Simulations**

Heechol Choi, Dhanoj Gupta, and Mi-Young Song

*NFRI, Korea***FD1-4****10:20-10:40****Interaction Mechanism of Low Energy Electron and Biomolecules**

Yeunsoo Park, Dae Chul Kim, Younghyun Kim, Mi-Young Song, Jung-Sik Yoon, and Hyuck Cho

NFRI, Korea



[FE1] Energy and Related Devices	
Date / Time	July 27 (Fri.), 2018 / 09:00-11:00
Place	Room E (#107~108)
Session Chair(s)	Myunghun Shin (Korea Aerospace Univ., Korea) Doo-Hyun Ko (Kyung Hee Univ., Korea)

FE1-1 [Invited]	09:00-09:30
------------------------	--------------------

Self-Aggregated AAO Nanowire Structures for Solar Energy Harvesting

Kyoungsik Kim

Yonsei Univ., Korea

FE1-2 [Invited]	09:30-10:00
------------------------	--------------------

Multinary III-V Materials for High Efficiency Multi-Junction Solar Cells

Taewan Kim

KRISS, Korea

FE1-3	10:00-10:20
--------------	--------------------

Dissociation of Carbon Dioxide Using a Microhollow Cathode Discharge Plasma Reactor at Atmospheric Pressure

Qi Shi, Hai-Xing Wang, and Tao Ma

Beihang Univ., China

FE1-4	10:20-10:40
--------------	--------------------

Ambient Annealing Influences Upon Optical, Structural and Electrical Properties of Thermal Evaporated MoO_x Thin Films for High Efficiency Crystalline Si Solar Cells Applications

Kumar Mallem, Yong Jun Kim, Shahzada Qamar Hussain, Subhajit Dutta, Minkyu Ju, Youngkuk Kim,

Young-Hyun Cho, Eun-Chel Cho, and Junsin Yi

Sungkyunkwan Univ., Korea

FE1-5	10:40-11:00
--------------	--------------------

Fabrication and Characterization of High-Quality Films and Nanopatterns of Upconversion Materials

Heeyeon Park, Gang Yeol Yoo, Min-Seop Kim, Kein Kim, Chiho Lee, Sungham Park, and Woong Kim

Korea Univ., Korea



[FA2] Plasma Farming III	
Date / Time	July 27 (Fri.), 2018 / 13:20-15:00
Place	Room A (#104~106)
Session Chair(s)	Wonho Choe (KAIST, Korea)

FA2-1 [Invited]

13:20-13:50

Innovative Processed Meat Manufacturing Using Cold Plasma Technology

Cheorun Jo

Seoul Nat'l Univ., Korea

FA2-2 [Invited]

13:50-14:20

Biological Applications Using Pulsed Power Technology

Douyan Wang and Takao Namihira

Kumamoto Univ., Japan

FA2-3

14:20-14:40

Elucidation of the Mechanism of Atmospheric Pressure Plasma-Inducted Green Discoloration of Myoglobin

Hae In Yong¹, Sang Hui Lee¹, Ki Ho Baek¹, Wonho Choe², and Cheorun Jo¹

¹*Seoul Nat'l Univ., Korea*, ²*KAIST, Korea*

FA2-4

14:40-15:00

On the Mutual Interactions between the Plasmas and Treatment Targets

Sung-Young Yoon, Changho Yi, Seong Bong Kim, Seungmin Ryu, Sangheum Eom, Hyeongwon Jeon, and Seungil Park

NFRI, Korea



[FB2] Plasma Biomaterial I	
Date / Time	July 27 (Fri.), 2018 / 13:20-15:10
Place	Room B (#113)
Session Chair(s)	XinPei Lu (HuaZhong Univ. of Science and Tech., China) David Graves (Univ. of California, USA)

Introduction for PBRC & APMC

13:20-13:40

Eun Ha Choi (*Kwangwoon Univ., Korea*)

Kai Masur (*INP Greifswald, Germany*)

FB2-1 [Invited]

13:40-14:10

The Effect of Tissue and Medium on the Penetration of RONS Generated by Plasma

XinPei Lu, LanLan Nie, and JiangWei Duan

Huazhong Univ. of Science and Tech., China

FB2-2 [Invited]

14:10-14:40

Plasma and ROS Effects on G-Protein Coupled Receptor Signaling

Ji-Hye Yun¹, Pankaj Attri², Jae-Hyun Park¹, Eun-Ha Choi³, and Weontae Lee¹

¹*Yonsei Univ., Korea*, ²*Univ. of Antwerp, Belgium*, ³*Kwangwoon Univ., Korea*

FB2-3 [Invited]

14:40-15:10

Role of Protein Folding in Plasma Medicine

Pankaj Attri¹, Weontae Lee², Eun Ha Choi³, and Annemie Bogaerts¹

¹*Univ. of Antwerp, Belgium*, ²*Yonsei Univ., Korea*, ³*Kwangwoon Univ., Korea*



[FC2] Plasma & Atomic Layer Etching II	
Date / Time	July 27 (Fri.), 2018 / 13:40-15:00
Place	Room C (#114)
Session Chair(s)	Nam Hun Kim (Adaptive Plasma Tech. Corp., Korea) Thorsten Lill (Lam Research Corp., USA)

FC2-1 [Invited]	13:40-14:10
------------------------	--------------------

Atomic Layer Defect-Free Top-Down Processes for Future Nano-Devices

Seiji Samukawa

Tohoku Univ., Japan

FC2-2	14:10-14:30
--------------	--------------------

Surface Reaction Mechanisms of Hexafluoroacetylacetone (HFAC) on a Nickel or Nickel Oxide Surface for Atomic-Layer Etching (ALE)

Abdulrahman Hikmat Basher¹, Michiro Isobe¹, Tomoko Ito¹, Kazuhiro Karahashi¹, Masato Kiuchi², Takae Takeuchi³, and Satoshi Hamaguchi¹

¹*Osaka Univ., Japan*, ²*AIST, Japan*, ³*Nara Women's Univ., Japan*

FC2-3 [Invited]	14:30-15:00
------------------------	--------------------

Isotropic Atomic Layer Etching of ZnO on 2D and 3D Substrates Using Acetylacetone and O₂ Plasma

Alfredo Mameli¹, Marcel A. Verheijen¹, Adrie J.M. Mackus¹, Erwin (W.M.M.) Kessels¹, and Fred Roozeboom^{1,2}

¹*Eindhoven Univ. of Tech., The Netherlands*, ²*TNO, The Netherlands*



[FD2] Fundamental Processes in Plasma II	
Date / Time	July 27 (Fri.), 2018 / 13:20-14:10
Place	Room D (#115)
Session Chair(s)	Mi-Young Song (NFRI, Korea)

FD2-1 [Invited]

13:20-13:50

Studies on the Separate Control of Plasma Parameters in Atmospheric Pressure Dielectric Barrier Discharge System Based on Dual-Frequency Modulation

Qiu-Yue Nie¹, Zhonglin Zhang¹, Yaoge Liu², Shulei Zheng¹, and Guangye Xu¹

¹Harbin Inst. of Tech., China, ²Dutch Inst. For Fundamental Energy Research, The Netherlands

FD2-2

13:50-14:10

Surface Plasma Wave in Semiconductor Quantum Plasma with Spin-Up and Spin-Down Exchange Interaction

Punit Kumar and Nafees Ahmad

Univ. of Lucknow, India



[FE2] Flexible / Stretchable Display Technology I	
Date / Time	July 27 (Fri.), 2018 / 13:20-15:10
Place	Room E (#107~108)
Session Chair(s)	Chi Hwan Lee (Purdue Univ., USA)

FE2-1 [Invited]

13:20-13:50

Hybrid Polymer as Key Enabling Materials for Flexible and Stretchable Displays

Gerhard Domann, Daniela Collin, Juergen Clade, and Katharina Lang

Fraunhofer Inst. for Silicate Research, Germany

FE2-2 [Invited]

13:50-14:20

Graphene Encapsulation for Stretchable Displays

Byung Hee Hong

Seoul Nat'l Univ., Korea

FE2-3 [Invited]

14:20-14:50

Stretchable, Wearable Display Enabled with Micro-LED and 2D Materials

Jong-Hyun Ahn

Yonsei Univ., Korea

FE2-4

14:50-15:10

Ultra-Stable Graphene Electrodes Doped with Macromolecular Acid

Sung-Joo Kwon¹, Tae-Hee Han², Taeg Yeong Ko¹, Nannan Li³, Youngsoo Kim⁴, Dong Jin Kim⁴, Sang-Hoon Bae², Yang Yang², Byung Hee Hong⁴, Sunmin Ryu¹, Kwang S. Kim³, and Tae-Woo Lee¹

¹POSTECH, Korea, ²Univ. of California, USA, ³UNIST, Korea, ⁴Seoul Nat'l Univ., Korea



[FA3] Plasma Farming IV	
Date / Time	July 27 (Fri.), 2018 / 15:30-17:00
Place	Room A (#104~106)
Session Chair(s)	Jaesung Oh (NFRI, Korea)

FA3-1 [Invited]	15:30-16:00
------------------------	--------------------

MicroRNA-7450 and MicroRNA-100 Regulates Non-Thermal DBD Plasma-Induced Chicken Sertoli Cell Proliferation
Jiao Jiao Zhang and Dong Kee Jeong
Jeju Nat'l Univ., Korea

FA3-2 [Invited]	16:00-16:30
------------------------	--------------------

Effects of Plasma on Cellular Differentiation and Metabolic Activity in Beneficial Fungi
Mayura Veerana, Eun-Ha Choi, and Gyungsoon Park
Kwangwoon Univ., Korea

FA3-3 [Invited]	16:30-17:00
------------------------	--------------------

Agricultural Productivity Enhancement Using Low Temperature Plasmas
Masaharu Shiratani and Kazunori Koga
Kyushu Univ., Japan



[FB3] Plasma Characterization III	
Date / Time	July 27 (Fri.), 2018 / 15:30-17:00
Place	Room B (#113)
Session Chair(s)	Satoshi Hamaguchi (Osaka Univ., Japan) Ihn Han (Kwangwoon Univ., Korea)

FB3-1 [Invited]

15:30-16:00

Influence of Reactive Oxygen and Nitrogen Species on the Plasmid DNA and Transformation of Escherichia Coli with Plasmid

GeonJoon Lee¹, Eun Ha Choi¹, Heesu Kim¹, Jae Ho Shin¹, Jieun Kim², Jun Young Kim², and Seong Hwan Kim²

¹Kwangwoon Univ., Korea, ²Dankook Univ., Korea

FB3-2 [Invited]

16:00-16:30

Novel Surface Assisted Laser Desorption / Ionization Mass Spectrometry Using Carbon Nanowalls for Analyzing Bio Molecule

Takayuki Ohta¹, Kenji Ishikawa², Hiroki Kondo², Mineo Hiramatsu¹, and Masaru Hori²

¹Meijo Univ., Japan, ²Nagoya Univ., Japan

FB3-3 [Invited]

16:30-17:00

The Transdermal and Wound Healing Effect of Plasma Activated Medium

Dawei Liu

Huazhong Univ. of Science and Tech., China



[FC3] Plasma and Liquid V	
Date / Time	July 27 (Fri.), 2018 / 15:30-17:20
Place	Room C (#114)
Session Chair(s)	Li Oi Lun (Pusan Nat'l Univ., Korea)

FC3-1 [Invited]

15:30-16:00

Corrosion Resistance of Oxide Films Formed on Mg Alloy by Plasma Electrolytic Oxidation

Takahiro Ishizaki¹, Youta Shimada¹, Tomohiro Miyashita¹, and Kazuhito Nishinaka²

¹Shibaura Inst. of Tech., Japan, ²ART1, Japan

FC3-2 [Invited]

16:00-16:30

Improvement of Heat Dissipation Characteristics on PEO-Treated Al6061 Alloy with BNNT

Jung Woo Choi, Dong Hyuk Shin, and Bongyoung Yoo

Hanyang Univ., Korea

FC3-3 [Invited]

16:30-17:00

Application of Multiphase Media Plasmas to Nano-Material Treatment

Tatsuru Shirafuji

Osaka City Univ., Japan

FC3-4

17:00-17:20

Arcing Behavior during Plasma Electrolytic Oxidation of Light Metals

Sungmo Moon, Yeajin Kim, and Juseok Kim

KIMS, Korea



[FD3] Plasma Assisted Process Monitoring Technologies

Date / Time	July 27 (Fri.), 2018 / 14:30-17:00
Place	Room D (#115)
Session Chair(s)	Jung-Sik Yoon (NFRI, Korea)

FD3-1 [Invited]

14:30-15:00

Cutoff Probe for Process Monitoring

ShinJae You

Chungnam Nat'l Univ., Korea

FD3-2

15:00-15:20

Study of Plasma Diagnostics and Algorithm for Virtual Metrology in Etch Process Plasma

Jongsik Kim, Dae Chul Kim, Jung Ho Song, Yonghyun Kim, Young-Woo Kim, Duksun Han, Mi-Young Song, and Jung-Sik Yoon

NFRI, Korea

FD3-3

15:20-15:40

Development of Plasma Information Based Virtual Metrology to Trace the Drift of Plasma-Assisted Processes

Hyun-Joon Roh¹, Sangwon Ryu¹, Yunchang Jang¹, Nam-Kyun Kim¹, Younggil Jin², Seolhye Park², and Gon-Ho Kim¹

¹*Seoul Nat'l Univ., Korea*, ²*Samsung Display Co., Ltd., Korea*

FD3-4

15:40-16:00

Measurement of Electron Density of the Cutoff Probe in High Pressure Plasma

SiJun Kim¹, JangJae Lee¹, YoungSeok Lee¹, ChulHee Cho¹, SeungWan Yoo¹, JungHyung Kim², and ShinJae You¹

¹*Chungnam Nat'l Univ., Korea*, ²*KRISS, Korea*

FD3-5

16:00-16:20

Performance Evaluation Method of RF Generators with In-Situ Plasma Process Monitoring Sensors

Kyung Jae Jo, Syed Ashar Ali, and Sang Jeen Hong

Myongji Univ., Korea

FD3-6

16:20-16:40

A Linear Combination Model for Analyzing Long-Time Data Trend in a Plasma Etching Process

Moojin Kim, Gunpil Hwang, Seungjin Kim, and Yongjoon Cheong

Samsung Electronics Co., Ltd., Korea

FD3-7

16:40-17:00

Surrogate Modeling of Plasma System with Bayesian Deep Neural Network

Damdae Park and Jong Min Lee

Seoul Nat'l Univ., Korea



[FE3] Flexible / Stretchable Display Technology II	
Date / Time	July 27 (Fri.), 2018 / 15:30-17:10
Place	Room E (#107~108)
Session Chair(s)	Jong-Hyun Ahn (Yonsei Univ., Korea)

FE3-1 [Invited]	15:30-16:00
------------------------	--------------------

Transfer Printing Processing Technologies for Fabricating Flexible Thin Film Electronics on Arbitrary Substrate

Chi Hwan Lee
Purdue Univ., USA

FE3-2 [Invited]	16:00-16:30
------------------------	--------------------

Direct-Imaging Metal Interconnection and User Targeted Reliability Techniques for Stretchable Displays and FHE(Flexible Hybrid Electronic) Devices

Yongjin Kim, Joon Yub Song, JaeHak Lee, and SeungMan Kim
KIMM, Korea

FE3-3	16:30-16:50
--------------	--------------------

Fabrication of Stretchable Electrodes Using Spray-Coated Silver Nanowire

Jaewook Jeong and JongHyun Jeong
Chungbuk Nat'l Univ., Korea

FE3-4	16:50-17:10
--------------	--------------------

Low Temperature Processed Non-Volatile Memory Oxide TFT with Mobile Proton Generation in SiO₂ Gate Dielectric by Hydrogen Neutral Beam

JangWon Yun¹, Jin Nyoung Jang², and MunPyo Hong¹
¹Korea Univ., Korea, ²Wish Co Ltd., Korea



Poster Session III

Date / Time	July 27 (Fri.), 2018 / 17:30-19:00
Place	Room F (#117~118)

FP-001

$\text{Ti}_x\text{Si}_{1-x}\text{O}_2$ Deposited by Plasma-Enhanced Atomic Layer Deposition for Spacer Application

Sanghun Lee¹, Woo-Jae Lee², Wontae Noh³, Satoko Gatineau³, Se-Hun Kwon², and Hyungjun Kim¹

¹Yonsei Univ., Korea, ²Pusan Nat'l Univ., Korea, ³Air Liquide Lab., Korea

FP-002

Tungsten Thin Films Deposited by Plasma-Enhanced Atomic Layer Deposition with Tungsten Chloride Precursor

Seunggi Seo¹, Yujin Lee¹, Il-Kwon Oh¹, Bonggeun Shong², Kyu-Hyun Yeom³, Jungwun Hwang³, Jang Hyeon Seok³, Jung Woo Park³, and Hyungjun Kim¹

¹Yonsei Univ., Korea, ²Hongik Univ., Korea, ³Hansol Chemical, Korea

FP-003

A Study on the Passivation Characteristics According to the RF-Power Variable of Tunnel Oxide Layer Using N_2O Gas

Sehyeon Kim, Sanguk Han, Sooyoung Park, Geonju Yoon, Youngseok Lee, Sangho Kim, Seongho Jeon, Donggi Shin, and Junsin Yi

Sungkyunkwan Univ., Korea

FP-004

Synthesis of MoS_2 by Plasma Enhanced Atomic Layer Deposition for Gas Sensor

Youngjun Kim, Minjoo Lee, Kyung Yong Ko, Jusang Park, and Hyungjun Kim

Yonsei Univ., Korea

FP-005

The Role of Discharge in Plasma Assisted Atomic Layer Deposition Technique

Zhongwei Liu, Zhengduo Wang, Lijun Sang, and Qiang Chen

Beijing Inst. of Graphic Communication, China



FP-006

High-Quality Cobalt Thin Film Deposited by Using Very High Frequency Plasma-Enhanced Atomic Layer Deposition

Won-Kyun Yeom and Geun-Young Yeom
Sungkyunkwan Univ., Korea

FP-007

On the Carrier Concentration of Nanocrystalline Si:H Films Made by Inductively Coupled Plasma with Low-Inductance Antenna

H.H. Yang and Jyh-Shiarn Cherng
Ming Chi Univ. of Tech., Taiwan

FP-008

Preparation of Diamond-Like Carbon Films Using a Cathode Localized Glow Discharge under Sub-Atmospheric Pressure Excited by a High-Repetition Nanosecond Pulsed Voltage Application

Yusuke Kikuchi¹, Takuya Maegawa¹, Ryo Hirano¹, Akira Otsubo², Yoshimi Nishimura², Masayoshi Nagata¹, and Mitsuyasu Yatsuzuka¹
¹Univ. of Hyogo, Japan, ²Kurita Seisakusyo Co. Ltd., Japan

FP-009

Al₂O₃-CxHy Multilayer Thin Films Manufactured by Plasma-Enhanced Atomic Layer Deposition and Plasma Polymerization for Moisture Barrier Film

Jin Young Lee¹, Woo Seok Kang², Dae Woong Kim², Jae Ok Lee², Min Hur², and Gon Ho Kim¹
¹Seoul Nat'l Univ., Korea, ²KIMM, Korea

FP-010

Low Dielectric Constant Plasma Polymerized SiCOH Film Deposited from Tetrakis(trimethylsilyloxy) Silane as a Flexible Insulator

Hyuna Lim¹, Wonjin Ban¹, Sungyool Kwon¹, Yoonsoo Park¹, Younghyun Kim¹, Seonhee Jang², and Donggeun Jung¹
¹Sungkyunkwan Univ., Korea, ²Univ. of Louisiana at Lafayette, USA

FP-011

Plasma Copolymerization of Ultra-Low Dielectric Constant SiCOH Films Using Octamethylcyclotetrasiloxane and Tetraethyl Orthosilicate Precursors

Yoonsoo Park, Sungyool Kwon, Wonjin Ban, Hyuna Lim, and Donggeun Jung
Sungkyunkwan Univ., Korea



FP-012

Characteristic Analysis of Optimized SiO₂ / SiON_x Stack Passivation Layer and Study on Application of High Efficiency N-Type c-Si Solar Cell

Geonju Yoon, Sanguk Han, Sooyoung Park, Sehyeon Kim, Youngseok Lee, Sangho Kim, Seongho Jeon, Donggi Shin, and Junsin Yi
Sungkyunkwan Univ., Korea

FP-013

Improvement of Memory Characteristics of MIS-NVM Device Using Hydrogenated Gate Oxide

Donggi Shin, Sehyeon Kim, Geonju Yoon, Jungsoo Kim, Sangho Kim, Youngseok Lee, Seongho Jeon, and Junsin Yi
Sungkyunkwan Univ., Korea

FP-014

Development of the Virtual Metrology for the Nitride Thickness in Multi-Layer Plasma-Enhanced Chemical Vapor Deposition Using Plasma-Information Variables

Hyun-Joon Roh¹, Sangwon Ryu¹, Yunchang Jang¹, Nam-Kyun Kim¹, Younggil Jin², Seolhye Park², and Gon-Ho Kim¹
¹Seoul Nat'l Univ., Korea, ²Samsung Display Co., Ltd., Korea

FP-015

Fluid Simulation on Plasma Characteristics of RF Capacitively Coupled Plasma Sustained in SiH₄/N₂/O₂ and Ar/SiH₄/N₂O

Wen-Zhu Jia, Yuan-Hong Song, and You-Nian Wang
Dalian Univ. of Tech., China

FP-016

Residual Gas Composition during Diamond Deposition with a New Developed Microwave Surface Wave Plasma Source

Hyun Jong You, Oleksii Girka, Seung Whan Lee, and Seung Pyo Hong
NFRI, Korea

FP-017

Flexibility, Validity and Susceptibility of Cylindrical Langmuir Probes for CubeSat and Pico-Satellite to Characterize Ionosphere and Thermosphere Plasma

Shankar Bhattarai
Tribhuvan Univ., Nepal



FP-018

CubeSat with Cylindrical Langmuir Probes to Characterize Ionosphere and Thermosphere Plasma

Shankar Bhattarai

Tribhuvan Univ., Nepal

FP-019

Research and Patent Trend Analysis of Plasma Technology for Next-Generation Semiconductor Manufacturing Process and Manufacturing Equipment Development

Ki-Hwan Cho

NFRI, Korea

FP-020

Experimental and Numerical Analysis of Nanoscale Particle Created during PECVD of Amorphous Carbon Layer

Dongbin Kim¹, Seungki Chae¹, Sang-Woo Kang², and Taesung Kim¹

¹*Sungkyunkwan Univ., Korea*, ²*Univ. of Science and Tech., Korea*

FP-021

Introduction of Thickness Monitoring Sensor, SR as Integrated Metrology in PECVD System

Chul Lee, Hyeju Hwang, Sangho Park, Kwangjung Son, Keunhyeok Lee, Hyuncheol Wang, and Nae Il Lee

Wonik IPS, Korea

FP-022

Use of Laser for Characterizing Ion Density and Sheath of N₂ Plasma

Jinsu Jung and Byungwhan Kim

Sejong Univ., Korea

FP-023

The Comparison of End-Point Detection between Optical Spectroscopy and Residual Gas Analysis in Silicon Etching in NF₃/Ar Plasma

Heetae Kwon, Hwanhee Lee, Giwon Shin, Woojae Kim, and Gichung Kwon

Kwangwoon Univ., Korea

FP-024

A Study on the Prediction of Density from OES(Optical Emission Spectroscopy) Data Using Machine Learning Algorithm

Jung Ho Song, Jong Sik Kim, Dae Chul Kim, Yong Hyun Kim, Duk Sun Han, and Young Woo Kim

NFRI, Korea



FP-025

Incoherent Laser Thomson Scattering Diagnostic for Pulsed Streamer Discharge

Ryo Fujita¹, Kyohei Eguchi¹, Douyan Wang¹, Kentaro Tomita², and Takao Namihira¹

¹Kumamoto Univ., Japan, ²Kyushu Univ., Japan

FP-026

Plasma Diagnosis by Electrical Method

Gi-Chung Kwon, Gi Won Shin, Woo Jae Kim, Hee Tae Kwon, and Hwan Hee Lee

Kwangwoon Univ., Korea

FP-027

Experimental Study on Arcing Detection Technology in PECVD Process

Hye-Ju Hwang, Sang-Ho Park, Chul Lee, Kwang-Jung Son, KeunHyeok Lee, HyunCheol Wang, and Nae Il Lee

Wonik IPS, Korea

FP-028

Model Predictive Control of Electron Density for Ar/SF₆ Etching Plasma

Sangwon Ryu, Hyun-Joon Roh, Yunchang Jang, Damdae Park, Junmo Koo, Jongmin Lee, and Gon-Ho Kim

Seoul Nat'l Univ., Korea

FP-029

In-Situ Monitoring Method of Plasma Process Equipment Condition: Deposition and Cleaning

Surin An, Geonji Kang, Kwangpyo Kim, and Sang Jeen Hong

Myongji Univ., Korea

FP-030

Plasma Diagnostic Method by Charging Capacitor in a Floating Langmuir Probe

Moo-Young Lee, Kyung-Hyun Kim, and Chin-Wook Chung

Hanyang Univ., Korea

FP-031

Measurement of Ion Energy Distribution According to Positive Voltage Applied to the Substrate

Dae Chul Kim, Jong-Bae Park, and Young-Woo Kim

NFRI, Korea



FP-032

Optical Emission Spectroscopy at a Foreline for Monitoring Plasma Processes

Dae-Woong Kim, Min Hur, Jin Young Lee, Woo Seok Kang, and Jae-Ok Lee

KIMM, Korea

FP-033

Investigation of Fluorine Actinometric Coefficient in Capacitively Coupled SF₆/Ar Plasma

Ji-Won Kwon, Yunchang Jang, Sangwon Ryu, and Gon-Ho Kim

Seoul Nat'l Univ., Korea

FP-034

Withdrawn

FP-035

Experimental Observation of Charging Potentials in a Deep Trench Structure Using an Anodic Aluminum Oxide Template

Jihwan Park and Chinwook Chung

Hanyang Univ., Korea

FP-036

Microscopic Stress-Induced Retardation between Amorphous SiN_x and IZO

Nakcho Choi¹, Taekyung Yim², Yegeon Yoon², Namsuk Roh², Byoungcho Cheong¹, and MunPyo Hong¹

¹*Korea Univ., Korea*, ²*Samsung Display Co., Ltd., Korea*

FP-037

Development of Plasma Information Based Virtual Metrology (PI-VM) for Predicting Fine Variation of SiO₂ Etching Depth

Yunchang Jang, Hyun-Joon Roh, Sangwon Ryu, Ji-Won Kwon, and Gon-Ho Kim

¹*Seoul Nat'l Univ., Korea*

FP-038

Physicochemical Characteristic Study on the He/H₂O Plasma Jet

Jingjing Liu, Dong Chen, and Guangzhen Du

Guangzhou Univ., China



FP-039

Study of Various Cross Sections of Fluorocarbons for Plasma Modeling Applications

Dhanoj Gupta, Heechol Choi, Deuk-Chul Kwon, Mi-Young Song, and Jung-Sik Yoon

NFRI, Korea

FP-040

Measurement of Electron Scattering Cross Sections of Molecules Using Magnetized Electron Beam

Haeuk Pyun, Dae Chul Kim, Young Rock Choi, Yonghyun Kim, Young-Woo Kim, Yeunsoo Park, Mi-Young Song, Jung-Sik Yoon, and Hyuck Cho

NFRI, Korea

FP-041

Plasma Surface Kinetic Studies of Etch Process in Fluorocarbon Plasmas

Won-Seok Chang¹, Deuk-Chul Kwon¹, Mi-Young Song¹, Dea-Chul Kim¹, Jong-Sik Kim¹, Young-Woo Kim¹, Jung-Sik Yoon¹, Dong-Hun Yu², Yeong-Geun Yook³, and Yeon-Ho Im³

¹NFRI, Korea, ²Kyungwon Tech Inc., Korea, ³Chonbuk Nat'l Univ., Korea

FP-042

The Plasma & Chemical Property Data Management System for Plasma Modeling and Simulation

Jun-Hyoung Park, Heechul Choi, Won-Seok Chang, Deuk-Chul Kwon, and Mi-Young Song

NFRI, Korea

FP-043

Numerical Optimization of Rate Coefficients of Chemical Reactions in C₄F₈ Plasma

Sang-Young Chung, Deuk-Chul Kwon, and Mi-Young Song

NFRI, Korea

FP-044

Study on the Hysteresis during E to H Mode Transition at Low Pressure Inductively Coupled Plasma

Hyun-Ju Kang, Young-Hun Hong, and Chin-Wook Chung

Hanyang Univ., Korea

FP-045

Withdrawn

FP-046

Withdrawn



FP-047

Studies of Interfacial Microstructures and Series Resistance on Electroplated and Hot-Dipped Sn- x Cu Photovoltaic Modules

Kuan-Jen Chen, Fei-Yi Hung, Truan-Sheng Lui, and Hsu Lin
Nat'l Cheng Kung Univ., Taiwan

FP-048

Numerical Simulation and Defect Analysis of CIGS Thin Film Solar Cells Using TCAD

Sangah Lee, Jaesung Lee, Jeonghoo Jo, Ganghoo Lee, Yoojeong Lee, and Myunghun Shin
Korea Aerospace Univ., Korea

FP-049

Withdrawn

FP-050

The Effect of TiCl_4 Treatment on the Interface Roughness to the Electron Transport Layer of Perovskite Solar Cell and Their Performance

Hai Truyen Dang, Thi Nguyen Nguyen, Sang Mo Kim, and Chung Wung Bark
Gachon Univ., Korea

FP-051

Study of Crystalline Silicon Solar Cells Texturing Process with SF_6 Atmospheric Pressure Plasma

Woo Jae Kim¹, Hwan Hee Lee¹, Hee Tae Kwon¹, Gi Won Shin¹, Chang Sil Yang², and Gi-Chung Kwon¹
¹Kwangwoon Univ., Korea, ²Y.I. TECH Co., Ltd., Korea

FP-052

A Study on Crystalline Solar Cell Phosphorous Doping Using Atmospheric Pressure Plasma

Hwan Hee Lee¹, Hee Tae Kwon¹, Gi Won Shin¹, Woo Jae Kim¹, Chang Sil Yang², and Gi Chung Kwon¹
¹Kwangwoon Univ., Korea, ²Y.I. TECH Co., Ltd., Korea

FP-053

Fabrications of Copper Oxide Based Heterojunction Thin Film Solar Cell by Using Sputtering

Dae San Lee¹, Yu Jin Kim¹, Yu Sup Jung², and Kyung Hwan Kim¹
¹Gachon Univ., Korea, ²CNI Tech., Korea



FP-054

Characteristics of Perovskite Solar Cells (PSCs) Prepared with Chemical Mechanical Polished Transparent Electrode

Sangmo Kim, He Rui, Ma Ro Kim, Dang Hai Truyen, Jeongseo Kim, Haram Lee, Seong Gwan Shin, Hyung Wook Choi, and Chung Wung Bark
Gachon Univ., Korea

FP-055

Characteristics of TCO-Less Dye-Sensitized Solar Cells Using ZnO Nanorods Grown by Hydrothermal Method

Nam-Hoon Kim¹, Seok-Jae Kim², and Yong Seob Park³
¹*Chosun Univ., Korea*, ²*Medical Microrobot Center, Korea*, ³*Chosun College of Science and Tech., Korea*

FP-056

Fabrication of Si Thin-Film Tandem Solar Cell on Multi-Surface Textures of Periodic Honeycomb Glass

Hyeongsik Park¹, Myunghun Shin², Anh Huy Tuan Le¹, Jaehyun Cho¹, Junhee Jung¹, Jaesung Lee², Jaehyung Lee¹, and Junsin Yi¹

¹*Sungkyunkwan Univ., Korea*, ²*Korea Aerospace Univ., Korea*

FP-057

Development of Phosphorus Doped Highly Conducting N-Type Nano Crystalline Silicon Film for High Efficiency Thin Film Solar Cells

Chonghoon Shin, S. M. Iftiqar, Jinjoo Park, Sangho Kim, Junhee Jung, Sungjae Bong, and Junsin Yi
Sungkyunkwan Univ., Korea

FP-058

Withdrawn

FP-059

Study on the ITO Work Function and Hole Injection Barrier in Silicon Heterojunction Solar Cells

Seongho Jeon, Woong-Kyo Oh, Youngseok Lee, Donggi Shin, Geonju Yoon, Sehyeon Kim, and Junsin Yi
Sungkyunkwan Univ., Korea

FP-060

IR-Reflective Colored Solar Cells with Transparent $\text{MgF}_2/\text{Al}_2\text{O}_3/\text{SiO}_2/\text{Al}_2\text{O}_3/\text{Ag}/\text{Al}_2\text{O}_3$ Multilayer Thin Films

Jang-Hsing Hsieh and Yi-Jin Wei
¹*Ming Chi Univ. of Tech., Taiwan*



FP-061

Effect of Sb Mole Concentration on the Electrochemical Characteristics of Electrodeposited Cuprous Oxide Thin Film

Young Dae Yun, Young Been Kim, Joo Sung Kim, and Hyung Koun Cho
Sungkyunkwan Univ., Korea

FP-062

Surface Plasma Treatment of PEDOT-TiO₂ Composite Materials and Its Applying to Electrode in Various Devices

Sang-Hun Nam, Dong In Kim, Ji Won Lee, Jung-Honn Yu, Jin-Hyo Boo, and Hyeon Jin Seo
Sungkyunkwan Univ., Korea

FP-063

Synthesis of Nitrogen-Doped Carbon Nanowalls as Direct Methanol Fuel Cell Electrode Using Plasma Enhanced Chemical Vapor Deposition

Radwan Metwaly Elzoheiry^{1,2}, Shinsuke Mori¹, Fatemeh Bohlooli¹, Hiroki Shinkawa¹, Sho Kaneda¹, and Mahmoud Ahmed²
¹Tokyo Inst. of Tech., Japan, ²E-JUST, Egypt

FP-064

Effect of Sb Mole Concentration on the Electrochemical Characteristics of Electrodeposited Cuprous Oxide Thin Film

Young Dae Yun, Sung Hyeon Jung, Young Been Kim, Joo Sung Kim, and Hyoung Koun Cho
Sungkyunkwan Univ., Korea

FP-065

Characterization of Ablation Properties of Carbon Fiber Reinforced Composites with High Enthalpy Plasma Wind Tunnel

Philyong Oh, Jung Chul Choi, Ho Seok Kim, Bo Ram Kang, Seong Man Choi, and Bong Guen Hong
Chungbuk Nat'l Univ., Korea

FP-066

Steam-Methane Reforming in a Steam Plasma Using 2.45 GHz Microwave System

Daehyun Choi, Changhyun Cho, Hyunjae Park, Jihun Kim, and Taehyup Lho
NFRI, Korea



FP-067

Withdrawn

FP-068

Improving the Efficiency of Upconversion Material with Slot Modes in Silicon Nanoblock Arrays

Youngsoo Kim, Kihwan Moon, Young Jin Lee, Seokhyeon Hong, and Soon-Hong Kwon

Chung-Ang Univ., Korea

FP-069

Improvement of Upconversion Process Using Metamaterial Mirror

Young Jin Lee, Kihwan Moon, and Soon-Hong Kwon

Chung-Ang Univ., Korea

FP-070

The Uniformity Optimization of La-Doped BaSnO₃ Film via Multistep Spin Coating

Yi Zhang and Jaehyeong Lee

Sungkyunkwan Univ., Korea

FP-071

Surface Fluorination of MCMB and Conductive Agent by Reactive Gas in Atmospheric Pressure Plasma and Their Applications

Seungryul Yoo, Dong Chan Seok, and Yong Ho Jung

NFRI, Korea

FP-072

A Study on the Carbon Dioxide Dry Reforming with Methane Using Atmospheric 915MHz Microwave Plasma

ChangHyun Cho, DaeHyun Choi, HyunJae Park, and JiHun Kim

NFRI, Korea

FP-073

Intense Red-Emitting Upconversion Nanophosphors with Core/Shell/Shell Structure

A-Ra Hong¹, Kwangyeol Lee², and Ho Seong Jang¹

¹KIST, Korea, ²Korea Univ., Korea



FP-074

Optimization of UV-LED Sintering in Best Conditions of Silver Nanoparticles Ink

WonJe Oh, Donguk Kim, Soohyun Hwang, JiSu Park, Jeongin Park, and Jaehyeong Lee
Sungkyunkwan Univ., Korea

FP-075

Exploring the Correlation between MoS₂ Nanosheets and 3D Graphene-Based Nano Structures for Reversible Lithium Storage

Yoonkook Son and Jae Bok Kwak
Chosun Univ., Korea

FP-076

Withdrawn

FP-077

Numerical Studies on the Performance of the Percolation Network for Flexible Transparent Conducting Electrodes under External Deformation

Jinyoung Hwang¹, HyunA Jung¹, Sang Hyun Lee², and Hiesang Sohn³
¹*Korea Aerospace Univ., Korea*, ²*Korea Univ., Korea*, ³*Kwangwoon Univ., Korea*

FP-078

Withdrawn

FP-079

Mechanical Stretchability of Screen Printed Ag Nanoparticles Electrode on Polyurethane Substrate

Jieun Lim¹, Dockyoung Lee², and Hanki Kim¹
¹*Sungkyunkwan Univ., Korea*, ²*ELK, Korea*

FP-080

Withdrawn

FP-081

DC-Driven Stretchable Light-Emitting Devices Based on Perovskite Nanocomposites

Huanyu Zhou, Yeongjun Lee, Jinwoo Park, Seung Heyon Jo, Young-Hoon Kim, and Tae-Woo Lee
Seoul Nat'l Univ., Korea



FP-082

Heterostructured Semiconductor Single-Walled Carbon Nanotube Films for Solution-Processed High-Performance Thin Film Transistors

Noh-Hwal Park and Yong-Young Noh
Dongguk Univ., Korea

FP-083

Solution-Processed Amorphous Indium-Gallium-Zinc-Oxide Thin-Film Transistors on a Flexible Plastic Substrate

Jaewook Jeong and Ikjun Jang
Chungbuk Nat'l Univ., Korea

FP-084

Low Temperature Fabricated Organic-Inorganic Hybrid Insulator for Thin Film Transistors

JeongOh Kim, JaeSeok Hur, HyeonA Kim, and JaeKyeong Jeong
Hanyang Univ., Korea

FP-085

Applying Mixed Host with Newly Synthesized P-Typehost to Phosphorescent Organic Light-Emitting Diodes for High External Quantum Efficiency and Low Efficiency Roll-Off

Jun Yeob Lee, Ha Lim Lee, and HoJung Lee
Sungkyunkwan Univ., Korea

FP-086

Highly Stretchable and UltrasMOOTH Silver Nanowire Embedded Electrode for Stretchable Organic Light-Emitting Diodes (SOLEDs)

Jeongho Min and Chang Su Kim
KIMS, Korea

FP-087

Reaction between Metal and Oxides

Sang Min Lee, Sang Ho Hwang, Yeong Jo Baek, In Hye Kang, Min Su Kang, Seok Jun Kang, Ye Lin Han, and Byung Seong Bae
Hoseo Univ., Korea



FP-088

A Solution Processed Hybrid Gate Dielectric Prepared with Cross-Linkable Metal Ligand

HyeonA Kim, JeongOh Kim, JaeSeok Hur, and JaeKyeong Jeong

Hanyang Univ., Korea

FP-089

Study on Back Channel Etching of IGZO Transistor with New Titanium Alloy Source/Drain

Jinwon Bae, Jeonghyun Kim, Jaehong Jeon, Heehwan Choe, and Jong Hyun Seo

Korea Aerospace Univ., Korea

FP-090

Solution-Processed Gate Insulator for Complementary Thin Film Transistor Applications on Flexible Substrate

Hyeong Jun Cho¹, Dong-Hoon Lee¹, Eung-Kyu Park¹, Min Su Kim¹, So Young Lee¹, Kee Chan Park², Heehwan Choe³, Jae-Hong Jeon³, and Yong-Sang Kim¹

¹*Sungkyunkwan Univ., Korea*, ²*Konkuk Univ., Korea*, ³*Korea Aerospace Univ., Korea*

FP-091

Improved Contact Property IZO Thin-Film Transistors via Ultrathin Al₂O₃ Layer in Low Temperature Process

Hyung Koun Cho, Sung Hyeon Jung, and Cheol Hyoun Ahn

Sungkyunkwan Univ., Korea

FP-092

Promotion of Adhesion between Metal Electrodes and Stretchable Substrates Using Organic Primer

Yong Hee Kim, Eun Kwang Lee, and Joon Hak Oh

POSTECH, Korea

FP-093

Charge Mobility and Stretchability of Field-Effect Transistors Based on Semiconducting Polymers with Non-Conjugated Backbone Segments

Mingyuan Pei¹, Min Ju Cho², Donghoon Choi², and Hoichang Yang¹

¹*Inha Univ., Korea*, ²*Korea Univ., Korea*

FP-094

Neutral Beam Assisted Sputtering Gas Barrier for Stretchable Display

SeungMin Shin, YunSung Jang, Seungjun Yi, and MunPyo Hong

Korea Univ., Korea



FP-095

Study on Wet Etching Behavior of Amorphous CuZr Thin Film in Hydrogen Peroxide Solution for Stretchable Display

Jinwon Bae, Myeongsik Im, and JongHyun Seo
Korea Aerospace Univ., Korea

FP-096

Self-Alignment of Conductive Micro-Sphere for Stretchable Micro LED

Ho Won Yoon, Jae Byung Park, and MunPyo Hong
Korea Univ., Korea

FP-097

Enhanced Electrical and Physical Properties of Metal Nanowire Networks Using Inductive Coil System

Jisoo Oh and Geunyoung Yeom
Sungkyunkwan Univ., Korea

FP-098

Free-Standing Stretchable Sensor Array Using Stiffness Design of Interconnectors

Jongho Lee and Namyun Kim
GIST, Korea

FP-099

Fabrication of Flexible Ag Circuit at Low Temperature Using Intense Pulsed Light Energy

SangWoo Kim¹, JongWoong Kim², Dong-Gun Kam³, and SeungBoo Jung¹
¹*Sungkyunkwan Univ., Korea*, ²*Chonbuk Nat'l Univ., Korea*, ³*Ajou Univ., Korea*

FP-100

Large-Scale Etching of Silicon Nitride Using a Linear ECR Plasma Source with Reciprocating Substrate Motion

SeongYong Kwon, HoWon Yoon, YunSung Jang, SeungMin Shin, Seungjun Yi, and MunPyo Hong
Korea Univ., Korea



[SB1] Plasma Biomaterial II	
Date / Time	July 28 (Sat.), 2018 / 09:00-10:40
Place	Room B (#113)
Session Chair(s)	Pankaj Attri (Univ. of Antwerp, Belgium) Takayuki Ohta (Meijo Univ., Japan)

SB1-1 [Keynote]

09:00-09:40

Novel Cancer Treatments Based on Synthetic Approaches of Plasma-Activated Liquids

Masaru Hori, Hiromasa Tanaka, Kenji Ishikawa, Fumitaka Kikkawa, and Masaaki Mizuno
Nagoya Univ., Japan

SB1-2 [Invited]

09:40-10:10

Plasma Bioscience in Dentistry

Jae-Sung Kwon
Yonsei Univ., Korea

SB1-3 [Invited]

10:10-10:40

Investigation of Strong Cell Adhesion to Amine-Rich Plasma Polymers

Lenka Zajickova¹, Jirina Medalova¹, Petra Cernochova¹, Miroslav Michlicek¹, Satoshi Hamaguchi²,
and David Necas¹
¹Masaryk Univ., Czech, ²Osaka Univ., Japan



[SC1] Plasma ALD / PECVD I	
Date / Time	July 28 (Sat.), 2018 / 09:00-10:40
Place	Room C (#114)
Session Chair(s)	Han-Bo-Ram Lee (Incheon Nat'l Univ., Korea)

SC1-1 [Invited]

09:00-09:25

Atomic Layer Deposition of Rare Earth Oxides for Surface Energy Control

Han-Bo-Ram Lee

Incheon Nat'l Univ., Korea

SC1-2 [Invited]

09:25-09:50

BN Electron-Enhanced ALD at Room Temperature and Prospects for Area Selective Deposition

Steven George, Jaclyn Sprenger, Andrew Cavanagh, and Huaxing Sun

Univ. of Colorado, USA

SC1-3 [Invited]

09:50-10:15

Ion-Surface Interaction during Plasma-Enhanced ALD and How It Can Be Used to Tailor Film Properties

Erwin Kessels

Eindhoven Univ. of Tech., The Netherlands

SC1-4 [Invited]

10:15-10:40

A Toolbox for an All-ALD Earth-Abundant Resonant Tunneling Junction Solar Cell

Sean T. Barry¹, Goran Bačić¹, David Zanders², Jason P. Masuda³, Anjana Devi², and Steven P. McGarry¹

¹*Carleton Univ., Canada*, ²*Ruhr-Univ. Bochum, Germany*, ³*Saint Mary's Univ., Canada*



[SD1] Plasma Sources and Technologies IV	
Date / Time	July 28 (Sat.), 2018 / 09:00-10:40
Place	Room D (#115)
Session Chair(s)	ShinJae You (Chungnam Univ., Korea)

SD1-1 [Invited]	09:00-09:30
------------------------	--------------------

Investigation of Carbon Dioxide Decomposition in a Micro-Slit Discharge at Low Pressures

Tao Ma¹, Hai-Xing Wang¹, Qi Shi¹, Shi-Ning Li¹, and A. B. Murphy²

¹Beihang Univ., China, ²CSIRO Manufacturing, Australia

SD1-2 [Invited]	09:30-10:00
------------------------	--------------------

Generation of Vibrationally Excited Nitrogen in a DC Discharge Sustained by Repetitive Nanosecond Pulses

Keisuke Takashima, Yuki Kunishima, and Toshiro Kaneko

Tohoku Univ., Japan

SD1-3	10:00-10:20
--------------	--------------------

Modeling on 2D Rapid Surface Oxidation by 1D Scanning Loop-Type of Induction Thermal Plasmas

Yasunori Tanaka¹, Takumi Tsuchiya¹, Atsushi Fujita¹, Tatsuo Ishijima¹, Yoshihiko Uesugi¹, Tetsuya Yukimoto², and Hiroshi Kawaura²

¹Kanazawa Univ., Japan, ²CV Research Inc., Japan

SD1-4	10:20-10:40
--------------	--------------------

An Efficient Spark Gap Switch Design for Low Impedance Nanosecond Pulse Generator

Kazuki Karashima, Ryusei Shimotsu, Douyan Wang, and Takao Namihira

Kumamoto Univ., Japan



[SB2] Plasma Applications	
Date / Time	July 28 (Sat.), 2018 / 10:50-12:30
Place	Room B (#113)
Session Chair(s)	Jae-Sung Kwon (Yonsei Univ., Korea) Lenka Zajickova (Masaryk Univ., Czech)

SB2-1 [Invited]	10:50-11:20
------------------------	--------------------

Properties of Dawoo Korea Plasma Sterilizer Using Nonthermal Atmospheric Pressure Plasma

Jang Sick Park¹, Jun Hyung Bae², and Eun Ha Choi³

¹Korea Industrial Tech. Association, Korea, ²Dawoo Korea, Korea, ³Kwangwoon Univ., Korea

SB2-2 [Invited]	11:20-11:50
------------------------	--------------------

Insight into the Molecular Dynamic Simulation Studies of Reactive Oxygen Species in Native and Oxidized Skin Membrane

Dharmendra Kumar Yadav¹, Surendra Kuamar¹, Mi-Hyun Kim¹, and Eun-Ha Choi²

¹Gachon Univ. of Medicine and Science, Korea, ²Kwangwoon Univ., Korea

SB2-3	11:50-12:10
--------------	--------------------

Quantum Dots: An Effective Nanomedicine and Their Role in Plasma Bioscience

Rizwan Wahab¹, Neha Kaushik², Farheen Khan³, Nagendra Kumar Kaushik⁴, Su-Jae Lee², Eun Ha Choi⁴, and Abdulaziz A. Al-Khedhairi¹

¹King Saud Univ., Saudi Arabia, ²Hanyang Univ., Korea, ³Taibah Univ., Saudi Arabia, ⁴Kwangwoon Univ., Korea

SB2-4	12:10-12:30
--------------	--------------------

Surface Sterilization Using LF-Microwave Hybrid Plasma at Atmospheric Pressure

Norrawit Tonmitr¹, Norihito Abe¹, Akira Yonesu¹, and Nobuya Hayashi²

¹Univ. of the Ryukyus, Japan, ²Kyushu Univ., Japan



[SC2] Plasma ALD / PECVD II	
Date / Time	July 28 (Sat.), 2018 / 10:50-12:30
Place	Room C (#114)
Session Chair(s)	Han-Bo-Ram Lee (Incheon Nat'l Univ., Korea)

SC2-1 [Invited]

10:50-11:15

Research in Thermal Area Selective Atomic Layer Deposition and Atomic Layer Etching for Advanced Device Patterning

Gregory Parsons

North Carolina State Univ., USA

SC2-2 [Invited]

11:15-11:40

ALD-Induced Blending of Polymers with Ceramics for Novel Functional Hybrids

Mato Knez

CIC nanoGUNE, Spain

SC2-3 [Invited]

11:40-12:05

Remote Plasma ALD for Low K Dielectric

Hyeongtag Jeon

Hanyang Univ., Korea

SC2-4 [Invited]

12:05-12:30

Plasma-Assisted Atomic Layer Deposition of SiN_x

Sumit Agarwal

Colorado School of Mines, USA



[SD2] Plasma Sources and Technologies V	
Date / Time	July 28 (Sat.), 2018 / 10:50-12:30
Place	Room D (#115)
Session Chair(s)	Hyo-Chang Lee (KRISS, Korea)

SD2-1	10:50-11:10
--------------	--------------------

The Effects of Asymmetric Secondary Electron Emission Induced by Different Materials Electrodes in Capacitively Coupled Plasmas

Jing-Yu Sun, De-Qi Wen, Yong-Xin Liu, and You-Nian Wang
Dalian Univ. of Tech., China

SD2-2	11:10-11:30
--------------	--------------------

Numerical Study on Tempo-Spatially Varying Thermofluid Field in Tandem Type of Modulated Induction Thermal Plasmas-Effect of Lower Coil Current Modulation

Kazuki Onda¹, Kotaro Shimizu¹, Yasunori Tanaka¹, Yoshihiko Uesugi¹, Tatsuo Ishijima¹, Shiori Sueyasu², Shu Watanabe², and Keitaro Nakamura²
¹*Kanazawa Univ., Japan*, ²*Nisshin Seifun Group Inc., Japan*

SD2-3	11:30-11:50
--------------	--------------------

Investigations of Argon Arc Attachment Modes on the Anode: The Effect of Gas Temperature

Su-Rong Sun and Hai-Xing Wang
Beihang Univ., China

SD2-4	11:50-12:10
--------------	--------------------

Voltage Balancing of External Antenna for Inductively Coupled Plasma for Mixture of Oxygen, Nitrogen, Hydrogen, Ammonia, and Forming Gas

Jong Woo Park, Sang Moon Yoo, Hyo Jeong Seo, Aram Kim, and Sung Jin Yoon
PSK Inc., Korea

SD2-5	12:10-12:30
--------------	--------------------

Withdrawn