



8th International Symposium on Advanced Plasma Science  
and its Applications for Nitrides and Nanomaterials /  
9th International Conference on Plasma-Nano Technology & Science

# ISPlasma2016/IC-PLANTS2016

## March 6-10, 2016

### Nagoya University, Nagoya, Japan

#### Organizing Committee

##### Chairperson

Hiroshi Amano, Nagoya University

##### Vice-Chairperson

Masaru Hori, Nagoya University  
Hideto Miyake, Mie University  
Mineo Hiramatsu, Meijo University

Sponsored by : The Japan Society of Applied Physics  
Co-sponsored by : Nagoya University  
Nagoya Institute of Technology  
Meijo University  
Chubu University  
The Japan Society of Plasma Science and Nuclear Fusion Research  
The Japanese Association for Crystal Growth

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<http://www.isplasma.jp/>

※The photograph is an image.



ISPlasma/IC-PLANTS is a specialized international symposium that brings together about 1,000 world-leading scientists and engineers in Nagoya, Japan to discuss latest researches in the fields of advanced plasma science, its applications for processing and manufacturing of nitrides and nanomaterials, as well as new systems for technology transfers. This symposium will address issues such as global warming, resources and energy problems to which advanced plasma science and its application technologies can greatly contribute. In this symposium biosensing technologies will be also highlighted, because of their increasing importance in healthcare, agri-food and environmental areas. We hope that this symposium will provide an ideal venue for the exchange of new ideas and information, and also support the initiation or further development of international collaborations among those who work in these multidisciplinary fields.

#### Related Fields

##### Plasma Science & Technologies

- Plasma Source
- Modeling & Simulation
- Thin Film Deposition Process
- Flexible Electronics
- Plasma Agriculture
- Advanced Plasma Diagnostics
- Plasma in Liquid
- Etching Process
- Plasma Biology & Medicine
- Plasma for Nano & Green Technologies

##### Nitride Semiconductors

- Crystal Growth of GaN & Related Materials
- Characterization
- Optical & Optoelectronic Devices
- MBE Growth & Nitrogen Source
- Device Processing
- Electron & Power Devices

##### Nanomaterials

- Nanodots & Nanoparticles
- 2D Nanomaterials
- Composites & Functionally Grade Materials
- Surface Modification & Functionalization
- Applications for Energy, Environment, Nanomedicine & Sensing
- Nanotubes, Nanowires & Nanorods
- Porous Materials & Membranes

##### Biosensing

- Detection Technologies
- Electrochemical Devices
- Biomarkers & Biosensor Surfaces
- Biomaterials
- Optical Devices, Bioimaging
- Biosensors
- Fabrication Technologies
- Biodevices,  $\mu$ TAS, Lab on a Chip

#### Special Issue

Selected papers will be published in a special issue of a scientific journal.

#### Registration Please register on our website.

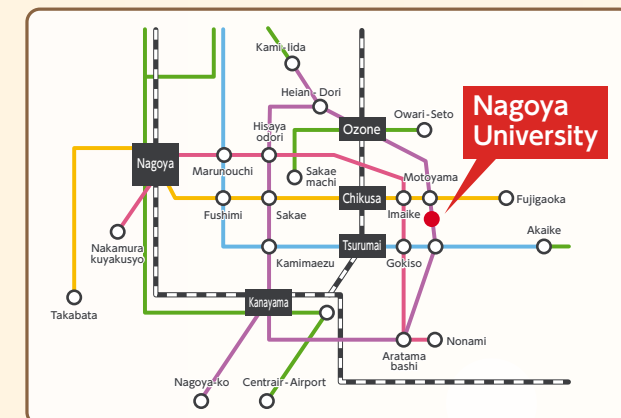
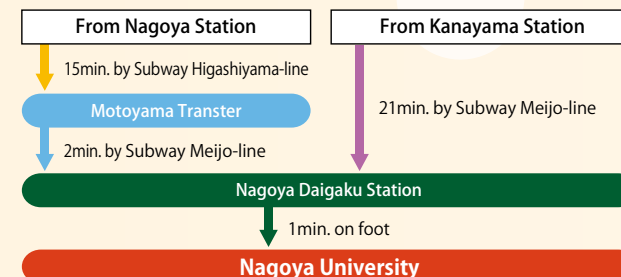
**Advanced Online Registration is required.**

Registration Fee :	General	Student
Early Registration (Until Feb 20, 2016)	JPY 45,000	JPY 15,000
On-site Registration	JPY 50,000	JPY 20,000
<b>Tutorial Fee :</b>		
Participant in Main Symposium	JPY 1,000	JPY 1,000
Tutorial Registration Only	JPY 10,000	JPY 5,000
<b>Banquet Fee (on March 8, 2016)</b>	<b>JPY 6,000</b>	<b>JPY 3,000</b>

\* Refunds cannot be made at any reason.

#### Venue

**Nagoya University** | Furo-cho, Chikusa-ku, Nagoya JAPAN  
Phone : +81-52-581-3241



# Schedule at a glance

Time	3/6 (Sun)	3/7 (Mon)	3/8 (Tue)	3/9 (Wed)	3/10 (Thu)	Time
9:00						9:00
9:10		Registration 9:00-19:00	Registration 09:10-16:40	Registration 9:10-19:00	Registration 9:10-16:30	9:10
9:30			<i>Plasma Science &amp; Technologies 3</i> <Atmospheric Pressure Plasma>	<i>Plasma Science &amp; Technologies 5</i> <Nano and Green Technology>	<i>Plasma Science &amp; Technologies 7</i> <Bio and Medical Application>	9:30
10:00		Opening Address <b>Prof. Hiroshi Amano</b> Nagoya University	<i>Nitride Semiconductors 3</i> <UV-emitters 1> Invited Lecture <b>Dr. Cyril Pemot</b> <sup>Hikiso</sup> <b>Dr. Leo Schowalter</b> CrystalIS <b>Dr. Tim Wernicke</b> Technische Universität Berlin	<i>Nanomaterials 3</i> < Nanocomposite Alloy >	<i>Biosensing 3</i> <Analytical Biosensing>	10:00
10:10		Plenary Lecture <b>Prof. Akira Fujishima</b> Tokyo University of Science	Invited Lecture <b>Dr. Zdenko Machala</b> Comenius University	Invited Lecture <b>Prof. Miran Mozetič</b> Jožef Stefan Institute	<i>Plasma Science &amp; Technologies 5</i> <Carbon / 2D materials > Invited Lecture <b>Dr. Arulkumaran Subramaniam</b> Nanyang Technological University	10:10
10:45					<i>Biosensing 5</i> <Optical and Electrical Biosensing> Invited Lecture <b>Prof. Toshihiko Baba</b> Yokohama National University	10:45
11:00		Break 11:00-11:10	Break 11:00-11:15	Break 11:00-11:15		11:00
11:10		Keynote Lecture <b>Prof. Katsumi Kishino</b> Sophia University	<i>Plasma Science &amp; Technologies 4</i> <Plasma Physics> Invited Lecture <b>Prof. Osamu Sakai</b> The University of Shiga Prefecture	<i>Nitride Semiconductors 4</i> <UV-emitters 2> Invited Lecture <b>Dr. Hideki Hirayama</b> Riken <b>Prof. Dabing Li</b> Changchun Institute of Optics	<i>Nanomaterials 4</i> < Nanowire > Invited Lecture <b>Prof. Shinjiro Hara</b> Hokkaido University <b>Prof. Tsuyoshi Yanagida</b> Kyushu University	11:10
11:15					<i>Biosensing 4</i> <Biosensing for Healthcare> Invited Lecture <b>Prof. Shoji Takeuchi</b> The University of Tokyo	11:15
11:40		Keynote Lecture <b>Dr. Sungwoo Hwang</b> Samsung			<i>Plasma Science &amp; Technologies 6</i> <Etching> Invited Lecture <b>Dr. Susumu Kaminaga</b> SPP Technologies Co., Ltd	11:40
12:00					<i>Nitride Semiconductors 6</i> <Electron Devices 2> Invited Lecture <b>Dr. Marianne Germain</b> ExaGaN	12:00
12:15					<i>Nanomaterials 6</i> < Surface > Invited Lecture <b>Prof. Po-Yu Chen</b> National Tsing Hua University	12:15
12:20					<i>Biosensing 6</i>	12:20
12:30	Registration 12:20-20:00				Poster Session ③ 11:00-12:30	12:30
12:40						12:40
13:00	Tutorial <i>Plasma Science &amp; Technologies</i> <b>Prof. Uwe Czarnecki</b> Ruhr-Universität Bochum, Institut für Experimentalphysik V	Lunch 12:30-14:00	Lunch 12:30-14:00	Lunch 12:30-14:00	Lunch 12:30-14:00	13:00
13:20						13:20
13:40						13:40
14:00	Break 14:00-14:10				<i>Topical Session 2</i> <Widegap Semiconductors with Plasma Processing 1> Invited Lecture <b>Dr. Czesław Skierbiszewski</b> Unipress <b>Prof. Bao-pin Zhan</b> Xiamen University <b>Dr. Yoshio Honda</b> Nagoya University	14:00
14:10	Tutorial <i>Nitride Semiconductors</i> <b>Prof. Christian Wetzel</b> Rensselaer Polytechnic Institute <b>Dr. Koh Matsumoto</b> Taiyo Nippon Sanso	<i>Plasma Science &amp; Technologies 1</i> <Thin Films> Invited Lecture <b>Dr. Michal Bockowski</b> Unipress <b>Dr. Yohei Otaki</b> SCIOCS	<i>Nanomaterials 1</i> Invited Lecture <b>Prof. Franz Faupel</b> Christian-Albrechts-Universität zu Kiel	<i>Biosensing 1</i> <Biosensing for Biology> Invited Lecture <b>Prof. Akira Matsumoto</b> Tokyo Medical and Dental University	<i>Topical Session 1</i> <Biosensing based on Nanotechnology> Keynote Lecture <b>Prof. Tomoji Kawai</b> Osaka University Invited Lecture <b>Prof. Meng Jiy Wang</b> National Taiwan University of Science and Technology	14:10
14:30						14:30
15:00						15:00
15:10	Break 15:10-15:20					15:10
15:15						15:15
15:20						15:20
15:30	Tutorial <i>Nanomaterials</i> <b>Prof. Kenji Shiraishi</b> Nagoya University	Break 15:30-15:45	Break 15:30-15:45	Break 15:30-15:45		15:30
15:40						15:40
15:45					<i>Topical Session 3</i> Special Session Invited Lecture <b>Prof. Pere Roca I. Cabarrocas</b> Ecole Polytechnique <b>Prof. Keiji Ueno</b> Saitama University	15:45
16:00		<i>Plasma Science &amp; Technologies 2</i> <Solution Plasma> Invited Lecture <b>Prof. David Go</b> University of Notre Dame	<i>Nitride Semiconductors 2</i> <Growth and Characterizations> Invited Lecture <b>Prof. Yoichi Kawakami</b> Kyoto University	<i>Nanomaterials 2</i> < Growth and Characterizations>	<i>Biosensing 2</i> <Material Science for Biosensing>	16:00
16:20					<i>Topical Session 1</i> <Biosensing based on Nanotechnology> Invited Lecture <b>Prof. Nae-Eung Lee</b> Sungkyunkwan University <b>Prof. Stella W. Pang</b> City University of Hong Kong <b>Prof. Akira Mizuno</b> Toyohashi University of Technology	16:20
16:30	Break 16:20-17:20					16:30
16:40						16:40
17:00						17:00
17:20	Tutorial <i>Biosensing</i> <b>Prof. Takanori Ichiki</b> The University of Tokyo					17:20
17:30						17:30
17:45						17:45
18:00		Poster Session ① 17:30-19:00				18:00
18:20	Move to Welcome Reception					18:20
18:30						18:30
19:00	Welcome Reception 18:30-20:00					19:00
19:30						19:30
20:00						20:00
20:30						20:30

## PLENARY SPEAKER



**Akira Fujishima**  
(Tokyo University of Science, JAPAN)

Water photolysis and photocatalysis

## KEYNOTE SPEAKERS

### NITRIDE SEMICONDUCTORS

K. Kishino (Sofia University, JAPAN)

Progress of InGaN-based nanocolumns and visible nanoemitters prepared by rf-plasma assisted molecular beam epitaxy



### NANOMATERIALS

S. Hwang (Samsung, KOREA)

Device application of graphene and 2D materials



### BIOSENSING

T. Kawai (Osaka University, JAPAN)

Advanced nanodevices for single biomolecule detection--- Fabrication and Performance---

## TUTORIAL SPEAKERS



### PLASMA SCIENCE

U. Czarnetzki (Ruhr-Universität Bochum, GERMANY)

Charged particle generation, transport, and fluxes in laboratory plasmas



### NITRIDE SEMICONDUCTORS

K. Matsumoto (Taiyo Nippon Sanso, JAPAN)

Opportunities and challenges to GaN MOCVD for electron devices



C. Wetzel (Rensselaer Polytechnic Institute, USA)

The challenge of the green gap – development of direct Emitting LEDs in the green and yellow spectral region



### NANOMATERIALS

K. Shiraishi (Nagoya University, JAPAN)

First Principles Theoretical Investigation of Future Nano-Materials



### BIOSENSING

T. Ichiki (The University of Tokyo, JAPAN)

Biosensing devices : Microfluidic-based platform and beyond

## INVITED SPEAKERS

### PLASMA SCIENCE

G. Fridman (A.J. Drexel Plasma Institute, Drexel University, USA)

Non-equilibrium gliding arc discharge plasma-activated water in plasma agriculture : Pathogen control, plant growth enhancement, and reduction of irrigation water consumption

D. Go (University of Notre Dame, USA)

Plasmas with liquid electrodes : Fundamental processes and applications to chemical processing

S. Kaminaga (SPP Technologies Co., Ltd., JAPAN)

Plasma processing technology for MEMS and trillion sensors

Z. Machala (Comenius University, SLOVAKIA)

Water activated by non-thermal air plasma discharges for bio-decontamination and bio-medical effects

M. Mozetič (Jožef Stefan Institute, SLOVENIA)

Selective functionalization of polymers with amino groups for excellent haemocompatibility of vascular grafts

O. Sakai (The University of Shiga Prefecture, JAPAN)

Plasma media created in abnormal-permeability metamaterial space

### NITRIDE SEMICONDUCTORS

C. Skierbiszewski (Unipress, POLAND)

Nitride based laser diodes grown by high nitrogen flux plasma assisted molecular beam epitaxy

M. Bockowski (Unipress, POLAND)

HVPE-GaN growth-challenges and perspectives

B. Daudin (CEA-Grenoble, FRANCE)

Carrier localization in nitride nanowire heterostructures

M. Germain (ExaGaN, BELGIUM)

T. B. A.

T. Hashizume (Hokkaido University, JAPAN)

Interface control technologies for GaN power transistors

H. Hirayama (RIKEN, JAPAN)

Recent progress and future prospects of AlGaIn deep-UV LEDs

Dr. Yoshio Honda (Nagoya University, JAPAN)

T.B.A.

M. Kasu (Saga University, JAPAN)

Diamond FETs for RF power electronics : Novel hole doping

Y. Kawakami (Kyoto University, JAPAN)

Assessment and control of recombination dynamics in nitride-based semiconductors for tailor-made solid state lighting

D. Li (Changchun Institute of Optics, CHINA)

Growth and Characterization of AlN on sapphire by high-temperature MOCVD

Y. Otoki (SCIOCS, JAPAN)

Improvement of electrical device performances by using epi-wafers grown on VAS-GaN substrate

C. Pernot (Nikkiso, JAPAN)

Recent Progress of Nitrides DUV-LED

S. Rajan (Ohio State University, USA)

Tunnel junctions for high efficiency visible and ultraviolet optoelectronics

L. Schowalter (Crystals, USA)

High performance, pseudomorphic UVC LEDs on AlN substrates

A. Subramaniam (Nanyang Technological University, SINGAPORE)

GaN transistors on silicon using non-gold process technology

T. Wernicke (Technische Universität Berlin, GERMANY)

Deep UV emitters

Bao-ping Zhang (Xiamen University, CHINA)

Loss study and fabrication of low-threshold GaN-based VCSELs

### NANOMATERIALS

P. R. Cabarrocas (Ecole Polytechnique, FRANCE)

Vertical and in-plane silicon nanowires for radial junction solar cells and transistors produced in a PECVD environment

Y. Darma (Institut Teknologi Bandung, INDONESIA)

Plasmon-exciton interaction and screening of exciton in ZnO-based thin film on different electronic environments

F. Faupel (Christian-Albrechts-Universität zu Kiel, GERMANY)

Plasma deposition of functional nanocomposites

S. Hara (Hokkaido University, JAPAN)

Axial heterojunctions in free-standing ferromagnetic MnAs / semiconducting InAs nanowires

A. Koshio (Mie University, JAPAN)

Development of one-step plasma synthesis for metal-free carbon nanotubes and novel nanocarbon materials

A. Mizuno (Toyohashi University of Technology, JAPAN)

Electrostatics and non-thermal plasma for handling and processing of biological cells and molecules

D. Onoshima (Nagoya University, JAPAN)

Bioimaging devices for regenerative medicine

K. Ueno (Saitama University, JAPAN)

Layered chalcogenide materials : Basic properties and application to atomic-layer electronics

J. Xu (Nanjing University, CHINA)

Light emission from un-doped and doped nanocrystalline Si-based multilayers

T. Yanagida (Kyushu University, JAPAN)

Single crystalline metal oxide nanowires and their promises

### BIOSENSING

T. Baba (Yokohama National University)

Nanolaser biosensors

P. Y. Chen (National Tsing Hua University, CHINA)

Synthesis of multi-functional surfaces inspired from carnivorous pitcher plants

N. E. Lee (Sungkyunkwan University, KOREA)

Flexible and stretchable sensors for wearable electronics in personal healthcare

T. Ichiki (The University of Tokyo, JAPAN)

Flexible sheet-type sensor for measuring cellular oxygen metabolism

A. Matusmoto (Tokyo Medical and Dental University, JAPAN)

Borono-lectin based approaches toward bio-sensing and drug delivery systems

S. W. Pang (City University of Hong Kong, HONG KONG)

Plasma modified electrodes on neural probes and quasi 3D plasmonic biosensors

S. Takeuchi (The University of Tokyo, JAPAN)

T. B. A.

M. J. Wang (National Taiwan University of Science and Technology, TAIWAN)

Application of nanoparticles on biosensing