IWM-10

The 10th anniversary of International Workshop on Microplasmas

Satellite workshop on plasma metamaterials

Sponsors:
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15th Anniversary Since 2002
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Osamu Sakai, Univ. of Shiga Prefecture, Japan
Kazuo Terashima, Univ. of Tokyo, Japan

Local organization committee

Osamu Sakai (Univ. Shiga Prefecture, chair)
Tsuyohito Ito (Univ. of Tokyo, co-chair)
Kazuo Terashima (Univ. of Tokyo)
Tatsuru Shirafuji (Osaka City Univ.)
Tomoyuki Murakami (Seikei Univ.)

Program of IWM10, 2019

Time	05/20 (Mon)	05/21 (Tue)	05/22 (Wed)	05/23 (Thu)	05/24 (Fri)	Time
9:00		Opening	K. Stapelmann		S-J. Park	9:00
9:30		V. S-v. Gathen	K. Tachibana	9:40~	N. Milaniak	9:30
10:00		S. Remillard	K. Ishikawa	O. Sakai	H. Suzuki	10:00
10:30		S. Dzikowski	Break	R. Michaud	Break	10:30
11:00		Break	N. Takeuchi	S. Wu	W-H. Chiang	11:00
11:30		W. Choe	T. Goto	Break	P.P. Sun	11:30
12:00		Y-K. Pu	V. Kovacevic	D-S. Zhou	Closing	12:00
12:30	Registration desk open	S-R. Sun		J-S. Oh		12:30
13:00		Lunch		Lunch		13:00
13:30	Satellite Workshop					13:30
14:00	Opening (Workshop)	C. Lazzaroni	Excursion	H-X. Wang		14:00
14:30	J. Sokoloff	J. Hopwood		M. Jinno		14:30
15:00	P.P. Sun	Y. Shimizu		T. Kaneko		15:00
15:30	D. Pai	M. Kanno		T. Murakami		15:30
16:00	Break	Y. Xu		Break		16:00
16:30	A. Smolyakov	Break		K. Sasaki		16:30
17:00	A. Semnani	Poster session		Y. Nakagawa		17:00
17:30	T. Naito			Y. Baba		17:30
18:00	Closing (Workshop)			K. Tomita		18:00
18:30	Welcome party	ISC meeting	Banquet	N. Sakakibara		18:30
19:00						19:00
19:30						19:30
20:00	~20:00		~21:00			20:00

International Workshop on Microplasmas 2019

Monday, May 20th, 2019

13:40 – 14:00	O 1	Opening (Workshop): **Brief Review on Plasma Photonics Crystals, Plasma Metamaterials and Plasma Antennas: Opening of Satellite Workshop on Plasma Metamaterials** Osamu Sakai The University of Shiga Prefecture
Chaired by		*Osamu Sakai, Univ. of Shiga Prefecture*
14:00 – 14:30	O 2	Invited: **Plasma-based microwave materials and devices** J. Sokoloff,[1*] T. Callegari,[1] L. Liard,[1] O. Pascal,[1] R. Pascaud,[1] and L. Simonchik[2] 1 Université de Toulouse 2 Institue of Physics of NAS of Belarus
14:30 – 15:00	O 3	Invited: **THREE-DIMENSIONAL PHOTONIC CRYSTALS IN THE mm-WAVE REGION: RESONANCES, TUNABILITY AND SYMMETRIES** P. P. Sun, W. Chen, and J. G. Eden University of Illinois Urbana-Champaign
15:00 – 15:30	O 4	Invited: **Electron number density measurements from the frequency shift of a plasma defect state in a one-dimensional photonic crystal** David Z. Pai,[1] Fabio Righetti,[2] Benjamin C. Wang,[2] David R. Biggs,[2] and Mark A. Cappelli[2] 1 Université de Poitiers 2 Stanford University
15:30 – 16:00		Break
16:00 – 16:30	O 5	Invited: **Plasmon resonances and reflection-less absorption in plasmas** Andrei Smolyakov[1] and Natalia Sternberg[2] 1 University of Saskatchewan 2 Clark University
16:30 – 17:00	O 6	Invited: **Plasma Metamaterial: A Potential Solution for Wideband Electrically-Small Antennas[1]** Abbas Semnani, Sergey O. Macheret, and Dimitrios Peroulis Purdue University,
17:00 – 17:30	O 7	Invited: **Analytical study of plasma and antenna properties of linear plasma antennas** Teruki Naito[1, 2] 1 Mitsubishi Electric Corporation 2 The University of Shiga Prefecture
17:30 –		Closing (Workshop)
18:00 – 20:00		Welcome party (room 2)

Tuesday, May 21st, 2019

Chaired by		*Kazuo Terashima, Univ. of Tokyo*
9:00 – 9:20		Opening: Yi-Kang Pu, chair of international scientific committee
9:20 – 9:50	O 8	Invited: **Micro cavity plasma array devices: From first ignition to continuous operation** V. Schulz-von der Gathen,[1] S. Dzikowski,[1] M. Böke,[1] R. Michaud,[2] S. Iseni,[2] and R. Dussard[2] 1 Ruhr-Universität Bochum 2 Université d'Orléans
9:50 – 10:10	O 9	**High Frequency Breakdown and Plasma Characteristics in a Microgap** S.K. Remillard and W.G. Zywicki Hope College
10:10 – 10:30	O 10	**Initial ignition behavior of a micro cavity plasma array (MCPA)** Sebastian Dzikowski, Marc Böke, and Volker Schulz-von der Gathen Ruhr-University Bochum
10:30 – 10:50		Break
Chaired by		*Remi Dussart, Univ. d'Orleans*
10:50 – 11:20	O 11	Invited: **Electric wind generated by atmospheric pressure jet plasmas** Wonho Choe,[1] Sanghoo Park,[1] Uros Cvelbar,[2] and Se Youn Moon[3] 1 Korea Advanced Institute of Science and Technology 2 Jožef Stefan Institute 3 Chonbuk National University
11:20 – 11:40	O 12	**The evolution of a capacitively coupled argon discharge due to the sputtering of oxide layer on an aluminum electrode** Jie Qiu and Yi-Kang Pu Tsinghua University
11:40 – 12:00	O 13	**Investigation of chemical reaction processes for different arc-anode attachments in a high intensity argon arc** Su-Rong Sun, Hai-Xing Wang, and Tao Zhu Beihang University
12:00 – 13:30		Lunch
Chaired by		*Tatsuru Shirafuji, Osaka City Univ.*
13:30 – 14:00	O 14	Invited: **Synthesis of boron nitride using a micro hollow cathode discharge deposition reactor** C. Lazzaroni, S. Kasri, H. Kabbara, G. Lombardi, V. Mille and A. Tallaire Université Paris 13
14:00 – 14:30	O 15	Invited: **Microplasma Formation in Metamaterials and Photonic Crystals** Jeffrey Hopwood and Hyunjun Kim Tufts University

14:30 – 14:50	O 16	**Decoration of ZnO film with gold nanoparticles in open air by atmospheric-pressure micro-plasma jet and the photocatalytic properties of the decorated film** Yoshiki Shimizu, Yoshie Ishikawa, Kazuto Hatakeyama, and Yukiya Hakuta National Institute of Advanced Industrial Science and Technology (AIST)
14:50 – 15:10	O 17	**Electrophoretic deposition of TiN with field-emitting surface dielectric barrier discharge** Moriyuki Kanno, Tsuyohito Ito, and Kazuo Terashima The University of Tokyo,
15:10 – 15:30	O 18	**Deposition of Porous TiO_2 Films with a Pulsed RF Atmospheric Pressure Glow Discharge** Yu Xu,[1] Cheng-Ran Du,[1] Sergey Kharapak,[2] Ke Ding,[1] Mierk Schwabe,[2] Jian-Jun Shi,[1] and Jing Zhang[1] 1 Donghua University 2 Deutsches Zentrum für Luft- und Raumfahrt (DLR)
15:30 – 16:00		Break
16:00 – 18:00		Poster session (room 2)
18:00 –		ISC meeting (room 1)

Poster session (Tuesday, May 21st, 16:00 – 18:00)

P 1 **The determination of the electron energy distribution function for low pressure argon/krypton discharges**

Jie Qiu and Yi-Kang Pu

Tsinghua University

P 2 **Study of ns-pulsed microplasma sources in N_2/Ar mixture**

S. Kasri,[1] L. William,[1] X. Aubert,[1] G. Lombardi,[1] A. Tallaire,[1] J. Achard,[1] and C. Lazzaroni,[1] G. Bauville,[2] M. Fleury,[2] K. Gazeli,[2] S. Pasquiers,[2] and J. Santos Sousa[2]

1 Université Paris 13

2 Université Paris-Saclay

P 3 **Influence of Applied Voltage on Electrostatic Elimination using Corona Discharge**

Katsuya Kubo,[1] Katsuyuki Takahashi,[1] Koichi Takaki,[1] Nozomi Takeuchi,[2, 3] Shinichi Yamaguchi,[1, 4] and Hidemi Nagata[4]

1 Iwate University

2 National Institute of Advanced Industrial Science and Technology (AIST)

3 Tokyo Institute of Technology

4 Shishido Electrostatic, Ltd.

P 4 **Transient evolution of argon radio frequency atmospheric pressure discharge after the very first breakdown**

Z.F.Ding, M.Q.Du, and S.H.Fu

Dalian University of Technology

P 5 **Atmospheric Radio Frequency Plasma Plume Enhanced by Pulsed discharge jet**

Jianjun Shi, Ying Guo, Qianhan Han, and Jing Zhang

Donghua University

P 6 **Spatial Concentration Uniformity of Reactive Species Provided with a Scalable DBD Device**

Masaharu Shiratani,[1] Toshiyuki Kawasaki,[2] Ryoya Sato,[1] Kunihito Kamataki,[1] Naho Itagaki,[1] and Kazunori Koga[1]

1 Kyushu University

2 Nishinippon Institute of Technology

P 7 **Neutral gas temperature in silicon based DC MHCD operated in various gases near atmospheric pressure**

Sylvain Iseni,[1] Ronan Michaud,[1] Philippe Lefaucheux,[1] Goran Sretenovic,[2] Volker Schulz-von der Gathen,[3] and Remi Dussart[1]

1 UMR7344 CNRS/Univ. Orléans

2 Univ. of Belgrade

3 Ruhr-Univ. Bochum

P 8 **Thermal Damage of a Glass Tube for Dielectric Barrier Plasma Jet Source**

Hiroto Matsuura, Yoshiki Matsui, Bounyang Ouanthavinsak, and Tran Trung Nguyen

Osaka Prefecture University

Wednesday, May 22nd, 2019

Chaired by		*Jeff Hopwood, Tufts Univ.*
9:00 – 9:30	O 19	Invited: **Unraveling plasma chemistry in liquids by using biochemical probes** Katharina Stapelmann,[1] Brayden Myers,[1] Duncan Trosan,[1] Hager Mohamed,[2] Leah Dobbosy,[2] Keely Beyries-Powers,[2] Fred Krebs,[2] Vandana Miller,[2] and Pietro Ranieri[1] 1 North Carolina State University 2 Drexel University
9:30 – 9:50	O 20	**Dependency of Production Yield and Composition of Reactive Oxygen and Nitrogen Species on Discharge Schemes and Micro-structures** Kunihide Tachibana and Toshihiro Nakamura Kyoto University
9:50 – 10:10	O 21	**In-liquid plasma formation at low temperature of in situ binding SnO2/Graphene** Kenji Ishikawa, Rajit R. Borude, Hirotsugu Sugiura, Takayoshi Tsutsumi, Hiroki Kondo, Nobuyuki Ikarashi, and Masaru Hori Nagoya University
10:10 – 10:40		Break
Chaired by		*Achim von Keudell, Ruhr-Univ. Bochum*
10:40 – 11:00	O 22	**Decomposition of Various Organic Compounds by Microplasmas Generated within Oxygen Bubbles in Water** Nozomi Takeuchi,[1, 2] 1 Tokyo Institute of Technology 2 National Institute of Advanced Industrial Science and Technology (AIST)
11:00 – 11:20	O 23	**Plasma-surface-modification of inorganic materials in aqueous solution for high functional, flexible, and tough composite material** Taku Goto,[1, 2] Tsuyohito Ito[1], Koichi Mayumi,[1] Rina Maeda,[1] Yoshiki Shimizu,[2] Kohzo Ito,[1] Yukiya Hakuta,[2] and Kazuo Terashima[1] 1 The University of Tokyo 2 National Institute of Advanced Industrial Science and Technology (AIST)
11:20 – 11:50	O 24	Invited: **Spatio-temporally resolved electric field measurements in plasma jets** Vesna V. Kovačević, Goran B. Sretenović, Ivan B. Krstić, Bratislav M. Obradović, and Milorad M. Kuraica University of Belgrade
11:50 –		Excursion
18:00 – 21:00		Banquet

Thursday, May 23rd, 2019

Chaired by		*Tomoyuki Murakami, Seikei Univ.*
9:40 – 10:00	O 25	**Maze-Solving by Long-Path Microchannel Plasmas** Toshifusa Karasaki and Osamu Sakai The University of Shiga Prefecture
10:00 – 10:20	O 26	**Si-based Micro Hollow Cathode Discharges: from Fabrication to Application** Ronan Michaud, Sylvain Iséni, Arnaud Stolz, Olivier Aubry, Philippe Lefaucheux, and Rémi Dussart UMR7344 CNRS/Univ. Orléans
10:20 – 10:40	O 27	**The effects of the tube diameter on plasma properties of atmospheric-pressure microplasmas confined inside capillaries** Shuqun Wu, Chang Liu, Xueyuan Liu, Lu Yang, and Chaohai Zhang Nanjing University of Aeronautics and Astronautics
10:40 – 11:10		Break
11:10 – 11:30	O 28	**Effect of magnetic field configuration on needle-mesh corona discharge** De-sheng Zhou, Jing-feng Tang, Xi-ming Zhu, and Chao-hai Zhang Harbin Institute of Technology
11:30 – 11:50	O 29	**Microplasma Jet Contributes to Investigation of RONS Chemistry of Plasma-Activated Water** Jun-Seok Oh, and Tatsuru Shirafuji Osaka City University
11:50 – 13:30		Lunch
Chaired by		*Katharina Stapelmann, North Carolina State Univ.*
13:30 – 14:00	O 30	Invited: **Experimental Investigation of CO_2 Decomposition in a DC Micro-slit Sustained Glow Discharge Reactor** Hai-Xing Wang, Tao Ma, Su-Rong Sun, Qi Shi, and Shi-Ning Li Beihang University, Beijing
14:00 – 14:30	O 31	Invited: **Innovative Gene/Molecule Transfection Using Micro-plasma** Masafumi Jinno,[1] Yoshihisa Ikeda,[1] Yugo Kido,[2] and Susumu Satoh[3] 1 Ehime University 2 Pearl kogyo Co. Ltd. 3 Y's corp.
14:30 – 14:50	O 32	**Dominant Factors of In-Liquid Micro Plasma for Drug Introduction into Cells** R. Honda, S. Sasaki, K. Takashima, M. Kanzaki, T. Sato, and T. Kaneko Tohoku University
14:50 – 15:10	O 33	**Modeling the influence of cold atmospheric plasmas on intracellular metabolism** Tomoyuki Murakami Seikei University

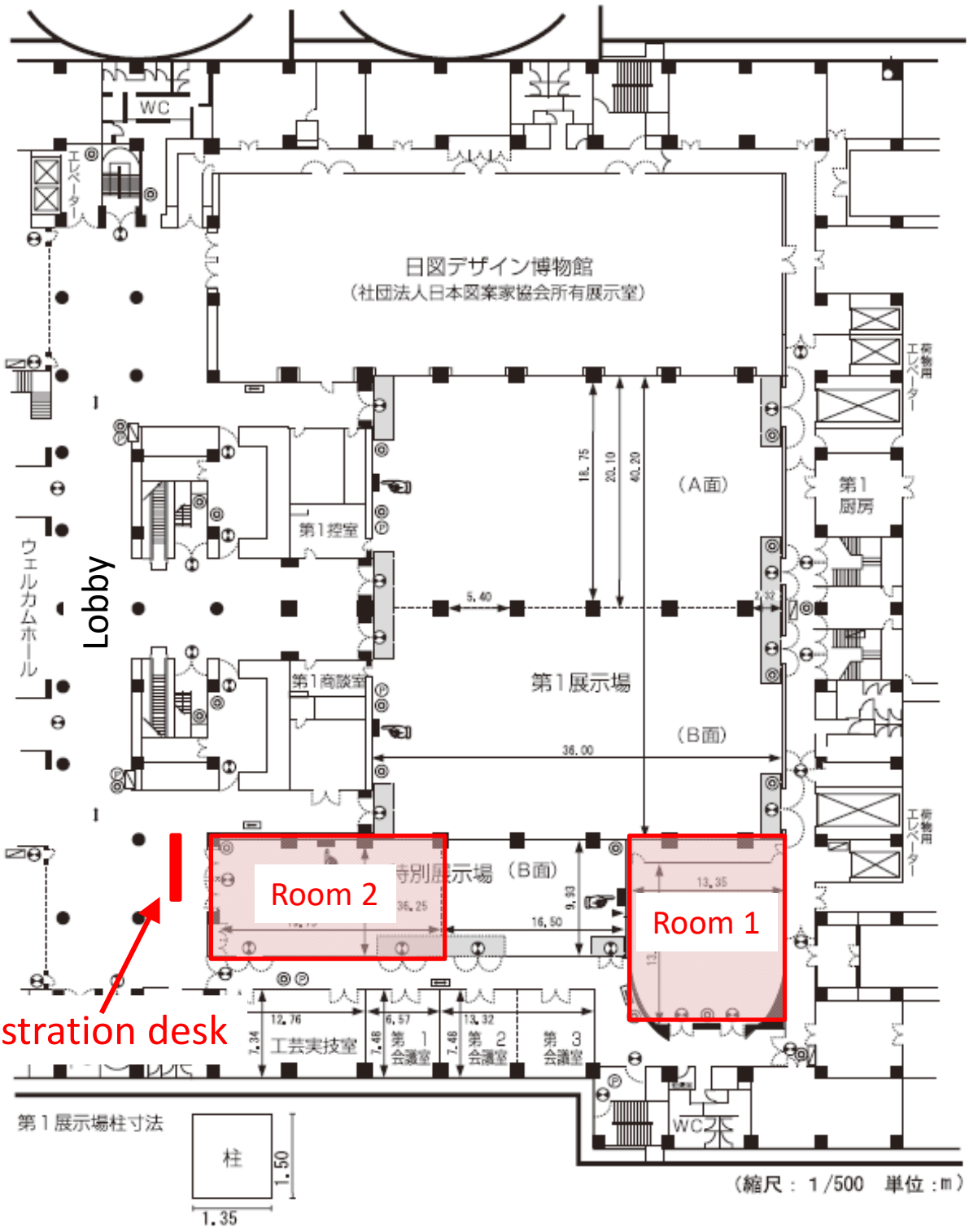
15:10 – 15:40		Break
Chaired by		*Yi-Kang Pu, Tsinghua Univ.*
15:40 – 16:00	O 34	**Signal and noise in detection of OH radicals by evanescent-wave laser-induced fluorescence spectroscopy** Koichi Sasaki and Yuto Hishida Hokkaido University
16:00 – 16:20	O 35	**TALIF Spectroscopy of Atomic Nitrogen in Medium Pressure Pulsed Discharge** Yusuke Nakagawa, Tatsuki Yoshii, Satoshi Uchida, and Fumiyoshi Tochikubo Tokyo Metropolitan University
16:20 – 16:40	O 36	**Time-resolved microscopic measurement of slot excited atmospheric pressure microwave plasma** Yoshiki Baba, Haruka Suzuki, and Hirotaka Toyoda Nagoya University
16:40 – 17:00	O 37	**Measurements of Electron Density and Temperature of Pulsed Micro-Discharges in Atmospheric Pressure Using Laser Scattering and Emission Spectroscopy Methods** Kentaro Tomita and Kiichiro Uchino Kyushu University
17:00 – 17:20	O 38	**Time-resolved observation of femtosecond laser-induced plasmas in water** Noritaka Sakakibara,[1, 2] Masahito Tanaka,[2] Hiroyuki Toyokawa,[2] Kazuo Terashima,[1, 2] Yukiya Hakuta,[2] and Eisuke Miura[2] 1 The University of Tokyo 2 National Institute of Advanced Industrial Science and Technology (AIST)

Friday, May 24th, 2019

Chaired by		*Tsuyohito Ito, Univ. of Tokyo*
9:00 – 9:30	O 39	Invited: **Advancement of Microplasma Science and Technology in Nanoscale Processes and Environmental Science: A New Era of Microplasmas for the Technical and Social Impact** Sung-Jin Park University of Illinois Urbana-Champaign, Eden Park Illumination, Inc., EP Purification, Inc.
9:30 – 9:50	O 40	**Innovative, plasma-based method for depositing multifunctional nanostructured thin films on the interior of a vascular graft** Natalia Milaniak,[1, 2] Gloria Bertrand,[1] Françoise Massines,[2] and Gaétan Laroche[1] 1 Université Laval 2 CNRS PROMES
9:50 – 10:10	O 41	**Large-area surface treatment using microwave plasma excited in meter-length slot with sub-millimeter gap** Haruka Suzuki, Hirotsugu Koma, Manh Hung Chu, Hansin Bae, Yoshiki Baba, and Hirotaka Toyoda Nagoya University
10:10 – 10:40		Break
Chaired by		*Jose L. Lopez, Seton Hall Univ.*
10:40 – 11:10	O 42	Invited: **Nanostructure Engineering using Microplasmas toward Functional Nanomterials Synthesis and Applications** Wei-Hung Chiang National Taiwan University of Science and Technology
11:10 – 11:30	O 43	**3D MICROPLASMA PHOTONIC CRYSTALS IN DIELECTRIC/METAL LATTICES** Peter P. Sun, Wenyuan Chen, Runyu Zhang, Paul V. Braun, and J. Gary Eden University of Illinois Urbana-Champaign
11:30 –		Closing

Underground first floor (B1) of Miyako Messe

Main entrance side



Room 1: Oral presentation

Room 2: Poster presentation, Exhibition, Coffee

Wifi service will be available in both rooms.

Sorry that the map is in Japanese