GEC 2022
75th Annual Gaseous Electronics Conference

ICRP-11
11th International Conference on Reactive Plasmas

PROGRAM BOOK

Date: October 3 - 7, 2022
Sendai International Center Conference Building
Joint Conference in Sendai, Japan
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Program

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General Information

The 75th Annual Gaseous Electronics Conference (GEC-2022) will be held as an international joint conference with the 11th International Conference on Reactive Plasmas (ICRP-11).

GEC, a special meeting of the APS Division of Atomic, Molecular, and Optical Physics (DAMOP), promotes ideas on the physical and chemical processes and dynamics taking place in partially ionized, collisional plasma and between the atoms, molecules, charged particles, photons, waves, and fields. The GEC has a long leadership history of presenting fundamental and basic science contributions on plasma sources, diagnostics, simulation, plasma chemistry, basic phenomena, atomic and molecular processes. In recent years, GEC has also been a leading venue for reporting on emergent areas of plasma-biotechnology, plasma medicine, multiphase plasmas, environmental applications and atmospheric-pressure plasma systems.

ICRP has been taking place based on the initiative of the Division of Plasma Electronics, the Japan Society of Applied Physics since 1991. The subjects covered in ICRP are the entire field of reactive plasmas and their applications to material, environment, energy, space, bio and medical fields with emphasis on basic phenomena, technologies, and the underlying basic physics and chemistry.

The GEC-2022/ICRP-11 will continue its tradition of offering a truly outstanding venue for leading research in low temperature plasma science and collision physics.

Themes ranging from fundamental plasma research to advanced topics will be discussed at GEC-2022/ICRP-11.
Committee

GEC Executive Committee

<table>
<thead>
<tr>
<th>Role</th>
<th>Name</th>
<th>Institution</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chair</td>
<td>Julian Schulze</td>
<td>(University of Bochum)</td>
<td>Germany</td>
</tr>
<tr>
<td>Chair elect</td>
<td>Shahid Rauf</td>
<td>(Applied Materials Inc.)</td>
<td>USA</td>
</tr>
<tr>
<td>Past secretary</td>
<td>Gabe Xu</td>
<td>(University of Alabama in Huntsville)</td>
<td>USA</td>
</tr>
<tr>
<td>Secretary</td>
<td>Toshiro Kaneko</td>
<td>(Tohoku University)</td>
<td>Japan</td>
</tr>
<tr>
<td>Secretary elect</td>
<td>Scott Baalrud</td>
<td>(University of Michigan)</td>
<td>USA</td>
</tr>
<tr>
<td>Treasurer</td>
<td>Aranka Derzsi</td>
<td>(Wigner Research Centre for Physics)</td>
<td>Hungary</td>
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<td></td>
<td>Kallool Bera</td>
<td>(Applied Materials Inc.)</td>
<td>USA</td>
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<tr>
<td></td>
<td>Mark Koepke</td>
<td>(West Virginia University)</td>
<td>USA</td>
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<td></td>
<td>Mark Kushner</td>
<td>(University of Michigan)</td>
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<tr>
<td></td>
<td>Sandra Quintanilla</td>
<td>(University of North Texas)</td>
<td>USA</td>
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<tr>
<td></td>
<td>Stephan Reuter</td>
<td>(École Polytechnique de Montreal)</td>
<td>Canada</td>
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<tr>
<td></td>
<td>Tetsuji Shimizu</td>
<td>(National Institute of Advanced Industrial Science and Technology)</td>
<td>Japan</td>
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</table>

ICRP International Organizing Committee

<table>
<thead>
<tr>
<th>Role</th>
<th>Name</th>
<th>Institution</th>
<th>Country</th>
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<tr>
<td>Chair</td>
<td>Fumiyoshi Tochikubo</td>
<td>(Tokyo Metropolitan University)</td>
<td>Japan</td>
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<tr>
<td>Vice-Chair</td>
<td>Wonho Choe</td>
<td>(KAIST)</td>
<td>Korea</td>
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<tr>
<td>Vice-Chair</td>
<td>Eugen Stamate</td>
<td>(Technical University of Denmark)</td>
<td>Denmark</td>
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<td></td>
<td>Natalia Babaeva</td>
<td>(Joint Institute for High Temperatures)</td>
<td>Russia</td>
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<td></td>
<td>Anne Bourdon</td>
<td>(École Polytechnique)</td>
<td>France</td>
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<td></td>
<td>Karol Hensel</td>
<td>(Comenius University)</td>
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<td>Mineo Hiramatsu</td>
<td>(Meijo University)</td>
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<td>Kenji Ishikawa</td>
<td>(Nagoya University)</td>
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<td></td>
<td>Jason Kenney</td>
<td>(Applied Materials)</td>
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<td>Akiko Kumada</td>
<td>(The University of Tokyo)</td>
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<td>Kazuaki Kurihara</td>
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<td>Hae June Lee</td>
<td>(Pusan National University)</td>
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<td></td>
<td>Dingxin Liu</td>
<td>(Xi’an Jiaotong University)</td>
<td>China</td>
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<td></td>
<td>Izumi Murakami</td>
<td>(NIFS)</td>
<td>Japan</td>
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<td>Sander Nijdam</td>
<td>(Eindhoven University of Technology)</td>
<td>The Netherlands</td>
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<td></td>
<td>Deborah O’Connell</td>
<td>(Dublin City University)</td>
<td>Ireland</td>
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<td>Takayuki Ohta</td>
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<td>Osamu Sakai</td>
<td>(The University of Shiga Prefecture)</td>
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<td>Yasuhiko Sentoku</td>
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<td>Yuichi Setsuhara</td>
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<td>Meng-Jiy Wang</td>
<td>(National Taiwan University of Science and Technology)</td>
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<td>Takayuki Watanabe</td>
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<td>Ron White</td>
<td>(James Cook University)</td>
<td>Australia</td>
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<td></td>
<td>Hitoki Yoneda</td>
<td>(The University of Electro-Communications)</td>
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<td>Toshiro Kaneko</td>
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<td>Akira Ando</td>
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<td>Takehiko Sato</td>
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<td>Naofumi Ohnishi</td>
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<td>Masaya Shigeta</td>
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<td>Takeru Okada</td>
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<td>Hidemasa Takana</td>
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<td>Keisuke Takashima</td>
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<td>Shota Sasaki</td>
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<td>Makoto Sugimoto</td>
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<td>Kenji Ishikawa</td>
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<tr>
<td>Hisaya Komen</td>
<td>(Osaka University)</td>
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</table>
Attendee Instructions

• Registration

The registration desk will be located in front of “Tachibana”, 2F, Sendai International Center. The registration desk will be open on Monday, October 3 from 9:00 AM, Tuesday through Friday, the registration will be open from 8:00 AM.

• Registration Fee

<table>
<thead>
<tr>
<th>REGISTRATION TYPE</th>
<th>ON-SITE</th>
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<tbody>
<tr>
<td>Regular Attendee</td>
<td>$ 550</td>
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<tr>
<td>Student</td>
<td>$ 200</td>
</tr>
<tr>
<td>Retired / Unemployed</td>
<td>$ 250</td>
</tr>
<tr>
<td>Monday Workshop Only</td>
<td>$ 100</td>
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</table>

Information: All registrations are nonrefundable regardless of the reason for cancellation. Registration fees for attendees do include welcome reception fee, but do not include a banquet ticket, parking fees, or transportation costs.

• Welcome Reception and Banquet

Welcome Reception will be held from 6:00 PM to 8:00 PM on Monday, October 3, in “Sakura”, Sendai International Center. The cost of Welcome Reception is included in the attendee’s registration fee.

On Thursday evening, October 6, the Banquet will be held from 7:00 PM to 9:00 PM in “Grand Ballroom”, 2F, Westin Hotel Sendai. It will take about 30 min. to the Westin Hotel Sendai from Sendai International Center by subway and on foot. Banquet is only available who had already registered and paid the Banquet fee. The GEC Awards for Best Student Oral and Poster Presentations will be presented during the Banquet.
• Access to the Banquet Venue

• Student Networking

Student Networking will be held from 12:15 PM to 1:15 PM on Thursday, October 6, in “Sakura 1”, Sendai International Center. Those who had applied to the student networking, please come to “Sakura 1” and pick up your lunch box and join the student networking discussion.

• Women in Science

Women in Science will be held from 6:30 PM to 8:00 PM on Tuesday, October 4, in “Tachibana”, Sendai International Center. Lectures by female researchers who are active on the cutting edge of science will be held. The scientists will talk not only about the research they are working on, but also about their own experiences, including their career paths. A free light meal will be served.
• Lunch and Drinks

Please check the lunch map in your congress bag. Coffees and teas will be available in “Sakura” during break time. Drinks and snacks will be also available to purchase at the “Service Counter”, 1F, Sendai International Center. » see Floor Plan

Those who had applied and reserved lunch box from conference web site, please pay 1,000 yen and pick up your lunch box in from of “Hagi” during 11:30 AM to 1:30 PM. Please note you will be able to pay by Japanese YEN cash ONLY. For Wed., Oct. 5, please receive lunch box by 2:30 PM.

• During Your Stay in Japan

- In Japan, wearing masks is required for infection control. Please bring your own mask and wear the mask at all the times inside the venue. If you forget to bring your mask, you will receive one at the registration desk.

- GEC 2022/ICRP-11 requires antigen testing in the morning of a meal event (welcome reception, banquet, student networking) to prevent the spread of Covid-19. Since it is not possible to purchase large quantities of antigen test kits in Japan at this time, we ask that everyone bring their own antigen test kits. If you forget to bring your own antigen test kit, they will be available at the registration desk for a fee (2,000 JPY). However, only a limited number of tests will be available. In the morning of each meal event, you are requested to take the antigen test yourself in your hotel room and take a picture of the result with your phone. The results will be checked at the entrance of each meal event. Please make sure that the date of the photo is available when checking the photo.

- If your Covid-19 test is positive, please adhere to the following procedure:

  a. Stay in your hotel room.
  b. Call or send an e-mail to the GEC/ICRP Local Organizing Committee (LOC)
     phone: +81-50-5534-1778
     email : icrp-11@grp.tohoku.ac.jp
  c. LOC will take care of procedures such as registration of infected persons.
  d. LOC will bring food, etc. to your hotel room
  e. You should extend your hotel stay and reschedule your flight on your own.

GEC/ICRP will not cover the cost of such changes.
• **GEC/ICRP2022 Mobile App**

Lam Research is sponsoring the mobile conference app below

![GEC/ICRP2022 Mobile App Logo]

Download here

- ISO (Apple) Mobile App
- Google Play (Android)

![ISO (Apple) QR Code]

![Google Play (Android) QR Code]

• **Wi-Fi**

Wi-Fi access is available at the venue, Sendai International Center. The ID and PW will be posted on the sign boards near the registration desk.
Sponsors

Student Travel Support
National Science Foundation

Premier Sponsor
Tokyo Electron Limited

Gold Sponsor
Samsung Electronics

Hitachi High-Tech Corporation

Mobile App Sponsor
Lam Research
Presenter Instructions

• Oral Presentations

Duration
Invited talk / 30 min total.
Regular talk / 15 min total.

Note

► Screen ratio is 16 : 9 (Widescreen) in all Session rooms.
► The projector has a VGA (analog RGB or D-sub) and HDMI connectors but not a mini DisplayPort.
► Use of equipped PC (OS: Windows10, Software: Microsoft PowerPoint 2019) is strongly recommended. Please upload your Microsoft PowerPoint file during the break time prior to the session. Note that your presentation time includes the presenter change time.
► If you use your own laptop computer, please check the connection between your PC and the projector during the break time.

• Poster Presentations

The size of the poster panel is 1200 mm (in width) x 1800 mm (in height).
# Program at a Glance

## Day 1  Monday, October 3rd, 2022

<table>
<thead>
<tr>
<th>Room</th>
<th>Tachibana</th>
<th>Hagi</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>10:00 AM - 10:30 AM</strong></td>
<td><strong>DM1</strong> Opening Ceremony</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Toshiro Kaneko</td>
<td></td>
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<td></td>
<td>• Julian Schulze</td>
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<td></td>
<td>• Fumiyoshi Tochikubo</td>
<td></td>
</tr>
<tr>
<td><strong>10:30 AM - 12:00 PM</strong></td>
<td><strong>DM2</strong> Workshop I Industrial Plasma Technologies [Jason Kenney / Hiroto Ohtake]</td>
<td><strong>EM2</strong> Workshop II Plasma Physics for Space Propulsion Technologies [Rei Kawashima / Amnon Fruchtman]</td>
</tr>
<tr>
<td><strong>12:00 PM - 1:30 PM</strong></td>
<td>--- Lunch ---</td>
<td></td>
</tr>
<tr>
<td><strong>1:30 PM - 3:00 PM</strong></td>
<td><strong>DM2</strong> Workshop I Industrial Plasma Technologies [Tsuyoshi Moriya / Jaeho Kim]</td>
<td><strong>EM2</strong> Workshop II Plasma Physics for Space Propulsion Technologies [Shinatora Cho / Justin Little]</td>
</tr>
<tr>
<td><strong>3:00 PM - 3:30 PM</strong></td>
<td>--- Coffee Break ---</td>
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<tr>
<td><strong>6:00 PM - 8:00 PM</strong></td>
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</tr>
<tr>
<td>Time</td>
<td>Workshop I</td>
<td>Workshop II</td>
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<tr>
<td>10:00 AM</td>
<td>Opening Ceremony</td>
<td>Workshop I</td>
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<tr>
<td>10:30 AM</td>
<td>Workshop II</td>
<td>Workshop II</td>
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<td>12:00 PM</td>
<td>Lunch</td>
<td>Workshop II</td>
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<td>1:30 PM</td>
<td>Workshop II</td>
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<tr>
<td>6:00 PM</td>
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<td>8:00 PM</td>
<td>Welcome Reception</td>
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## Day 2  
**Tuesday, October 4th, 2022**

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<tr>
<td><strong>8:00 AM - 9:30 AM</strong></td>
<td><strong>DT1</strong></td>
<td>Plasma Surface Interaction I</td>
<td><strong>ET1</strong> Thermal and Arc Plasma I</td>
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<tr>
<td></td>
<td></td>
<td>[Sumit Agarwal]</td>
<td>[Masaya Shigeta]</td>
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<tr>
<td><strong>9:30 AM - 10:00 AM</strong></td>
<td><strong>--- Coffee Break ---</strong></td>
<td></td>
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<tr>
<td><strong>10:00 AM - 12:00 PM</strong></td>
<td><strong>DT2</strong></td>
<td>Capacitively Coupled Plasmas I</td>
<td><strong>ET2</strong> Sheaths and Fireballs</td>
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<td></td>
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<td>[Jing-Yu Sun]</td>
<td>[Brett Scheiner]</td>
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<td><strong>12:00 PM - 1:30 PM</strong></td>
<td><strong>--- Lunch ---</strong></td>
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<tr>
<td><strong>1:30 PM - 3:30 PM</strong></td>
<td><strong>DT3</strong></td>
<td>Plasmas and Nanotechnology II</td>
<td><strong>ET3</strong> Laser Diagnostics I</td>
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<tr>
<td></td>
<td></td>
<td>[Uros Cvelbar / Renato P. Camata]</td>
<td>[Kunihiro Kamataki]</td>
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<td><strong>3:30 PM - 4:00 PM</strong></td>
<td><strong>--- Coffee Break ---</strong></td>
<td></td>
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<tr>
<td><strong>4:00 PM - 6:00 PM</strong></td>
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<tr>
<td><strong>6:30 PM - 8:00 PM</strong></td>
<td><strong>DT5</strong></td>
<td>Women in Science</td>
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<tr>
<td></td>
<td></td>
<td>[Sunhee Lee]</td>
<td>[Aranka Derzsi]</td>
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<td></td>
<td></td>
<td>[Douyan Wang]</td>
<td>[Airi Nakayama]</td>
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Tuesday, October 4th, 2022

Day 2
<table>
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<th>Time</th>
<th>Session 1</th>
<th>Session 2</th>
<th>Session 3</th>
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</table>
| 8:00 AM - 9:30 AM | **DT1** Plasma Surface Interaction I   
                  【Sumit Agarwal】 | **GT1** Electron and Photon Collisions - Excitation  
                  【Masamitsu Hoshino】 | Exhibition                                     |
| 9:30 AM - 10:00 AM | --- Coffee Break ---                         |                                               |                                               |
| 10:00 AM - 12:00 PM | **DT2** Capacitively Coupled Plasmas I    
                   【Jing-Yu Sun】 | **ET2** Sheaths and Fireballs  
                   【Brett Scheiner】 | Exhibition                                     |
| 12:00 PM - 1:30 PM | --- Lunch ---                               |                                               |                                               |
| 1:30 PM - 3:30 PM | **DT3** Plasmas and Nanotechnology II  
                  【Uros Cvelbar / Renato P Camata】 | **ET3** Laser Diagnostics I  
                  【Kunihiro Kamata】 | Exhibition                                     |
| 3:30 PM - 4:00 PM | --- Coffee Break ---                         |                                               |                                               |
| 4:00 PM - 6:00 PM | **HT4** Poster Session I & Exhibition      |                                               |                                               |
### Day 3  
**Wednesday, October 5th, 2022**

<table>
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<th>Time</th>
<th>Room</th>
<th>Tachibana</th>
<th>Hagi</th>
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</thead>
</table>
| **8:00 AM - 9:30 AM** | DW1  | Green Plasma Science & Technology I  
  [Keisuke Takashima / Muzammil Iqbal] | EW1  
  Aerospace Plasmas  
  [Steven Barrett] |   |
| **9:30 AM - 10:00 AM** |      | --- Coffee Break ---                                                      |                                                                      |   |
| **10:00 AM - 11:00 AM** | DW2  | Will Allis Prize Talk  
  [Toshiaki Makabe] |   |   |
| **11:00 AM - 12:00 PM** | DW3  | Reactive Plasma Award Talk  
  [Masaru Hori] |   |   |
| **12:00 PM - 1:00 PM** | DW4  | GEC Business Meeting  
  [Julian Schulze] |   |   |
| **1:00 PM - 2:30 PM** |      | --- Lunch ---                                                            |                                                                      |   |
| **2:30 PM - 4:00 PM** | DW5  | Green Plasma Science & Technology II  
  [Igor V Adamovich / Juan P Trelles / Gottlieb Oehrlein] | EW5  
  Plasma Surface Interaction II  
  [Jan Trieschmann] |   |
<p>| <strong>4:00 PM - 4:30 PM</strong> |      | --- Coffee Break ---                                                      |                                                                      |   |
| <strong>4:30 PM - 6:30 PM</strong> |      |                                                                           |                                                                      |   |</p>
<table>
<thead>
<tr>
<th>Shirakashi 1</th>
<th>Shirakashi 2</th>
<th>Sakura</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FW1</strong> Modeling - Plasma Processing and Chemistry I</td>
<td><strong>GW1</strong> Electron and Photon Collisions - Ionization (Xueguang Ren / Yasuyuki Nagashima)</td>
<td>Exhibition</td>
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<td>Exhibition</td>
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<tr>
<td><strong>FW5</strong> Atomic Layer Processes (Robert O’Connor / Kazunori Shinoda)</td>
<td><strong>GW5</strong> Heavy-Particle Collisions (Raul Oscar Barrachina / Alisher Kadyrov)</td>
<td>Exhibition</td>
</tr>
<tr>
<td>Exhibition</td>
<td>- 3:45 PM</td>
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</tr>
<tr>
<td><strong>HW6</strong> Poster Session II &amp; Exhibition</td>
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</table>

Wednesday, October 5th, 2022 Day 3
## Day 4  Thursday, October 6th, 2022

<table>
<thead>
<tr>
<th>Time</th>
<th>Room</th>
<th>Tachibana</th>
<th>Hagi</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 AM - 9:30 AM</td>
<td>DR1</td>
<td>Model Validation &amp; Verification</td>
<td>ER1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[Shinichi Namba]</td>
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<tr>
<td>9:30 AM - 10:00 AM</td>
<td>--- Coffee Break</td>
<td></td>
<td></td>
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<tr>
<td>10:00 AM - 12:00 PM</td>
<td>DR2</td>
<td>Plasma Surface Interaction III</td>
<td>ER2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[Timo Gans]</td>
<td>[Dmitry Levko]</td>
</tr>
<tr>
<td>12:00 PM - 1:30 PM</td>
<td>--- Lunch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1:30 PM - 3:30 PM</td>
<td>DR4</td>
<td>Plasma Propulsion II</td>
<td>ER4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[Christine Charles]</td>
<td>[Amanda M Lietz]</td>
</tr>
<tr>
<td>3:30 PM - 4:00 PM</td>
<td>--- Coffee Break</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4:00 PM - 6:00 PM</td>
<td>DR5</td>
<td>Optical Diagnostics</td>
<td>ER5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[Hiroshi Akatsuka]</td>
<td>[Jets and Gliding Arcs]</td>
</tr>
<tr>
<td>7:00 PM - 9:00 PM</td>
<td><strong>Banquet</strong></td>
<td>(Westin Hotel Sendai)</td>
<td></td>
</tr>
<tr>
<td>Shirakashi 1</td>
<td>Shirakashi 2</td>
<td>Sakura 1</td>
<td>Sakura 2</td>
</tr>
<tr>
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</tbody>
</table>
| **FR1** Magnetron Plasmas  
  [Bocong Zheng]  | **GR1** Plasma Propulsion I  | Exhibition | **IR1** Plasma Liquid Interaction I |
| **FR2** Low Pressure Plasmas  
  [Kentaro Hara]  | **GR2** Atomic and Molecular Physics  
  [Christian Hill / Masanori Tachikawa / Christopher J Fontes]  | Exhibition | **IR2** Plasma Liquid Interaction II  
  [Wonho Choe] |
| **FR4** Gas Phase Plasma Chemistry  
  [Andrew R Gibson / Ali Mesbah]  | **GR4** Modeling - New Algorithms and Machine Learning  | Exhibition | **IR4** Plasma Liquid Interaction III  
  [Paul Maguire]  |
| **FR5** Modeling - Plasma Processing and Chemistry II  
  [Amanda M Lietz]  | **GR5** Diamond Like Carbon Deposition  | Exhibition | **IR5** Plasma Liquid Interaction IV  
  [Ahmad Hamdan / Haruka Suzuki / Tetsuya Haruyama]  |
| **HR3** Student Networking |

--- Lunch ---
### Day 5  Friday, October 7th, 2022

<table>
<thead>
<tr>
<th>Room</th>
<th>Tachibana</th>
<th>Hagi</th>
</tr>
</thead>
</table>
| **8:00 AM - 9:30 AM** | DF1  
Plasmas and Nanotechnology III
[Wei-Hung Chiang] | EF1  
Plasma Medical & Agricultural Application I
[Dingxin Liu] |
| **9:30 AM - 10:00 AM** | --- Coffee Break --- |                                        |
| **10:00 AM - 12:00 PM** | DF2  
Laser Diagnostics II
[Holger Kersten] | EF2  
Plasma Medical & Agricultural Application II
[Kenji Ishikawa] |
| **12:00 PM - 1:30 PM** | --- Lunch --- |                                            |
| **1:30 PM - 3:30 PM** | DF3  
Plasma Propulsion III
[Andrei Smolyakov] | EF3  
Plasma Medical & Agricultural Application III
[Nevena Puac] |
| **3:30 PM - 4:00 PM** | --- Coffee Break --- |                                            |
| **4:00 PM - 5:30 PM** | DF4  
Fundamental Processes | EF4  
Plasma Medical & Agricultural Application IV
[Mounir Laroussi] |
| **5:30 PM - 6:00 PM** | DF5  
Closing Ceremony  
- Toshiro Kaneko 
- Julian Schulze 
- Shahid Rauf |                                           |
<table>
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<th>Time</th>
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<th>Event Description</th>
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<tr>
<td>8:00 AM - 9:00 AM</td>
<td><strong>Shirakashi 1</strong></td>
<td><strong>FF1</strong> Inductively Coupled Plasmas</td>
</tr>
<tr>
<td>8:00 AM - 9:00 AM</td>
<td><strong>Shirakashi 2</strong></td>
<td><strong>GF1</strong> Dissociative Electron Attachment and Distribution Functions [Sylwia Ptasinska]</td>
</tr>
<tr>
<td>8:00 AM - 9:00 AM</td>
<td><strong>Sakura 1</strong></td>
<td>Exhibition</td>
</tr>
<tr>
<td>8:00 AM - 9:00 AM</td>
<td><strong>Sakura 2</strong></td>
<td><strong>IF1</strong> Green Plasma Science and Technology III [Deanna A Lacoste]</td>
</tr>
<tr>
<td>9:00 AM - 9:30 AM</td>
<td><strong>Sakura 1</strong></td>
<td><strong>EF1</strong> Plasma Medical &amp; Agricultural Application I [Dingxin Liu]</td>
</tr>
<tr>
<td>9:00 AM - 9:30 AM</td>
<td><strong>Sakura 2</strong></td>
<td><strong>GF1</strong> Dissociative Electron Attachment and Distribution Functions [Sylwia Ptasinska]</td>
</tr>
<tr>
<td>9:30 AM - 10:00 AM</td>
<td><strong>Sakura 1</strong></td>
<td>Exhibition</td>
</tr>
<tr>
<td>9:30 AM - 10:00 AM</td>
<td><strong>Sakura 2</strong></td>
<td><strong>EF1</strong> Plasma Medical &amp; Agricultural Application II [Kenji Ishikawa]</td>
</tr>
<tr>
<td>10:00 AM - 12:00 PM</td>
<td><strong>Sakura 1</strong></td>
<td><strong>DF2</strong> Laser Diagnostics II [Holger Kersten]</td>
</tr>
<tr>
<td>10:00 AM - 12:00 PM</td>
<td><strong>Sakura 2</strong></td>
<td><strong>EF2</strong> Plasma Medical &amp; Agricultural Application II [Kenji Ishikawa]</td>
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<tr>
<td>10:00 AM - 12:00 PM</td>
<td><strong>Sakura 1</strong></td>
<td><strong>GF2</strong> Plasmas for Energy Applications [Shota Nunomura]</td>
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<tr>
<td>10:00 AM - 12:00 PM</td>
<td><strong>Sakura 2</strong></td>
<td><strong>GF2</strong> Plasmas for Energy Applications [Shota Nunomura]</td>
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<tr>
<td>12:00 PM - 1:30 PM</td>
<td><strong>Sakura 1</strong></td>
<td>Exhibition</td>
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<tr>
<td>12:00 PM - 1:30 PM</td>
<td><strong>Sakura 2</strong></td>
<td><strong>IF2</strong> Discharge Physics</td>
</tr>
<tr>
<td>12:00 PM - 1:30 PM</td>
<td><strong>Sakura 1</strong></td>
<td><strong>IF2</strong> Discharge Physics</td>
</tr>
<tr>
<td>12:00 PM - 1:30 PM</td>
<td><strong>Sakura 2</strong></td>
<td><strong>IF2</strong> Discharge Physics</td>
</tr>
<tr>
<td>1:30 PM - 3:30 PM</td>
<td><strong>Sakura 1</strong></td>
<td><strong>DF3</strong> Plasma Propulsion III [Andrei Smolyakov]</td>
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<tr>
<td>1:30 PM - 3:30 PM</td>
<td><strong>Sakura 2</strong></td>
<td><strong>EF3</strong> Plasma Medical &amp; Agricultural Application III [Nevena Puac]</td>
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<tr>
<td>1:30 PM - 3:30 PM</td>
<td><strong>Sakura 1</strong></td>
<td><strong>FF3</strong> Modeling - Thrusters and Wave-Plasma Interactions [Anne Bourdon]</td>
</tr>
<tr>
<td>1:30 PM - 3:30 PM</td>
<td><strong>Sakura 2</strong></td>
<td><strong>GF3</strong> Plasma Deposition [Matteo Gherardi / Giichiro Uchida]</td>
</tr>
<tr>
<td>1:30 PM - 3:30 PM</td>
<td><strong>Sakura 1</strong></td>
<td>Exhibition</td>
</tr>
<tr>
<td>1:30 PM - 3:30 PM</td>
<td><strong>Sakura 2</strong></td>
<td><strong>IF3</strong> Probe Diagnostics [Yegeon Lim]</td>
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<tr>
<td>3:30 PM - 4:00 PM</td>
<td><strong>Sakura 1</strong></td>
<td><strong>DF4</strong> Closing Ceremony [Toshiro Kaneko, Julian Schulze, Shahid Rauf]</td>
</tr>
<tr>
<td>3:30 PM - 4:00 PM</td>
<td><strong>Sakura 2</strong></td>
<td><strong>EF4</strong> Plasma Medical &amp; Agricultural Application IV [Mounir Laroussi]</td>
</tr>
<tr>
<td>3:30 PM - 4:00 PM</td>
<td><strong>Sakura 1</strong></td>
<td><strong>GF4</strong> Plasmas for Energy Applications [Shota Nunomura]</td>
</tr>
<tr>
<td>3:30 PM - 4:00 PM</td>
<td><strong>Sakura 2</strong></td>
<td><strong>GF4</strong> Plasmas for Energy Applications [Shota Nunomura]</td>
</tr>
<tr>
<td>3:30 PM - 4:00 PM</td>
<td><strong>Sakura 1</strong></td>
<td>Exhibition</td>
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<tr>
<td>3:30 PM - 4:00 PM</td>
<td><strong>Sakura 2</strong></td>
<td><strong>IF4</strong> Dielectric Barrier and Corona Discharges</td>
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<tr>
<td>3:30 PM - 4:00 PM</td>
<td><strong>Sakura 1</strong></td>
<td><strong>IF4</strong> Dielectric Barrier and Corona Discharges</td>
</tr>
<tr>
<td>3:30 PM - 4:00 PM</td>
<td><strong>Sakura 2</strong></td>
<td><strong>IF4</strong> Dielectric Barrier and Corona Discharges</td>
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</tbody>
</table>
Program

Monday, October 3rd, 2022

10:00AM - 10:30AM  Room: Tachibana

**Opening Ceremony**

Chair: Toshiro Kaneko *(Tohoku University)*

DM1.00001 Welcome Remarks  
Toshiro Kaneko

DM1.00002 GEC Chair Welcome Remarks  
Julian Schulze

DM1.00003 ICRP Chair Welcome Remarks  
Fumiyoshi Tochikubo

10:30AM - 5:00PM  Room: Tachibana

**Workshop I: Industrial Plasma Technologies**

Chair: Hajime Sakakita *(National Institute of Advanced Industrial Science and Technology)*  
Taisei Motomura *(National Institute of Advanced Industrial Science and Technology)*

DM2.00001 Modeling and Simulation of Plasmas for Etch Applications  
*Invited Speaker* Jason Kenney

DM2.00002 Thermal cyclic atomic-level etching in 3D ULSI device fabrication  
*Invited Speaker* Hiroto Ohtake

DM2.00003 Lunch

DM2.00004 New challenges on semiconductor plasma manufacturing processes  
*Invited Speaker* Tsuyoshi Moriya

DM2.00005 Applications of plasma-enhanced deposition technologies in the semiconductor industry  
*Invited Speaker* Jaeho Kim

DM2.00006 Coffee Break
EM2 Workshop II: Plasma Physics for Space Propulsion Technologies

Chair: Daisuke Kuwahara (Chubu University)

EM2.00001
10:30AM - 11:15AM
Anatomy of cross-field electron transport by steady and unsteady plasma structures in Hall thrusters
Invited Speaker: Rei Kawashima

EM2.00002
11:15AM - 12:00PM
The effects of collisions and oscillating fields on the thrust in electric propulsion
Invited Speaker: Amnon Fruchtman

EM2.00003
12:00PM - 1:30PM
Lunch

EM2.00004
1:30PM - 2:15PM
In-Space Electric Propulsion System Enabling JAXA Commercial Removal of Debris Demonstration (CRD2): Challenges and Relevant Physics
Invited Speaker: Shinatora Cho

EM2.00005
2:15PM - 3:00PM
Magnetically Expanding Plasmas for Space Propulsion
Invited Speaker: Justin Little

EM2.00006
3:00PM - 3:30PM
Coffee Break

EM2.00007
3:30PM - 4:15PM
Electrodeless plasma thrusters and magnetized plasma expansions for space propulsion
Invited Speaker: Mario Merino

EM2.00008
4:15PM - 5:00PM
Electron thermodynamics and ion transport in the magnetic nozzle of electrodeless electric thrusters
Invited Speaker: Stephane Mazouffre

EM2.00009
5:00PM - 5:45PM
The Blue Core Paradigm
Invited Speaker: Roderick W Boswell
**FM2**  Workshop III: Functional Surfaces in Plasma Elementary and Process-Applicable Reactions

**Chair:** Osamu Sakai *(The University of Shiga Prefecture)*

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<tr>
<th>Time</th>
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<th>Title</th>
<th>Speaker</th>
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</thead>
<tbody>
<tr>
<td>10:30AM - 11:15AM</td>
<td>FM2.00001</td>
<td>Application of hyperthermal spin- and alignment-controlled O₂ beam to surface reaction analysis</td>
<td>Mitsunori Kurahashi</td>
</tr>
<tr>
<td>11:15AM - 12:00PM</td>
<td>FM2.00002</td>
<td>Molecular Dynamics Simulations in Plasma-wave-material Interaction for Nuclear Fusion Study</td>
<td>Hiroaki Nakamura</td>
</tr>
<tr>
<td>12:00PM - 1:30PM</td>
<td></td>
<td>Lunch</td>
<td></td>
</tr>
<tr>
<td>1:30PM - 2:15PM</td>
<td>FM2.00004</td>
<td>Fibrous nanostructures formation using helium plasma and their applications as functional materials</td>
<td>Kenzo Ibano</td>
</tr>
<tr>
<td>2:15PM - 3:00PM</td>
<td>FM2.00005</td>
<td>Dynamics of plasma and catalyst interfacial reactions: in situ IR spectroscopy of CO₂ hydrogenation</td>
<td>Tomohiro Nozaki</td>
</tr>
<tr>
<td>3:00PM - 3:30PM</td>
<td></td>
<td>Coffee Break</td>
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<tr>
<td>3:30PM - 4:15PM</td>
<td>FM2.00006</td>
<td>Kinetic Simulation of Narrow Gap Discharge</td>
<td>June Young Kim</td>
</tr>
<tr>
<td>4:15PM - 5:00PM</td>
<td>FM2.00007</td>
<td>Advanced functional thin films for energy conversion and storage devices deposited by plasma-based processes</td>
<td>Naohiro Shimizu</td>
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**GM2**  Workshop IV: Catalytic Effects in Plasma-Liquid Interaction

**Chair:** Hiromasa Tanaka *(Nagoya University)*

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<th>Time</th>
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<th>Title</th>
<th>Speaker</th>
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<tbody>
<tr>
<td>1:30PM - 2:15PM</td>
<td>GM2.00001</td>
<td>Plasma Bubbles: A Route to Green Chemistry</td>
<td>Renwu Zhou</td>
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<tr>
<td>2:15PM - 3:00PM</td>
<td>GM2.00002</td>
<td>Graph-based approach to catalytic effects in plasma-exposed liquids</td>
<td>Tomoyuki Murakami</td>
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<tr>
<td>3:00PM - 3:30PM</td>
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<td>Coffee Break</td>
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<tr>
<td>3:30PM - 4:15PM</td>
<td>GM2.00003</td>
<td>Novel Hydrogen Generation Study Applying Rebound Tailing Pulse and Wet Electrode Methods</td>
<td>Naohiro Shimizu</td>
</tr>
</tbody>
</table>
Modeling of plasma-liquid interactions

Invited Speaker: Annemie Bogaerts

6:00PM - 8:00PM Room: Sakura 1

Welcome Reception

* See the Attendee Instructions page
Tuesday, October 4th, 2022

**Room: Tachibana**

### DT1  Plasma Surface Interaction I

**Chair:** Jan Trieschmann *(Kiel University)*

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<th>Session</th>
<th>Title</th>
<th>Speaker(s)</th>
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</thead>
<tbody>
<tr>
<td>DT1.00001</td>
<td>Photoemission induced plasma breakdown</td>
<td>Brian Z Bentz, Kevin Youngman, Asif Iqbal, Yang Zhou, Peng Zhang</td>
</tr>
<tr>
<td>DT1.00002</td>
<td>GEC Student Excellence Award Finalist Presentation - Dynamic surface surrogate model trained on atomistic data of AlN sputter depositions</td>
<td>Tobias Gerps, Thomas Mussenbrock, Jan Trieschmann</td>
</tr>
<tr>
<td>DT1.00003</td>
<td>Strategies to Enhance Etch Selectivity During Fluorocarbon Plasma-Assisted Atomic Layer Etching of Silicon-Based Dielectrics</td>
<td>Invited Speaker Sumit Agarwal</td>
</tr>
<tr>
<td>DT1.00004</td>
<td>Secondary electron emission due to atomic and molecular iodine ion bombardment</td>
<td>Lui Habl, Dmytro Rafalskyi, Trevor Lafleur</td>
</tr>
<tr>
<td>DT1.00005</td>
<td>Evidence of the dominant production mechanism of ammonia in a H&lt;sub&gt;2&lt;/sub&gt;/N&lt;sub&gt;2&lt;/sub&gt; plasma</td>
<td>James Ellis, Daniel Köpp, Norbert Lang, Jean-Pierre H van Helden</td>
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</tbody>
</table>

**Room: Hagi**

### ET1  Thermal and Arc Plasma I

**Chair:** Shinichi Namba *(Hiroshima University)*

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<th>Session</th>
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<tbody>
<tr>
<td>ET1.00001</td>
<td>Influence of charging in feedstock particles injected into modulated induction thermal plasma for nanoparticle synthesis with OML theory</td>
<td>Yasunori Tanaka, Ryudai Furukawa, Yurina Nagase, Yusuke Nakano, Tatsuo Ishijima, Shiori Sueyasu, Shu Watanabe, Keitaro Nakamura</td>
</tr>
<tr>
<td>ET1.00002</td>
<td>Arc Temperature Fluctuation near Electrode of Diode-Rectified Multiphase AC Arc</td>
<td>Manabu Tanaka, Junjie Chang, Yuki Takemoto, Takayuki Watanabe, Tsugio Matsuura, Tsuguo Ueda, Hideki Touzaki, Juan P Trelles, Masaya Shigeta</td>
</tr>
<tr>
<td>ET1.00003</td>
<td>Computational Studies of Thermal-Plasma-Induced Turbulence on Nanopowder Generation and Sustained Arc Discharge</td>
<td>Invited Speaker Masaya Shigeta</td>
</tr>
<tr>
<td>ET1.00004</td>
<td>Analysis of Amount of Metal Vapor Affected by Welding Speed in TIG Arc Welding</td>
<td>Yusuke Nemoto, Masahiro Takagi, Honoka Morishita, Yuki Suzuki, Zhenwei Ren, Gustilo C Reggie, Toru Iwao</td>
</tr>
</tbody>
</table>
Arc Temperature Measurement with High-Speed Camera Based on Continuum and Line Emissions in Argon-Nitrogen Free-Burning Arc
Yuki Takemoto, Manabu Tanaka, Takayuki Watanabe

**8:00AM - 9:15AM**  
Room: Shirakashi 1

**FT1**  
**Plasma Applications**

**Chair:** Kentaro Hara *(Stanford University)*

FT1.00001  
8:00AM - 8:30AM  
The role of atomic physics in collisional-radiative modeling of tin plasmas for lithography  
*Invited Speaker:* James Colgan

FT1.00002  
8:30AM - 8:45AM  
Profiling of High-Pressure DC Microdischarge for excimer emission.  
Rumysa Manzoor

FT1.00003  
8:45AM - 9:15AM  
Bridging the gap between fluid and kinetic plasma simulations for industrial plasma sources  
*Invited Speaker:* Alexandre Likhanskii

**8:00AM - 9:30AM**  
Room: Shirakashi 2

**GT1**  
**Electron and Photon Collisions - Excitation**

**Chair:** Harindranath Ambalampitiya *(Quantemol Ltd)*

GT1.00001  
8:00AM - 8:30AM  
Quantitative measurements of electron collision cross sections and their database related to plasma modeling  
*Invited Speaker:* Masamitsu Hoshino

GT1.00002  
8:30AM - 8:45AM  
Calculation of electron scattering from tin atoms  
Haadi Umer, Igor Bray, Dmitry V Fursa

GT1.00003  
8:45AM - 9:00AM  
Toward a frame-work for calculating comprehensive electron collision data sets for low-temperature plasma modeling: Vibrationally resolved cross sections of $N_2$, $N_2^*$ and $O_2$  
Mark C Zammit, James Colgan, Christopher J Fontes, Julie Jung, Amanda J Neukirch, Brett S Scheiner, Charles G Durfee, John W Rose, Matthew Webb, Eddy M Timmermans

GT1.00004  
9:00AM - 9:15AM  
Maximum angular momentum transfer in electron-atom collisions  
Mariusz Piwiński, Lukasz Klosowski

GT1.00005  
9:15AM - 9:30AM  
Electron impact excitation cross sections of neutral molybdenum : cross sections of interest in plasma modeling  
Indhu Suresh, Psnsr R Srikar, Priti Priti, Rajesh Srivastava, Reetesh K Gangwar
**DT2**  
**Capacitively Coupled Plasmas I**  
**Chair:** Aranka Derzsi *(Wigner Research Centre, Hungary)*

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<thead>
<tr>
<th>Session</th>
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<tbody>
<tr>
<td>DT2.00001</td>
<td>Resonant sheath heating in weakly magnetized capacitively coupled plasmas due to electron-cyclotron motion</td>
<td>Jing-Yu Sun</td>
</tr>
<tr>
<td>DT2.00002</td>
<td>GEC Student Excellence Award Finalist Presentation - Uniformity control by customized electrode designs in capacitive RF plasmas</td>
<td>Li Wang, Peter Hartmann, Zoltan Donko, Yuan-Hong Song, Julian Schulze</td>
</tr>
<tr>
<td>DT2.00003</td>
<td>Effect of the low-frequency voltage on nonlinear standing wave excitation in dual-frequency asymmetric capacitive discharges</td>
<td>Fang-Jie Zhou, Jian-Kai Liu, Kai Zhao, You-Nian Wang</td>
</tr>
<tr>
<td>DT2.00004</td>
<td>Surface effects in a capacitive argon discharge in the intermediate pressure regime</td>
<td>Jon T Gudmundsson, Janez Krek, De-Qi Wen, Emi Kawamura, Michael A Lieberman</td>
</tr>
<tr>
<td>DT2.00005</td>
<td>The effects of different boundary surface materials on electron power absorption dynamics in capacitive RF plasmas</td>
<td>Florian Beckfeld, David A. Schlenenberg, Ihor Korolov, Julian Schulze</td>
</tr>
<tr>
<td>DT2.00006</td>
<td>Kinetic behaviors of secondary electrons in magnetized capacitively coupled argon plasmas</td>
<td>Hui Wen, Jing-Yu Sun, Quan-Zhi Zhang, You-Nian Wang</td>
</tr>
<tr>
<td>DT2.00007</td>
<td>GEC Student Excellence Award Finalist Presentation - Striations in dual-low-frequency (2/10 MHz) driven capacitively coupled CF₄ plasma</td>
<td>Xiao-Kun Wang, Yong-Xin Liu, Julian Schulze, Zoltán Donk’o, You-Nian Wang</td>
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**ET2**  
**Sheaths and Fireballs**  
**Chair:** Trevor Lafleur *(ThrustMe)*

<table>
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<tr>
<td>ET2.00001</td>
<td>Electron Sheaths and Fireballs</td>
<td>Brett Scheiner</td>
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<td>ET2.00002</td>
<td>Direct measurement of ion and electron flux ratio at their respective sheath-edges and absence of the electron Bohm criterion effects</td>
<td>Chenyao Jin, Chi-Shung Yip, Wei Zhang, Di Jiang, Guosheng Xu</td>
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<td>Sheath expansion around Langmuir Probes: is it only about the probe bias potential?</td>
<td>Gregory Severn, Adrian Woodley, Peixuan Li, Oliver Schmitz</td>
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<td>ET2.00004</td>
<td>How sheath properties change with gas pressure: modeling and simulation</td>
<td>Lucas P Beving, Matthew M Hopkins, Scott D Baalrud</td>
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ET2.00005
11:15AM - 11:30AM
Plasma fireballs, their creation and behavior
Roman W Schrittwieser, Codrina Ionita, Reiner L Stenzel, Claudia T Konrad-Soare, Dan G Dimitriu, florin Enescu, Stefan A Irimiciuc

ET2.00006
11:30AM - 11:45AM
Development of a Discontinuous Galerkin fluid solver for argon plasma-sheath
Giuseppe Matteo Gangemi, Amaury Bilocq, Nayan Levaux, Koen Hillewaert, Thierry Magin, Alejandro Alvarez Laguna

ET2.00007
11:45AM - 12:00PM
A high density (>10^{12}cm^{-3}) multi-dipole confinement hot cathode discharge and its characteristics of plasma parameters formation
Chi-Shung Yip, Di Jiang, Chenyao Jin, Wei Zhang, Guosheng Xu

Room: Shirakashi 1

**FT2** Plasma Chemical Synthesis and Conversion

Chair: Masaharu Shiratani *(Kyushu University)*

**FT2.00001**
10:00AM - 10:15AM
Self-limiting trade-off between CO yield and CO2 conversion energy efficiency in atmospheric pressure radio-frequency plasmas: picosecond laser spectroscopy
James Dedrick, Alex Foote, Andrew R Gibson, Kari Niemi, Steven Thomas, Jüri Raud, Joshua Boothroyd, Zaenab Abd-Allah, Jérôme Bredin, Michael North, Deborah O’Connell, Timo Gans

**FT2.00002**
10:15AM - 10:30AM
Thermocatalytic Plasma-Assisted Dry Reforming of Methane Over Heterogeneous Ni/Al2O3 Catalyst.
Tyler Wong, Daniel E Guerrero, Setrak Tanielyan, Jose L Lopez

**FT2.00003**
10:30AM - 11:00AM
The role of reactive oxygen and nitrogen species on the conversion of volatile organic compounds in a twin surface dielectric barrier discharge
*Invited Speaker* Lars Schücke

**FT2.00004**
11:00AM - 11:15AM
Nonthermal plasma assisted CO2 hydrogenation over intermetallic Pd2Ga/SiO2
Daeyeong Kim, Shinya Furukawa, Tomohiro Nozaki

**FT2.00005**
11:15AM - 11:30AM
Reaction Mechanism for the Atmospheric Pressure Plasma Jet Treatment of Cysteine in Solution
Jordyn Polito, Sanjana J Kerketta, María J Herrera Quesada, katharina Stapelmann, Mark J Kushner

**FT2.00006**
11:30AM - 11:45AM
Plasma catalysis in fluidized-bed reactor for reverse water gas shift reaction
Xiaozhong Chen, Shinya Furukawa, Tomohiro Nozaki

**FT2.00007**
11:45AM - 12:00PM
Powderization behavior of uranium dioxide solid by non-equilibrium plasma oxidation
ZhuoRan Ma, Takaharu Tatsuno, Yoshiho Homma, Kenji Konashi, Tatsuya Suzuki
## GT2  Plasmas and Nanotechnology I

**Chair:** Uros Cvelbar (*Jozef Stefan Institute*)

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<td>Ulf Helmersson</td>
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<td>Control of Schottky barrier height for efficient fabrication of graphene nanoribbon-based quantum dot devices</td>
<td>Tatsuki Kato, Toshiro Kaneko, Toshiaki Kato</td>
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<td>Understanding of monolayer WS₄ nucleation by in-situ monitoring CVD</td>
<td>Yuta Iwamoto, Toshiro Kaneko, Toshiaki Kato</td>
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<td>Coagulation and Condensation Rates in Si Nanoparticle Growth at Different Feeding Durations of Feedstock Using Tandem Modulated Induction Thermal Plasmas</td>
<td>Yurina Nagase, Yasunori Tanaka, Yusuke Nakano, Tatsuo Ishijima, Shiori Sueyasu, Shu Watanabe, Keitaro Nakamura</td>
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<td>GT2.00005</td>
<td>Highly efficient exosome capture by carbon nanowalls template</td>
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## DT3  Plasmas and Nanotechnology II

**Chair:** Tsuyohito Ito (*The University of Tokyo*)

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<td>Naoki Matsuda</td>
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**Chair:** Andrew Gibson *(Ruhr University Bochum, Germany)*

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<td>Junhwi Bak, Jean Luis Suazo Betancourt, Anuj Rekhy, Amirhossein Abbasszadehrad, Richard B Miles, Christopher M Limbach, Mitchell L Walker</td>
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### Modeling - High Pressure and Streamers

**Chair:** Louis Reboul *(CMAP, Ecole Polytechnique)*

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Development of Three Dimensional Thermofluid Model for Ar-O₂ Loop Induction Thermal Plasmas with Reaction Rates for Dissociation of O₂ on the Substrate
Tomoya Fuwa, Hiroya Hara, Yasunori Tanaka, Yusuke Nakano, Tatsuo Ishijima, Tetsuya Yukimoto, Hiroshi Kawaura

Massively parallel high-fidelity simulations of plasma-assisted ignition of hydrocarbon fuels using nanosecond pulsed discharges
Nicholas Deak, Alfredo J Duarte Gomez, Lucas Esclapez, Marcus Day, Fabrizio Bisetti

Modelling and experimental studies of dielectric barrier discharges in dry and humidified air at sub-atmospheric pressure
Marjan Stankov, Sergey Gortschakow, Markus M Becker, Robert Bansemer, Klaus-Dieter Weltmann, Detlef Loffhagen

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**Atmospheric Pressure Plasmas**

Chair: Tatsuru Shirafuji (Osaka Metropolitan University)

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- **Ionization wave Propagation in Nanosecond Pulsed Discharge and its Application**
  Invited Speaker: Cheng Zhang

- **Strong Correlation Effects in Atmospheric Pressure Plasmas**
  Marco D Acciarri, Scott D Baalrud, Christopher H Moore

- **The effect of humidity on streamer propagation in long air gaps**
  Andrey Starikovskiy, Eduard Bazelyan, Nickolay Aleksandrov

- **Effects of humidity on the dynamics and electron recombination of a pin-to-pin discharge in He + H₂O at atmospheric pressure**
  Alexandra Brisset, Ben Harris, Aaron Dickenson, Kari Niemi, James Walsh, Erik Wagenaars

- **Simulation of Nonthermal Plasma Discharges in Air and CO₂ in Sub-millimetre Needle-Plane Gaps Under Fast-Rising Voltages**
  Timothy Wong, Igor Timoshkin, Scott MacGregor, Mark Wilson, Martin Given

- **Influence of water vapor and negative ions on self-organized luminous pattern formation in an atmospheric-pressure dc glow discharge**
  Toshiaki Miyazaki, Naoki Shirai, Koichi Sasaki

- **Striations in Atmospheric Pressure AC Driven Helium Glow Discharge**
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<td>Princeton Collaborative Low Temperature Plasma Research Facility (PCRF)</td>
<td>Yevgeny Raitses, Igor D Kaganovich, Mikhail N Shneider, Sophia Gershman, Shurik Yatom, Arthur Dogariu</td>
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<td>Measurement of Bead Width Using Feedback Control During Welding Speed Change in TIG Welding</td>
<td>Yuki Kusakari, Susumu Ichinose, Kenshin Saigo, Hiroto Suzuki, Yusuke Nemoto, Zhenwei Ren, Gustilo C Reggie, Toru Iwao</td>
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<td>Feasibility study for monitoring of tendency of particle generation in plasma etching by load impedance measurement</td>
<td>Yuji Kasashima, Tatsuo Tabaru</td>
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Measurement of thickness of silicon carbide using multi-frequency analysis in the inductively coupled plasma
Beom-Jun Seo, Se-Hun Ahn, Chin-Wook Chung

A study on the effect of ultra-low electron temperature on the etching of MoS$_2$ layer
Junyoung Park, Jiwon Jung, Min-Seok Kim, Chin-Wook Chung

Time-dependent Measurement of Ion Composition in Pulse-operated Ar/C$_6$F$_6$/O$_2$ Dual-frequency Capacitively-Coupled Plasma
Yuto Seki, Haruhito Kato, Shuichi Kuboi, Haruka Suzuki, Hirotaka Toyoda

Synthesis of diamond-like carbon thin film via multi pulse high-power impulse magnetron sputtering
Takashi Kimura

Plasma discharge characteristics for balanced magnetron sputtering cathode
Taisei Motomura, Tatsuo Tabaru

Phase-Resolved Analysis of an Inductively Coupled Plasma with a Dual-Frequency Bias Using a Two-Dimensional Particle-in-Cell Simulation
Heesung Park, HaeJune Lee

Elemental gradient functional thin film production for hydrogen entry prevention using powder target
Hiroharu Kawasaki

Characteristics of DLC films deposited by pseudo-spark discharge PE-CVD with different substrate bias voltages
Takaharu Kamada, Masayuki Watanabe, Yoshitaka Nakamura, Seiji Mukaigawa

TiN Film Formation by Linear and Novel Winding Filtered-Arc Deposition
Yoshinori Saiki, Jumpei Kito, Yuki Hashimoto, Takahiro Bando, Toru Harigai, Hirofumi Takikawa, Hiroaki Gima, Hiroaki Sugita

Deposition of nitrogen doped amorphous carbon film using high power impulse magnetron sputtering
Ryo Usui, Takayuki Ohta

Investigation of Material Properties of Fluorocarbon Films Deposited by Plasma-Enhanced Chemical Vapor Deposition
Toru Takeya, Takeru Okada

Thin plasma-polymerised layers on PET-substrates under the influence of NaOH solution
Jana Schöne, Marcel Rudolph, Jonathan Jenderny, Peter Awakowicz

Design and Preliminary Performance Assessment of a Porous Dielectric Barrier Discharge Reactor for Ammonia Synthesis
Visal Veng, Ephraim M Simasiku, Fanglin Che, HsiWu Wong, Maria Carreon, Juan P Treles

Effect of discharge parameters on the shock wave pretreatment of wood flour for enzymatic saccharification
Wataru Ueda, Fumiyoshi Tochikubo, Yusuke Nakagawa
Increased energy efficiency by optimization of the separation processes in waste incineration plants by means of Gemini
Daniel Szeremley

Decomposition of high-density toluene in water-vapor-mixed Nitrogen/Air using dielectric barrier discharge
Mao Xu, Yohei Fukuyama, Zhizhi Liu, Akitoshi Okino

Development of an experimental system for cell viability assays of yeasts using gas-temperature controllable plasma jets
Shinji Yoshimura, Yoko Otsubo, Akira Yamashita, Katsuki Johzuka, Takayoshi Tsutsumi, Kenji Ishikawa, Masaru Hori

New Plasma Device for Selective Generation of Dinitrogen Pentoxide from Air and Its Applications
Toshiro Kaneko, Shota Sasaki, Keisuke Takashima

Antitumor effects on mouse colorectal Colon-26 tumors in mice induced by normal tissue treatment using streamer discharge
Reima Jinno, Kengo Wada, Atsushi Komuro, Hideyuki Yanai, Ryo Ono

Comprehensive analysis of gene expression in PAL-treated glioblastoma cells
Hiromasa Tanaka, Masaaki Mizuno, Ayako Tanaka, Yuki Shibata, Kenji Ishikawa, Hiroki Kondo, Hiroshi Hashizume, Camelia Miron, Yasumasa Okazaki, Shinya Toyokuni, Kae Nakamura, Hiroaki Kajiyaama, Fumitaka Kikkawa, Masaru Hori

Enhancement of cytokine production and differentiation from sensitized EL4 T-cell by using atmospheric plasma irradiation
Nobuya Hayashi, Haruka Uematsu, Reona Aijima, Yoshio Yamashita

Role of short-lived nitrogen species generated at low-pressure RF plasma on the germination and seedling growth
Kazunori Koga, Pankaj Attri, Takamasa Okumura, Teruki Anan, Takumi Nakao, Kunihiro Kamataki, Naoto Yamashita, Naho Itagaki, Masaharu Shiratani

The effect of plasma-activated water in enhancing seeds germination, plant growth, and its use as a nitrogen source for algae growth
Vikas Rathore, Budhi S Tiwari, Sudhir Nema

Dependence of depth in liquid and gas-flow-rate ratio irradiated with nitric-oxide radicals on proliferation of fibroblast cells
Yasumasa Mori, Naoyuki Iwata, Tomiyasu Murata, Masaru Hori, Masafumi Ito

Application of heavy ion plasma to understand treatment mechanism of heavy ion cancer therapy
Kengo Moribayashi

Effect of alcohol addition on radical production
Hiroto Matsuura, Nguyen T Tran, Min Hu, Takumi Nakano

Changes in the permeation characteristics of ROS through biological membranes by discharge plasma-Induced electric field
Yuta Iwata, Ippei Yagi, Kosuke Tachibana, Akinori Oda, Takehiko Sato, Satoshi Uchida

Improvement of gene transfer efficiency for establishing cells with higher safety for gene therapy by using surface discharge
Kenjiro Ohnishi, Susumu Satoh, Satomi Ihara, Masafumi Jinno
Mechanism of macromolecular introduce into plant cells by plasma treatment.
Yuki Hamada, Ryosuke Ueshima, Yoshihisa Ikeda, Yugo Kido, Hidetaka Kaya, Masafumi Jinno

Effect of non-equilibrium atmospheric pressure plasma (APP) on adipocyte browning via modulations of TRPV1 and TRPA1 channels
Weijian Chen, Nyasha M Ruvarashe, Sara Fujii, Yuki Shirakawa, Shota Sasaki, Toshiro Kaneko, Makoto Kanzaki

Effect of plasma-generated gaseous nitrogen on plant growth
Taro Yamanashi, Shoki Takeshi, Shota Sasaki, Keisuke Takashima, Toshiro Kaneko, Yasuhiro Ishimaru, Nobuyuki Uozumi

Analysis of Intracellular Nucleic Acid Damage Induced by Cold Atmospheric Pressure Plasma Irradiation
Khulan Bidbayasakh, Sumire Arai, Atsushi Fukuda, Kazunori Takashima, Hiroyuki Kurita

Introduce gene into many cells by creepage discharge method
Yuta Kuroki, Susumu Satoh, Yoshihisa Ikeda, Hideki Motomura, Yugo Kido, Masafumi Jinno

Density profile control of a magnetically expanding plasma and its impact on a plasma thruster
Soya Sumikawa, Kazunori Takahashi

Forced van der Pol oscillator modeling of Hall-thruster's externally modulated breathing mode
Mark E Koepke

Size controlled synthesis of gold nanoparticle/carbon nanotube composites by atmospheric-pressure microplasma
Hiroyuki Yoshiki, Kenji Otosaka

Growth of metal-organic frameworks in solution influenced by laser-induced plasma at the early stage
Shota Chiba, Moriyuki Kanno, Hitoshi Muneoka, Tsuyohito Ito, Kazuo Terashima

A 2D Particle-In-Cell model of an Electron Cyclotron Resonance plasma for the purpose of lifetime tests
Efe Kemaneci, Denis Eremin, Andrei Yakunin, Ruben Snijdwinder, Mark van de Kerkhof, Ralf Peter Brinkmann

Treatment of Polyethylene Terephthalate using low-temperature atmospheric pressure helium plasma jet for improvement of adhesion
Tetsuji Shimizu, Junya Nonaka, Yuhei Ishihara, Hajime Sakakita

Effect of Biasing Voltage on Fiber-Form Nanostructured Tungsten Formation by Collisional Helium Arc Plasma Irradiation
Mitsuo Tajima, Yusuke Kikuchi, Tatsuya Aota, Shiro Maenaka, Kazunori Fujita, Shuichi Takamura

Dependence of ground-state NH radical fluorescence in atmospheric-pressure pulsed-arc plasma jet on operating gas composition
Noritake Yagawa, Ryuta Ichiki, Kosuke Tachibana, Takashi Furuki, Seiji Kanazawa
Low-temperature nitrocarburizing by pulsed-DC discharge of N₂-H₂-C₂H₂ for surface engineering of austenitic stainless steel
Jeet V Sah, Alphonsa Joseph, Ghanshyam Jhala, Subroto Mukherjee

Initial growth of graphene on copper foil in non-equilibrium atmospheric pressure remote plasma CVD
Akihiro Kajino, Yusuke Sakai, Keigo Takeda, Mineo Hiramatsu

Fabrication of Amorphous Carbon Nitride Films with High [N]/([N]+[C]) Ratios Using the Plasma Chemical Vapor Deposition of the Gas Mixture of C₂H₂ with N₂ : The Possibility to obtain the [N]/([N]+[C]) Ratio of >0.5
Haruhiko Ito, Yuga Satoh, Tsuneo Suzuki, Hidetoshi Saitoh

Machine learning-based prediction of process conditions in atmospheric-pressure microwave plasma reactor from plasma images
Cheolwoo Bong, Moon Soo Bak, Byeong Soo Kim, Dong Ju Kim

Hot carrier dynamics in LSPR tuneable plasmonic TiN at the interface of p and n type semiconductors
Santanu Podder, Arup R Pal

Separating Critical Materials using an Electromagnetic Centrifuge
Drue Hood-McFadden, Thomas C Underwood

**DT5**

**Women in Science**

Chair: Noriko Hosaka *(Tohoku University / National Institute of Technology, Sendai College, Japan)*

Co-sponsorship: Tohoku University Center for Gender Equality Promotion (TUMUG), Japan

Sunhee Lee
Aranka Derzsi
Douyan Wang
Airi Nakayama
Wednesday, October 5th, 2022

8:00AM - 9:30AM  Room: Tachibana

**DW1**  Green Plasma Science & Technology I

**Chair:** Gerard von Rooij  *(Maastricht University)*

**DW1.00001**  8:00AM - 8:30AM  
Nitrogen vibrational excitation in a non-self-sustained discharge plasma toward efficient nitrogen fixation processes  
*Invited Speaker:* Keisuke Takashima

**DW1.00002**  8:30AM - 8:45AM  
Selective Energy Input into Vibrational Energy of Nitrogen Molecule in Non-Self-Sustaining DC Discharge Plasma Source  
Yuki Kunishima, Keisuke Takashima, Toshiro Kaneko

**DW1.00003**  8:45AM - 9:00AM  
The energy cost of $N_2$ dissociation in a microwave discharge: combining modeling and experiments  
Margherita Altin, Pedro Viegas, Luca Vialetto, Alex W van de Steeg, Savino Longo, Gerard J Van Rooij, Paola Diomede

**DW1.00004**  9:00AM - 9:30AM  
Plasma assisted green ammonia production from water and nitrogen at atmospheric pressure  
*Invited Speaker:* Muzammil Iqbal

8:00AM - 9:30AM  Room: Hagi

**EW1**  Aerospace Plasmas

**Chair:** Mark Koepke  *(West Virginia University)*

**EW1.00001**  8:00AM - 8:15AM  
Regime Transitions of a Pulsed Nanosecond Discharge Driven by Dynamic Flame Instabilities  
Colin A Pavan, Santosh Shanbhogue, Drew Weibel, Ahmed F Ghoniem, Felipe G del Campo, Carmen Guerra-Garcia

**EW1.00002**  8:15AM - 8:30AM  
Global and PIC Modeling of Air-Breathing Plasma Engines  
Salman Sarwar, Igor D Kaganovich, Alexander V Khrabrov, Dmytro Sydorenko, Willia Vilafana

**EW1.00003**  8:30AM - 8:45AM  
Electroaerodynamic aircraft propulsion  
*Invited Speaker:* Steven Barrett

**EW1.00004**  8:45AM - 9:00AM  
Development of Fully Covered Plasma Actuator  
Mahoro Sakurai, Shintaro Sato, Naofumi Ohnishi

**EW1.00005**  9:00AM - 9:15AM  
Analysis of Particle Behavior Using Particle-in-cell Method in Discharge and Acceleration Processes of an Air-breathing Electrostatic Ramjet Engine  
Hoshiki Sato, Masayuki Takahashi
**FW1**  Modeling - Plasma Processing and Chemistry I  
**Chair:** Tomoyuki Murakami *(Seikei University)*

**FW1.00001**  
**8:00AM - 8:15AM**  
**8:00AM - 8:15AM**  
**Particle-in-Cell Modeling of Electron-Beam Generated Low Electron Temperature Plasma**  
Shahid Rauf, Dmytro Sydorenko, Sierra E Jubin, Willca Villafana, Stephane A Ethier, Alexander V Khrabrov, Igor D Kaganovich

**FW1.00002**  
**8:15AM - 8:30AM**  
**Characterization of a transformer-coupled remote plasma source chamber using a fluids-based, multiphysics plasma model**  
Scott Polak, Abhra Roy, Jun-Chieh Wang, Kailash Meher, Veera Venkata Rao

**FW1.00003**  
**8:30AM - 8:45AM**  
**Numerical investigation of vacuum ultraviolet emission in Ar-O₂ inductively coupled plasmas**  
Michel Osca Engelbrecht, Christopher P Ridgers, Andrew R Gibson

**FW1.00004**  
**8:45AM - 9:00AM**  
**Effects of amplitude modulation discharge on behavior of oxygen ions in Ar/O₂ capacitively coupled plasma studied by particle-in-cell/Monte Carlo collision model**  
Iori Nagao, Akihiro Yamamoto, Yuma Yamamoto, Kunihisi Kamataki, Takamasu Okumura, Naoto Yamashita, Naho Itagaki, Kazunori Koga, Masaharu Shiratani

**FW1.00005**  
**9:00AM - 9:15AM**  
**Plasma species and reaction dynamic-oriented global model studies for microscale argon discharges**  
De-Qi Wen, Peng Zhang, You-Nian Wang, John P. Verboncoeur

**FW1.00006**  
**9:15AM - 9:30AM**  
**Kinetics of non-equilibrium plasma in water vapor- and hydrocarbon-containing gaseous mixtures**  
Andrey Starikovskiy, Nickolay Aleksandrov, Eduard Bazelyan, Alexander Ponomarev

**GW1**  Electron and Photon Collisions - Ionization  
**Chair:** Sandra Quintanilla *(University of North Texas)*

**GW1.00001**  
**8:00AM - 8:30AM**  
**Absolute triple differential cross sections for low-energy electron impact ionization of biochemically relevant systems: Water, tetrahydrofuran, and hydrated tetrahydrofuran**  
*Invited Speaker* Xueguang Ren

**GW1.00002**  
**8:30AM - 9:00AM**  
**Progress in research using positronium negative ions**  
*Invited Speaker* Yasuyuki Nagashima

**GW1.00003**  
**9:00AM - 9:15AM**  
**Fixed-Nuclei Photon Scattering Cross Sections for H₂⁺**  
Adam J Singor, Igor Bray, Dmitry V Fursa

**GW1.00004**  
**9:15AM - 9:30AM**  
**Application of a complex Gaussian approach to study electron and photon impact ionization of molecules**  
Lorenzo Ugo Ancarani, Abdallah Ammar, Arnaud Leclerc
10:00AM - 11:00AM  Room: Tachibana

**DW2 Will Allis Prize Talk**

**Chair**: Julian Schulze *(Ruhr University Bochum, Germany)*

**DW2.00001**  10:00AM - 11:00AM

40 years with studies on radiofrequency plasma and related theory

*Plenary Speaker* Toshiaki Makabe

11:00AM - 12:00PM  Room: Tachibana

**DW3 Reactive Plasma Award Talk**

**Chair**: Fumiyoshi Tochikubo *(Tokyo Metropolitan University)*

**DW3.00001**  11:00AM - 11:30AM

Evolution of reactive plasma processes by radical control

*Plenary Speaker* Masaru Hori

12:00PM - 1:00PM  Room: Tachibana

**DW4 GEC Business Meeting**

**Chair**: Julian Schulze *(Ruhr University Bochum, Germany)*

**DW4.00001**  12:00PM - 1:00PM

GEC Business Meeting

Julian Schulze

2:30PM - 4:00PM  Room: Tachibana

**DW5 Green Plasma Science & Technology II**

**Chair**: Pankaj Attri *(Kyushu University)*

**DW5.00001**  2:30PM - 3:00PM

Ns Pulse and Hybrid Discharges for Plasma Chemistry and Plasma Catalysis Applications

*Invited Speaker* Igor V Adamovich

**DW5.00002**  3:00PM - 3:30PM

Solar-Plasma Reactors and Processes for Sustainable Chemical Synthesis

*Invited Speaker* Juan P Trelles

**DW5.00003**  3:30PM - 4:00PM

Gas Phase and Surface Infrared Studies of Plasma-catalysis

*Invited Speaker* Gottlieb Oehrlein
EW5  Plasma Surface Interaction II

Chair: Sumit Agarwal (Colorado School of Mines)

EW5.00001  A global plasma and surface model of a hydrogen/methane inductively coupled discharges for the purpose of minimal optical transmission loss in Extreme-Ultra-Violet lithography machines
Efe Kemaneci, Achim von Keudell, Andrei Yakunin, Andrey Nikipelov, Mark van de Kerkhof, Vadim Banine

EW5.00002  Implementation of Interatomic Potential for Charged Particle Collision
Yuto Toda, Arimichi Takayama, Atsushi M Ito

EW5.00003  Machine learning plasma-surface interactions: from low to high fidelity surrogate models
Invited Speaker: Jan Trieschmann

EW5.00004  Deep learning model for ion sputtering dynamics with molecular dynamics simulation
Byungjo Kim, Jinkyu Bae, Hyunhak Jeong, Suyoung Yoo, Sang Ki Nam

EW5.00005  Transfer Learning Model with Simulation and Experimental Data for Tool Virtualization in Poly-Si Etching
Takeshi Nakayama, Tsutomu Tetsuka, Tomohiro Sekine, Takeshi Ohmori

FW5  Atomic Layer Processes

Chair: Hiroki Kondo (Nagoya University, Japan)

FW5.00001  Optimisation and Understanding of Plasma Enhanced Atomic Layer Deposition Processes Using Quasi In-situ X-ray Photoelectron Spectroscopy
Invited Speaker: Robert O'Connor

FW5.00002  Damage mitigation in atomic layer etching of GaN by cyclic exposure of BCl₃ gas and F₂ added Ar plasma at high substrate temperature
Shohei Nakamura, Atsushi Tanide, Masafumi Kawagoe, Soichi Nadahara, Kenji Ishikawa, Osamu Oda, Masaru Hori

FW5.00003  Topographically-selective Atomic Layer Etching of SiO₂ using fluorine-containing plasma
Airah P Osonio, Takayoshi Tsutsumi, Bablu Mukherjee, Ranjit Borude, Nobuyoshi Kobayashi, Masaru Hori

FW5.00004  Plasma-assisted thermal-cyclic atomic-layer etching for selective removal of thin films
Invited Speaker: Kazunori Shinoda
**GW5**

**Heavy-Particle Collisions**

**Chair:** Masamitsu Hoshino *(Sophia University, Japan)*

GW5.00001  
*2:30PM - 2:45PM*

**Doubly differential ionization cross sections of proton-helium collisions**  
Kate Spicer, Corey Plowman, Shukhrat Alladustov, Ilkhom Abdurakhmanov, Igor Bray, Alisher Kadyrov

GW5.00002  
*2:45PM - 3:15PM*

**Transcending the impact parameter approach by means of a full quantum distorted wave description of ion-atom and ion-molecule collisions**  
[Invited Speaker] Raul Oscar Barrachina

GW5.00003  
*3:15PM - 3:45PM*

**Ion-induced differential ionisation of helium at intermediate energies**  
[Invited Speaker] Alisher Kadyrov

**4:30PM - 6:30PM**  
**Room:** Sakura 1

**HW6**

**Poster Session II**

4:30PM - 6:30PM

HW6.00001  
**Transport of electrons and propagation of negative streamers in CF₃I-SF₆ mixtures**  
Sasa Dujko, Jasmina Atić, Danko Bošnjaković, Ilija Simonović, Zoran Petrović

HW6.00002  
**Water you waiting for? - A Complete and Consistent Set of Electron-H₂O Collision Cross Sections for Plasma Modelling**  
Maik Budde, Tiago C Dias, Luca Vialetto, Nuno R Pinhao, Vasco Guerra, Tiago Silva

HW6.00003  
**Investigation of Negative Ion Mobility and Ion-Molecule Reactions in Atmospheric O₂ with a Small Amount of H₂O Based on Ion Mobility Measurement**  
Yui Okuyama, Hirotake Sugawara

HW6.00004  
**Elastic scattering of electrons on ions**  
Łukasz Kłosowski, Mariusz Piwinski

HW6.00005  
**Ionic Heating of N₂ and O₂ Gas Discharges**  
Brett Scheiner, Matthew M Hopkins, Mark C Zammit, Christopher H Moore, Eddy M Timmermans

HW6.00006  
**On the Formation of the Inverse EDF and the Absolute Negative Conductivity of Electrons in a Gas-Discharge Plasma**  
Anatoly Kudryavtsev, Chengxun Y Yuan, Eugene Bogdanov

HW6.00007  
**Three-dimensional kinetic simulations of the collective processes in beam-plasma interaction**  
Jian Chen, Haomin Sun, Andrew T Powis, Igor D Kaganovich

HW6.00008  
**Plasma Oscillations of Partially Magnetized ExB Discharge with Multiple Ion Species**  
Jinyoung Choi, Y. S. Hwang, Kyung-jae Chung, June Young Kim*
Threshold for Switching the Dynamic Pressure Dependence of Plasma Propagation Velocity
Kiyoyuki Yambe, Iwao Ohyama

**low frequency shocks with higher order effects in multicomponent plasma**
Rajneet Kaur, Geetika Slathia, N.S. Saini

Optimization of a negative oxygen ion beam
Jia Han, Philippe Guittienne, Alan Howling, Ivo Furno, Florent Plane, Anders Melbom, Johanna Marin Carbonne

Study of propagation of nonlinear shock waves in a multicomponent beam plasma
Geetika Slathia, N. S. Saini, Rajneet Kaur

**Collisional damping of surface ion-acoustic wave in semi-bounded plasmas**
Myoung-Jae Lee, Young-Dae Jung

Atomic oxygen interaction with surface materials in oxygen-containing plasmas
Pedro Viegas, Jorge Silveira, José Afonso, Ana Sofia Morillo-Candas, Luca Vialetto, Vasco Guerra

**Langmuir probe PIC dynamic simulation of collisional plasma**
Jakub Palacký, Štěpán Roučka

Advances in IEDF Measurements by Lock-in Detection
Christian Lütke Stetzkamp, Tsanko V Tsankov, Jonas Thiel, Nikita D Lepikhin, Uwe Czarnetzki

Optical emission spectroscopy of water vapor plasma in DC reactive magnetron sputtering of Zn
Allen Vincent B Catapang, Jose Gabriel F Abalos, James Edward II A Hernandez, Magdaleno Jr R Vasquez, Motoi Wada

Production of metastable-state argon ions in an electron cyclotron resonance plasma investigated by laser-induced fluorescence spectroscopy
Ryosuke Takahashi, Seiya Kito, Koji Eriguchi, Keiichiro Urabe

Lamb dip spectrum in cavity ringdown spectroscopy at Balmer-α line of atomic hydrogen: toward sheath electric field measurement in plasmas
Kimika Fushimi, Shusuke Nishiyama, Satoshi Tomioka, Koichi Sasaki

Two-dimensional images of line integrated electron density for X-pinch plasmas using dark-field Schlieren and interferogram
Seungmin Bong, H. J. Woo, Seunggi Ham, Jonghyeon Ryu, Kyoung-Jae Chung, Y. S. Hwang, Young-chul Ghim

Development of asymmetric wireless double probe for two-dimensional measurement
Taewung Hwang, Hyun-Dong Eo, Seong-Joon Park, Chin-Wook Chung

Energy distribution function of substrate incident negative ions in DC magnetron sputtering of metal-doped ZnO target measured by magnetized retarding field energy analyzer
Yoshinobu Matsuda, Shoma Uzunoe, Koki Watanabe
Development of sensitive electric-field measurement method via electric-field-induced coherent anti-Stokes Raman scattering
Takeru Koike, Hitoshi Muneoka, Kazuo Terashima, Tsuyohito Ito

Measurements of Spatial profiles of electron density and EEDF in a positive air-streamer discharge using laser Thomson scattering
Toma Miyazawa, Kentaro Tomita, Atsushi Komuro, Ryo Ono

Characterization of a low power 13.56 MHz RF atmospheric pressure plasma source for ion mobility spectroscopy
Keith Nealson N Penado, Allen Vincent B Catapang, James Edward II A Hernandez, Motoi Wada

Spectral investigations of discharges on complex structured cathodes
Roman W Schrittwieser, florin Enescu, Claudia T Konrad-Soare, Dan G Dimitriu, Codrina Ionita

Investigation on the harmonic currents in an asymmetric double Langmuir probe when AC voltage is applied
Hyundong Eo, Chin-Wook Chung, NaYeon Kim, JaeHwi Kim, HyoJun Choi, Jeonghyun Lee

An Improved Calculation Scheme of Electron Flow in Propagator Method for Solving the Boltzmann Equation
Tsukasa Kobayashi, Hirotake Sugawara, Kei Ikeda

Best impedance matching seeking of capacitively coupled plasmas by numerical simulations
Shimin Yu, Hao Wu, Zhijiang Wang, Wei Jiang, Ya Zhang

Azimuthal structures and turbulent transport in Penning discharge
Mikhail Tyushev, Mina Papahn Zadeh, Vedanth Sharma, Meghradj Sengupta, Yevgeny Raitses, Andrei Smolyakov

Numerical Simulation of a High-Repetition Nanosecond Pulsed Glow Nitrogen Discharge Plasma
Masayuki Iida, Yusuke Kikuchi

Modeling of a (sub-)atmospheric pressure ns-pulsed plasma jet
Jan Kuhfeld, Nikita D Lepikhin, Dirk Luggenhölscher, Uwe Czarnetzki, Zoltan Donko

Particle-In-Cell Simulation for Electron Velocity Dispersion in a Vacuum Tube for RF-DC Conversion
Maho Matsukura, Kohei Shimamura, Shigeru Yokota

Computational fluid dynamics modelling of a post-discharge in low-temperature argon plasma jets
Duarte Gonçalves, Stéphane Pasquiers, Joao Santos Sousa, Mário Lino da Silva, Luís L Alves

Surface Diffusion of Adatom on Tungsten Material Evaluated by Density Functional Theory Calculation
Arimichi Takayama, Atsushi M Ito

Evaluation of microwave propagation control by plasma-metamaterial composite using pattern comparison
Yota Noyori, Chui Inami, Alexandre Bambina, Shigeyuki Miyagi, Osamu Sakai
Numerical simulation of atmospheric-pressure helium DC glow discharge considering gas dynamics
Takaki Goto, Fumiyoshi Tochikubo, Yusuke Nakagawa

High density plasma activated by resonance properties of metamaterials and measurements of spatial distribution of plasma parameters
Takuya Mizutomi, Youhei Sanami, Shigeyuki Miyagi, Osamu Sakai

Electron drift velocity in acetylene and carbon dioxide determined from rf breakdown curves
Valeriy Lisovskiy, Stanislav Dudin, Pavlo Platonov, Vladimir Yegorenkov

Investigating the plasma dynamics of capacitive discharges driven by pulsed radio-frequency (RF) at low-pressure using particle-in-cell simulation
Sarveshwar Sharma, Soham Banerjee, Peng Tian, Jason Kenney, Shahid Rauf, Dmytro Sydorenko, Alexander Khrabrov, Igor D Kaganovich, Andrew T Powis, Wilica Villafana

The influence of transverse magnetic field on the properties of a 13.56 MHz cylindrical CCRF device
Swati Swati, Pawandeep Singh, Shantanu Karkari

Spatial distributions of hydrogen RF discharge plasma using a hollow cathode with double toroidal grooves combined with magnets
Yasunori Ohtsu, Hokuto Hiwatashi, Julian Schulze

Enhancement of photoresist ashing by controlling the impedance between bias electrode and ground in an inductively coupled plasma
You He, Chin-Wook Chung

Modulation of IEADs by different bias waveforms in an ICP reactor: A fast hybrid simulation approach
Ming-Liang Zhao, Jian-Kai Liu, Yu-Ru Zhang, You-Nian Wang

Plasma Density Enhancement of an Electron Cyclotron Resonance Plasma with Pulse-biased stage
Ikumi Hamaguchi, Kensuke Sasai, Haruka Suzuki, Hirotaka Toyoda

Phase-resolved electron characteristics in a pulse-modulated RF plasma jet
Sanghoo Park, Sung-Young Yoon

Synthesis of ZnO Tetrapods by Atmospheric Pressure Microwave Plasma Jet and Their Enhanced Photocatalytic Performance
Goo-Hwan Jeong, Seong-Gyu Heo, Jong-Min Seo

Quantification of molecular impurity ratio in high-pressure helium dielectric barrier discharge by laser absorption spectroscopy
Keiichiro Urabe, Minami Toyoda, Yasunori Matsuoka, Koji Eriguchi

TALIF Measurements of Spatial Distribution of Atomic Oxygen in Sub-Atmospheric Pressure Oxygen Discharges
Jion Oogaki, Yusuke Nakagawa, Fumiyoshi Tochikubo

Airflow impact on the collective behavior of microdischarges in DBD
Azamat I Ashirbek

Measurement of spatio-temporal behavior of surface electrical potential in a dielectric creeping discharge using Pockels effect
Mami Ogata, Akira Ando
Enhancing the Decomposition of Polluted Air Streams with Additional Metal Plates in a Multi-Electrode Twin Surface Dielectric Barrier Discharge System
Arisa Bodnar, Alexander Böddecker, Lars Schücke, Peter Awakowicz, Andrew R. Gibson

Calculation of SF₆ Gas Contamination Rate Caused by Gas Flow Velocity with Changing Function of Gas Bluster Angle in Double-Flow Gas Circuit Breaker
Wataru Fuse, Yuki Suzuki, Honoka Morishita, Masahiro Takagi, Yusuke Nemoto, Zhenwei Ren, Gustilo C Reggie, Toru Iwao

Analysis of Radiation Distribution Effected by Interelectrode Distance in Arc Lamps Using 3D Electromagnetic Three-Dimensional Electromagnetic Thermal Fluid Simulation
Kazumasa Minamisawa, Taisei Kudo, Hiroto Suzuki, Yuki Suzuki, Honoka Morishita, Masahiro Takagi, Zhenwei Ren, Yusuke Nemoto, Gustilo C Reggie, Toru Iwao

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Taisei Kudo, Kazumasa Minamisawa, Hiroto Suzuki, Yuki Suzuki, Yusuke Nemoto, Zhenwei Ren, Gustilo C Reggie, Toru Iwao

High Temperature Gas Reflection as Function of Distance between Arc and Wall in Sealed Arc Extinguishing Chamber
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High-viscous Ar plasma generation for plasma window application to electron beam welding in atmosphere
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Time Transition of Temperature Distribution in Cross Section of Contact Wire Contacted with Disconnection Arc on Its Surface
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Pulsed microwave plasma coupled with MoO$_3$-based heterogeneous catalysts for nitrogen fixation
Babak Sadeghi, Omid Samadi Bahnamiri, Marie-Paule Delplancke, Rony Snyders

Study of ozone oxidation of dimethyl sulfide and surface analysis of iodine catalysts
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Auto-methanation using plasma catalysis at room temperature
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Dependence of structure of carbon nanowalls anode electrode on property of lithium-ion batteries
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Polyaniline-Crystalline Rubrene nanosystem Synthesis by One-step Plasma Based Route: Application in Optoelectronics by Plasmonic Functionalization
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Inhibition of recurrence of mouse melanoma B16F10 tumors in mice using streamer discharge
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Molecular introduction into barley seed growth point using plasma
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Inactivation of Breast Cancer Cells using Nitrogen-Oxygen-Radical-Activated Lactate Ringer's Solution
Taiga Nishida, Naoyuki Iwata, Tomiyasu Murata, Hiromasa Tanaka, Masaru Hori, Masafumi Ito

Plant disease suppression through the activation of plant immunity using N$_2$O$_5$ gas generated from air by atmospheric-pressure plasma device
Daiki Tsukidate, Keisuke Takashima, Shota Sasaki, Shuhei Miyashita, Toshiro Kaneko, Hideki Takahashi, Sugihiro Ando

Degradation of lignin model compounds using ambient-air glow discharge
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Investigation on Reaction of Plasma-generated Dinitrogen Pentoxide Gas with Amino Acids
Yuto Oba, Shota Sasaki, Keisuke Takashima, Toshiro Kaneko

Viscous reduction of carboxymethyl cellulose treated with ambient-air glow discharge using peristaltic pumps
Kazuma Okamoto, Masahiro Maebayashi, Motoyuki Shimizu, Masashi Kato, Masaru Hori, Masafumi Ito
October 5th

HW6.00089 Calcium Based Systemic Activation of Plant Defense by Exposure to Plasma-generated \( \text{N}_2\text{O}_5 \)
Hiroto Iwamoto, Shota Sasaki, Keisuke Takashima, Atsushi Higashitani, Masatsugu Toyota, Toshiro Kaneko

HW6.00090 Growth promotion of Arabidopsis thaliana using oxygen-radical-treated \( \text{L-tryptophan solution} \)
Araki Shota, Tomomichi Ota, Hironaka Tsukagoshi, Naoyuki Iwata, Masaru Hori, Masafumi Ito

HW6.00091 Atmospheric pressure plasma generation at liquid interface for nitrogen fixation
Ritsuki Fujita, Keisuke Takashima, Toshiro Kaneko

HW6.00092 Development of Gene Transfection Method Using Combined Plasma and Pulsed Electric Field in Liquid
Ryosuke Honda, Shota Sasaki, Keisuke Takashima, Makoto Kanzaki, Takehiko Sato, Toshiro Kaneko

HW6.00093 Nitrogen fertilization effects of Plasma Generated Dinitrogen Pentoxide
Shouki Takeshi, Keisuke Takashima, Shota Sasaki, Atsushi Higashitani, Toshiro Kaneko

HW6.00094 Spatiotemporal distribution measurements of ozone in the gas and liquid phases generated by non-equilibrium atmospheric pressure radical source
Hiromi Alwi Yamamoto, Masaru Hori, Masafumi Ito

HW6.00095 Measurement of Reactive Species Produced by Discharge in Medium for Highly Efficient Gene Transfer
Kazuki Oikawa, Shota Sasaki, Ryosuke Honda, Toshiro Kaneko

HW6.00096 Numerical modeling on cell death induction by low-temperature plasma
Hayata Kanda, Tomoyuki Murakami

HW6.00097 Numerical modeling on the dynamic behavior of immune cells
Chihiro Takazawa, Tomoyuki Murakami

HW6.00098 Characterization and Comparison of Atmospheric Pressure Plasma Sources for Medical and Biological Applications
Sophia Gershman, Oliver Huang, Henry L Fetsch, Shurik Yatom, Yevgeny Raitses

HW6.00099 Effect of the magnetic field topology on azimuthal spoke oscillations in Hall thruster
Yevgeny Raitses, Andrei Smolyakov

HW6.00100 High-enthalpy portable RF plasmatron for nonequilibrium flow analysis
Andrey Starikovskiy

HW6.00101 Measurement of thrust induced by a water-fueled magnetron sputtering source
Sota Shimizu, Kazunori Takahashi

HW6.00102 Numerical Simulations of the Plasma Dynamics in an ECR Thruster Experiment
Subhasish Bag, Vikrant Saxena

HW6.00103 Plasma-CVD Enabling Seeded Growth of Nanocarbons from a Single Carbon-Nanoring
Rikizo Hatakeyama, Hiroshi Ueno, Eunsang Kwon, Fuminori Misaizu
Effects of minor addition of \( \text{N}_2/\text{O}_2 \) impurities on silicon nanostructure formation behavior in hydrogen plasma process

Toshimitsu Nomura, Naoki Tamura, Ken Sakamoto, Hiroaki Kakiuchi, Hiromasa Ohmi

Investigation of optical property of tungsten-doped zinc oxide films deposited by sputtering

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Elucidation of Ignition-Area Extension of Barrier Discharge under High Temperature and its Application to Precise Control of Nitridable Area

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Synthesis of nanographene-Si composite material using gas-liquid interface plasma

Kazushi Masuda, Keigo Takeda, Mineo Hiramatsu

Comparative Study on Formation of Boride Thin Films Deposited by Co-sputtering with Molybdenum

Kazuki Nashimoto, Yoshiko Horiguchi, Akichika Kumatani, Takeru Okada

Infrared absorption spectroscopy of astronomically relevant reddish substances produced by cryoplasma irradiation of ice surface

Shota Ide, Phua Yu Yu, Noritaka Sakakibara, Hitoshi Muneoka, Tsuyohito Ito, Kazuo Terashima

Plasma Carburizing and Nitrocarburizing for Composite Austenitic Stainless Steel with Tungsten Carbide Fabricated by LMD

Shinichiro Adachi, Takuto Yamaguchi, Keigo Tanaka, Nobuhiro Ueda

Relationship between vibrational temperature and \( \text{CO}_2 \) methanation with plasma catalysis

Susumu Toko, Taiki Hasegawa, Takamasa Okumura, Kunihiro Kamataki, Kosuke Takenaka, Kazunori Koga, Masaharu Shiratani, Yuichi Setsuhara

Plasma application to the fabrication of solid photocatalysts

Muneaki Yamamoto, Tetsuo Tanabe

Extraordinary field emission of diamond film developed by microwave plasma jet chemical vapor deposition

Chun-Yu Lin, Jing-Shyang Yen, Kaviya Aranganadin, Chi-Wen Liu, Chii-Ruey Lin, Jwo-Shiun Sun, Hua-Yi Hsu, Ming-Chieh Lin
Thursday, October 6th, 2022

8:00AM - 9:30AM  Room: Tachibana

DR1  Model Validation & Verification

Chair: Kallol Bera (Applied Materials, Inc.)

DR1.00001  8:00AM - 8:15AM
Simulation of an inductively coupled RF discharge using fluid moment models
Alejandro Alvarez Laguna, Adnan Mansour, Yusuke Yamashita, Kentaro Hara, Benjamin Esteves, Anne Bourdon, Pascal Chabert

DR1.00002  8:15AM - 8:30AM
Coupling Finite Element and Finite Volume within the Plasma Fluid Code: Zapdos
Corey Dechant, Casey T Icenhour, Grayson Gall, Shane Keniley, Alexander D Lindsay, Davide Curreli, Steven Shannon

DR1.00003  8:30AM - 8:45AM
Important role of excited state atoms in low pressure capacitive rf argon discharges
De-Qi Wen, Janez Krek, Jon T Gudmundsson, Emi Kawamura, Michael A Lieberman, Peng Zhang, John P Verboncoeur

DR1.00004  8:45AM - 9:00AM
Space-charge limited current flow: An analytical verification solution for kinetic and fluid simulations
Trevor Lafleur

DR1.00005  9:00AM - 9:15AM
Benchmarking between fluid and global models for low-pressure oxygen DC glow discharges
Pedro Viegas, Dmitry Voloshin, Tiago C Dias, Chloé Fromentin, Tiago Silva, Alexander Chukalovsky, Yuri Mankelevich, Tatyana Rakhimova, Vasco Guerra

DR1.00006  9:15AM - 9:30AM
Simulation benchmarks of the XPDP1 PIC-MCC code on capacitively coupled plasma helium discharges
Guoning Wang, Kaviya Aranganadin, Hua-Yi Hsu, John P. Verboncoeur, Ming-Chieh Lin

8:00AM - 9:30AM  Room: Hagi

ER1  Thermal and Arc Plasma II

Chair: Masaya Shigeta (Tohoku University)

ER1.00001  8:00AM - 8:15AM
Numerical Simulation of Time Evolution of Cathode Sheath Voltage Contributing to Evaporation of Fe Cathode in Vacuum Arc
Masahiro Takagi, Hiroto Suzuki, Honoka Morishita, Yuki Suzuki, Yusuke Nemoto, Zhenwei Ren, Reggie C Gustilo, Toru Iwao

ER1.00002  8:15AM - 8:30AM
Investigation of the electro-thermal dynamics of a low pressure DC plasma spray torch
Ram K Mohanta
Generation of stationary high-density cascade arc plasmas and its application to plasma windows
Invited Speaker Shinichi Namba

Arc resistance increasing during DC interruption using SiO$_2$/Si$_3$N$_4$ mixture powder as arc interruption medium
Naoto Kodama, Yasunobu Yokomizu, Waku Takenaka, Kaito Hasegawa

Bidirectional vortex stabilization of a supersonic ICP torch
Ashley Pascale, Trevor Lafleur, Cormac Corr

**FR1** Magnetron Plasmas

**Chair:** Yevgeny Raitses (Princeton Plasma Physics Laboratory)

**FR1.00001**
Electron power absorption in magnetron sputtering discharges
Invited Speaker Bocong Zheng

**FR1.00002**
Modeling of high power impulse magnetron sputtering (HiPIMS) discharges with graphite target
Henrik Eliasson, Martin Rudolph, Kateryna Barynova, Nils Brenning, Michael A Raadu, Hamidreza Hajihoseini, Tiberiu M Minea, Daniel Lundin, Jon T Gudmundsson

**FR1.00003**
Study of ac magnetically enhanced capacitively coupled plasma argon discharges using particle-in-cell simulations
Kaviya Aranganadin, Guoning Wang, Hua-Yi Hsu, John P. Verboncoeur, Ming-Chieh Lin

**FR1.00004**
Electron energization via E×B drift generation in rf magnetrons operated at a low pressure
Denis Eremin, Birk Berger, Jens Kallähn, Kevin Köhn, Dennis Krueger, Liang Xu, Peter Awakowicz, Julian Schulze, Ralf Peter Brinkmann

**FR1.00005**
Formation and sustainment of spokes in planar dc magnetrons
Denis Eremin, Liang Xu, Jens Kallaehn, Kevin Koehn, Dennis Krueger, Ralf Peter Brinkmann

**GR1** Plasma Propulsion I

**Chair:** Kazuma Emoto (Yokohama National University)

**GR1.00001**
Plasma Creation and Evaluation of Flight Performance on Multi-parabola Laser Thruster Propelled by Repetitive Pulses
Yuya Hayadate, Masayuki Takahashi, Koichi Mori

**GR1.00002**
Effect of Flow Velocity on Generation Conditions of Argon LSP using Diode Laser
Seiichiro Takano, Kota Okamoto, Yamato Homme, Makoto Matsui
Electron properties comparison of microwave cathode and hollow cathode by incoherent laser Thomson scattering
Takuya Koiso, Yusuke Yamashita, Ryudo Tsukizaki, Kazutaka Nishiyama

Beam Focusing Performance of Microwave-Driven In-Tube Accelerator
Toshiki Yamada, Masayuki Takahashi, Kohei Shimamura

Investigation of Generating Conditions of Fiber Laser-Sustained Plasma using Argon
Kota Okamoto, Seiichiro Takano, Yamato Homme, Makoto Matsui

Numerical modeling and evaluation of 8.2-GHz microwave electrothermal thruster (MET) performance using atomic and molecular gases
Juyeon Lee, Laxminarayan L Raja

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**IR1**

**Plasma Liquid Interaction I**

**Chair:** Wonho Choe *(KAIST, Korea)*

**IR1.00001**

Analysis of Key Factor of Higher Hydrogen Peroxide Production Performance of Diaphragm Discharge Plasma Based on Time-Resolved Observation
Taichi Watanabe, Shungo Zen, Nozomi Takeuchi

**IR1.00002**

Analysis of OH Emission Spectra Using Deep Learning
Shuhei Takamatsu, Kenichi Inoue, Hitoshi Muneoka, Tsuyoshi Ito, Kazuo Terashima

**IR1.00003**

Ultrafast x-ray phase contrast imaging of pulsed plasma initiation in water and hydrocarbons
Mirza R Akhter, Christopher S Campbell, Kamel Fezzaa, Samuel J Clark, Zhehui Wang, David Staack

**IR1.00004**

Electrical Properties of Plasma Formation in Organic Solution and the Structure of the Resulting Carbon Material
Niu Jiangqi, Chayanaphat Chokradjaroen, Nagahiro Saito

**IR1.00005**

Imaging Electric Breakdown over the Rise and Fall of ns Pulses in Water and Free-flowing Bubbles
Nicholas L Sponsel, Sophia Gersham, Maria J Herrera Quesada, Jacob T Mast, Katharina Stapelmann

**IR1.00006**

Plasmas-in-liquids heating in a mm-sized bubbles multiphase thermochemical reactor
Ahmed M Hala
**DR2**  
**Plasma Surface Interaction III**  
**Chair:** Shinya Kumagai *(Meijo University)*

**DR2.00001**  
**10:00AM - 10:30AM**  
The interplay of surface processes and negative ions in radio-frequency driven oxygen and hydrogen plasmas  
*Invited Speaker* Timo Gans

**DR2.00002**  
**10:30AM - 10:45AM**  
Investigation of oxygen permeation enhancement with He/O\textsubscript{2} plasma and SOEC interaction  
Richard van de Sanden, Xingyu Chen, Floran Peeters, Felix Smits, Waldo Bongers

**DR2.00003**  
**10:45AM - 11:00AM**  
Propagation of Ionization Waves on Dielectric Substrates in Atmospheric Pressure Plasma Jets (APPJ)  
Joshua Morsell, Ksenia Konina, Mark J Kushner, Steven Shannon

**DR2.00004**  
**11:00AM - 11:15AM**  
An in-situ technique for the estimation of surface coefficients based on characteristics in the ion energy distribution of capacitively coupled plasmas  
Christian Schulze, Zoltan Donko, Jan Benedikt

**DR2.00005**  
**11:15AM - 11:30AM**  
Hydrogen accumulation and surface bubbling of liquidized Sn-Bi-Li-Er alloy under hydrogen plasma exposure  
Kota Tamura, Haruka Suzuki, Junichi Miyazawa, Suguru Masuzaki, Masayuki Tokitani, Hirotaka Toyoda

**DR2.00006**  
**11:30AM - 12:00PM**  
Plasmonic plasma process for low temperature growth of high-quality ultra-thin dielectric films  
Takeshi Kitajima, Kazuyasu Watanabe, Mahiko Miyake, Toshiki Nakano

**ER2**  
**Plasma Etching**  
**Chair:** Hirotaka Toyoda *(Nagoya University)*

**ER2.00001**  
**10:00AM - 10:15AM**  
Low Bias Frequencies for High Aspect Ratio Plasma Etching  
Evan Litch, Hyunjae Lee, Sang Ki Nam, Mark J Kushner

**ER2.00002**  
**10:15AM - 10:30AM**  
Effects of the focus ring on uniformity in capacitively coupled plasma etching reactors  
Fang-Fang Ma, Quan-Zhi Zhang, Jing-Yu Sun, You-Nian Wang

**ER2.00003**  
**10:30AM - 11:00AM**  
Development of validated fluorocarbon plasma chemistry for multi-dimensional modeling of semiconductor plasma etch processes  
*Invited Speaker* Dmitry Levko
Development of virtual metrology using plasma information to predict mask shape in HAR etch process
Jaemin Song, Namjae Bae, Jihoon Park, Taejun Park, Ji-Won Kwon, Sangwon Ryu, Ingyu Lee, Gon-Ho Kim

Electron-assisted photoresist etching in an inductively coupled oxygen plasma via low-energy electron beam
Jiwon Jung, Chin-Wook Chung

Ar plasma nanostructuring of PTFE for the wettability transition from hydrophobic to superhydrophobic and hydrophilic surfaces
Vivek Pachchigar, Umesh K Gaur, Sooraj K. P., Sukri H. Hans, Mukesh Ranjan

Achieving selective etching of SiN and SiO₂ over amorphous carbon during CF₄/H₂ by controlling substrate temperature
Shih-Nan Hsiao, Thi-Thuy-Nga Nguyen, Takayoshi Tsutsumi, Kenji Ishikawa, Makoto Sekine, Masaru Hori

Low Pressure Plasmas
Chair: Kazunori Takahashi (Tohoku University)
**GR2**  
**Atomic and Molecular Physics**  
Chair: Alisher Kadyrov *(Curtin University, Australia)*  

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<td>Positron binding in molecules</td>
<td>Invited Speaker Masanori Tachikawa</td>
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<td>Calculations of positron scattering from atomic Carbon</td>
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<td>Low-Temperature Lanthanide Spectroscopy Applied to Neutron Star Mergers</td>
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**IR2**  
**Plasma Liquid Interaction II**  
Chair: Nozomi Takeuchi *(Tokyo Institute of Technology)*  

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<td>Naoki Shirai, Yuto Takamura, Takuma Kaneko, Koichi Sasaki</td>
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<td>Atmospheric Pressure Plasma in Contact with High-speed Water Flow for Evaluating Liquid-phase OH Transport</td>
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<td>Yoshinobu Inagaki, Koichi Sasaki</td>
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<td>Plasma self-organization in DC discharges with liquid anode: effect of electrode separation, liquid type and working gas</td>
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<td>Plasma Discharge Morphology in a Thin Stream Packed Bed DBD with Turbulence Effects</td>
<td>Roxanne Z Pinsky, John E Foster</td>
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**12:00PM - 1:30PM**  
**Room:** Sakura 1

### HR3  
**Student Networking**

**Chair:** Takeru Okada *(Tohoku University)*

HR3.00001  
**Student Networking**  
Takeru Okada, Hidemasa Takana

**1:30PM - 3:30PM**  
**Room:** Tachibana

### DR4  
**Plasma Propulsion II**

**Chair:** Naofumi Ohnishi *(Tohoku University)*

DR4.00001  
**Data-Driven Estimation of Electrical Facility Effects on Anomalous Electron Transport in Hall Effect Thrusters**  
Daniel E Troyetsky, Christine Greve, Sedina Tsikata, Kentaro Hara

DR4.00002  
**Implementation of a xenon collisional radiative model with neural network for non-invasive determination of plasma parameters in Hall effect thrusters**  
Tarek Ben Slimane, Alexandre Leduc, Loic Schiesko, Anne Bourdon, Pascal Chabert

DR4.00003  
**Radiofrequency plasma thrusters and related studies**  
[Invited Speaker] Christine Charles

DR4.00004  
**Effect of electron-neutral collisions on plasma transport enhancement by kinetic instability in a Hall-effect thruster**  
Naoki Tsunezawa, Masayuki Takahashi

DR4.00005  
**Investigation of cross-field electron transport in Hall Effect Thrusters using 1D axial PIC/MCC simulation**  
Yusuke Yamashita, Kentaro Hara

DR4.00006  
**Facility Effects Associated with Ion Beam Neutralization**  
Tyler Topham, John E Foster

DR4.00007  
**Investigation of ion back flow by Hybrid-PIC simulation considering experimental current density distribution at the conductive surface for microwave discharge ion thruster**  
Ayumu Nono, Yusuke Yamashita, Ryudo Tsukizaki, Kazutaka Nishiyama
ER4

**Capacitively Coupled Plasmas II**

**Chair:** Li Wang *(Ruhr University Bochum, Germany)*

---

**ER4.00001**
1:30PM - 1:45PM

**Experimental and computational study of the electron power absorption in capacitively coupled neon-oxygen plasmas**

Aranka Derzsi, Peter Hartmann, Mate Vass, Benedek Horvath, Marton Gyulai, Ihor Korolov, Julian Schulze, Zoltan Donko

---

**ER4.00002**
1:45PM - 2:00PM

**Effect of voltage waveform tailoring and an additional 60 MHz frequency on the ion flux energy distribution function in a low pressure capacitively coupled radio frequency plasma**

Gerrit Hübner, Ihor Korolov, Stefan Ries, Soheil Karimi Aghda, Jochen M Schneider, Jan Trieschmann, Thomas Mussenbrock, Julian Schulze, Peter Awakowicz, Tobias Gergs

---

**ER4.00003**
2:00PM - 2:15PM

**Stratification of Capacitively Coupled Plasma in Noble Gases**

Vladimir I Kolobov, Robert Arslanbekov

---

**ER4.00004**
2:15PM - 2:30PM

**The mechanism of frequency coupling in low pressure dual-frequency capacitively coupled plasmas revisited based on the Boltzmann term analysis**

Máté Vass, Li Wang, Sebastian Wilczek, Trevor Lafleur, Ralf Peter Brinkmann, Zoltan Donko, Julian Schulze

---

**ER4.00005**
2:30PM - 2:45PM

**Pressure dependence on spatio-temporal distribution of excitation rates of Ar 2p, and Ne 2p, in Ar and Ar/Ne capacitively coupled plasmas**

Michihiro Otaka, Toshiaki Arima, Jian-syun Lai, Kizuki Ikeda, Kunihiro Kamataki, Naoto Yamashita, Takamasa Okumura, Naho Itagaki, Kazunori Koga, Masaharu Shiratani

---

**ER4.00006**
2:45PM - 3:00PM

**Generation of surface modes and plasma uniformity in VHF CCP reactors studied with a EM PIC code**

Denis Eremin, Efe Kemaneci, Masaaki Matsukuma, Thomas Mussenbrock, Ralf Peter Brinkmann

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**ER4.00007**
3:00PM - 3:15PM

**Current and voltage (I-V) characteristics of intermediate pressure plasma**

Shadhin Hussain, Matthew Goeckner

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**ER4.00008**
3:15PM - 3:30PM

**Wave Characteristics in E×B Source: Pressure-Dependent Evolution of Plasma Oscillation Phenomena**

June Young Kim, Cheongbin Cheon, Jinyoung Choi, Y. S. Hwang, Kyoung-Jae Chung, Hae June Lee

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**FR4**

**Gas Phase Plasma Chemistry**

**Chair:** Hiroshi Akatsuka *(Tokyo Institute of Technology)*

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**FR4.00001**
1:30PM - 2:00PM

**Control of reactive species formation in atmospheric pressure plasmas using pulsed power deposition**

*Invited Speaker* Andrew R Gibson
FR4.00002
2:00PM - 2:30PM
The Promise of Data-Driven Methods for Characterization, Diagnostics and Control of Plasma Processing of Complex Surfaces
Invited Speaker: Ali Mesbah

FR4.00003
2:00PM - 2:45PM
Controlling O₃ production in low-temperature He+O₂ atmospheric-pressure plasmas using tailored voltage waveforms
Ben Harris, Erik Wagenaars

FR4.00004
2:45PM - 3:00PM
Selectivity Control in an Atmospheric Pressure Plasma Source for Point-of-Use Water Disinfection
Chelsea M Tischler, Roxanne Z Pinsky, John E Foster

FR4.00005
3:00PM - 3:15PM
Plasma-assisted Deflagration to Detonation Transition of Dimethyl Ether in a Microchannel
Madeline Vorenkamp, Scott Steinmetz, Timothy Chen, Andrey Starikovskiy, Christopher J Kliwer, Yiguang Ju

1:30PM - 3:30PM
Room: Shirakashi 2

GR4
Modeling - New Algorithms and Machine Learning
Chair: Satoshi Hamaguchi (Osaka University)

GR4.00001
1:30PM - 1:45PM
High-order moment closure for partially-ionized plasmas
Alejandro Alvarez Laguna, Kentaro Hara

GR4.00002
1:45PM - 2:00PM
Development of a 10-Moment Multi-Fluid Model for Low-Temperature Magnetized Plasmas
Derek Kuldinow, Kentaro Hara

GR4.00003
2:00PM - 2:15PM
Recent progress on asymptotic preserving finite-volume methods for fluid models in low-temperature partially-magnetized plasma applications involving instabilities.
Louis Reboul, Alejandro Alvarez Laguna, Anne Bourdon, Marc Massot

GR4.00004
2:15PM - 2:30PM
Plasma Chamber Design Method Combined with Plasma Deep Learning Model and Optimization Algorithm
JungMin Ko, Jinkyu Bae, Byungjo Kim, Hyunjae Lee, Younghyun Jo, Sangki Nam

GR4.00005
2:30PM - 2:45PM
Exploring Physics Informed Neural Networks for Solving an Anisotropic Diffusion Equation Arising in Plasma Kinetics
Vladimir I Kolobov, Lucius Schoenbaum

GR4.00006
2:45PM - 3:00PM
An Open Source, Three-Dimensional, Kinetic Code for Modelling Low-Temperature Plasmas on Modern Supercomputing Architectures
Andrew T Powis, Johan A Carlsson, Stephane A Ethier, Alexander Khaneles, Grant Johnson, Maxwell Rosen, Igor D Kaganovich

GR4.00007
3:00PM - 3:15PM
N-body charged particle simulation in two- and three-dimensional systems
Yasutaro Nishimura

GR4.00008
3:15PM - 3:30PM
The LisbOn Kinetics Monte Carlo solver
Tiago C C Dias, Antonio Tejero-del-Caz, Luis L Alves, Carlos D Pintassilgo, Vasco Guerra
**IR4  Plasma Liquid Interaction III**

**Chair:** Naoki Shirai *(Hokkaido University)*

**IR4.00001**  
1:30PM - 2:00PM  
Generating enhanced chemical reactions inside highly charged microscale droplets for remote delivery of reactive radicals and high purity nanomaterials  
*Invited Speaker*: Paul Maguire

**IR4.00002**  
2:00PM - 2:15PM  
Analyses of chemical reactions in plasma generated within humid oxygen bubbles with highly concentrated ozone  
Nozomi Takeuchi, Ryota Kazama, Taichi Watanabe, Shungo Zen

**IR4.00003**  
2:15PM - 2:30PM  
Measurement of Radicals Generated by Plasma in Contact with Dilute Sulfuric Acid by Using Electron Spin Resonance (ESR) Method  
Kosuke Tachibana, Nao Murata, Kaede Saito, Seiji Kanazawa, Katsuyuki Takahashi, Junko Hieda, Nozomi Takeuchi, Oi Lun Li

**IR4.00004**  
2:30PM - 2:45PM  
Creation of reaction species by an atmospheric pressure plasma jet when treating liquids  
Nikola Skoro, Olivera Jovanović, Andelija Petrović, Gordana Malović, Nevena Puac

**IR4.00005**  
2:45PM - 3:00PM  
Numerical simulation of chemical reactions in PBS-like solution exposed to atmospheric-pressure plasmas  
Enggar Alfianto, Kazumasa Ikuse, Zoltan Donko, Satoshi Hamaguchi

**IR4.00006**  
3:00PM - 3:15PM  
Experimental study of the plasma chemistry in atmospheric pressure plasma contacts with dilute sulfuric acid  
Siqi Deng, Nozomi Takeuchi, Junko Hieda, Katsuyuki Takahashi, Kosuke Tachibana, Oi Lun Li

**IR4.00007**  
3:15PM - 3:30PM  
Polymerization of EDOT on H₂O by DBD treatment  
Tomohiro Okamoto, Tatsuru Shirafuji, Jun-Seok Oh

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**DR5  Optical Diagnostics**

**Chair:** Holger Kersten *(Kiel University, Germany)*

**DR5.00001**  
4:00PM - 4:15PM  
Coupled Electrical and Optical Characterization of Electrostatic Discharges  
Claudia A Schrama, Sarah Hinnegan, Jonathan Barolak, Daniel Adams, Alex Wilhelm, Charles G Durfee

**DR5.00002**  
4:15PM - 4:30PM  
Locally-resolved temperature and electron number density measurements in the VKI inductively-coupled plasma wind tunnel  
Andrea Fagnani, Diana Luis, Damien Le Quang, Alan Viladegut, Bernd Helber, Olivier Chazot

**DR5.00003**  
4:30PM - 5:00PM  
Optical Emission Spectroscopy Measurement for Plasma Parameter Identification — from Kinetic Modeling to Data Science  
*Invited Speaker*: Hiroshi Akatsuka
Spatially and temporally resolved Optical Emission Spectroscopy of a nanosecond Atmospheric Pressure Plasma Jet
Nikita D Lepikhin, Jan Kuhfeld, Zoltán Donkó, Dirk Luggenhölscher, Uwe Czarnetzki

Diagnostics of Electron Density and Temperature of Atmospheric Pressure Helium Plasma with Revise Collisional-Radiative Model Includes Atomic Collision Processes
Keren Lin, Atsushi Nezu, Hiroshi Akatsuka

Spectroscopic characterization of a He/N₂ dielectric barrier discharge for determination of plasma parameters and estimation of impurity content
Niklas Nawrath, Gregor Welling, Nikita Bibinov, Peter Awakowicz, Andrew R Gibson

Imaging of Hydrogen Peroxide and Methyl in Nanosecond Pulsed Plasmas by Photofragmentation Laser-Induced Fluorescence
Dirk van den Bekerom, Caleb Richards, Malik M Tahiyat, Erxiong Huang, Igor V Adamovich, Tanvir I Farouk, Jonathan H Frank

Jets and Gliding Arcs

Chair: Zuka-ul-Islam Mujahid (Ruhr University Bochum, Germany)

N₂ vibrational kinetics in near atmospheric pressure nanosecond-pulsed plasma jet: simulations validated against measurements
Youfan He, Jan Kuhfeld, Nikita D Lepikhin, Dirk Luggenhölscher, Uwe Czarnetzki, Vasco Guerra, Ralf Peter Brinkmann, Andrew R Gibson, Efe Kemaneci

Optical diagnostic and reactive species characterization of atmospheric pressure argon plasma jet under various operating conditions
Psnsr R Srikar, Shaik Mahmad Allabakshi, Shihabudheen M Maliyekkal, Reetesh K Gangwar

Investigation of multi-periodic self-trigger plasma in a AC-driven Atmospheric Pressure Plasma Jet
Hang Yang, Antoine Rousseau

O₂ influence on the spatio-temporal density of Ar(1s₅) in micro-plasma jets with varying shieldings
Duarte Goncalves, Gérard Bauville, Pascal Jeanney, Luis L Alves, Mário Lino da Silva, João Santos Sousa, Stéphane Pasquiers

Influence of Voltage Pulse Off-Time on the Discharge Characteristics in Surface-Launched Plasma Bullets
Koki Sasaki, Atsumu Matsumoto, Jun-Seok Oh, Tatsuru Shirafuji

Experiments and numerical simulation on the plasma bullets launched vertically from a dielectric surface
Tatsuru Shirafuji, Jun-Seok Oh

Properties of an atmospheric He-based nanosecond jet discharge
Nikolay Britun, Peterraj Dennis Christy, Vladislav Gamaleev, Shih-Nan Hsiao, Masaru Hori
Micro electric fields detection improvements: Steps toward tailoring cold atmospheric pressure plasma
Stephan Reuter

4:00PM - 6:00PM Room: Shirakashi 1

FR5 Modeling - Plasma Processing and Chemistry II
Chair: Margherita Altin (Maastricht University)

FR5.00001 4:00PM - 4:15PM Two and Three Dimensional Inductive Coupled Plasma Remote Source Modeling with Single and Gas mixtures with Experimental Validation
Abhra Roy, Shawming Ma, Luke Zhang, Yun Yang

FR5.00002 4:15PM - 4:30PM Kinetic Study of Effects of RF Pulsing in Dual Frequency Capacitively Coupled Plasma
Abhishek Verma, Kallol Bera, Shahid Rauf, Dmytro Sydorenko, Igor D Kaganovich, Willca Villafana

FR5.00003 4:30PM - 5:00PM Insights from Modeling Low-Pressure High-Voltage Dual-Frequency Capacitively Coupled Plasmas
Invited Speaker: Amanda M Lietz

FR5.00004 5:00PM - 5:15PM Particle-in-Cell Techniques for Simulations of Magnetron Sputtering
Joseph G Theis, Gregory R Werner, Thomas G Jenkins, Daniel Main, John R Cary

FR5.00005 5:15PM - 5:30PM Hybrid Plasma Modeling of Low-Pressure Oxygen Plasma in Capacitively Coupled Plasma Reactors
Sathya S Ganta, Han Luo, Shahid Rauf, Kallol Bera

FR5.00006 5:30PM - 5:45PM Hybrid Plasma Simulation of RF Hollow Cathode Discharge at Moderate Pressure
Kallol Bera, Abhishek Verma, Sathya S Ganta, Shahid Rauf, Ken Collins

FR5.00007 5:45PM - 6:00PM Modelling of a Toroidal Wave Heated Plasma Source for the Remote Generation of Neutral Radicals
Scott J Doyle, Amanda M Larson, Guy Rosenzweig, Keith Koai, Mark J Kushner

4:00PM - 6:00PM Room: Shirakashi 2

GR5 Diamond Like Carbon Deposition
Chair: Kunihiro Kamatakai (Kyushu University)

GR5.00001 4:30PM - 4:45PM Effect of pulse width on deposition of diamond-like carbon on high power pulsed magnetron sputtering
Takayuki Ohta, Jo Matsushima, Sota Okumura, Akinori Oda, Hiroyuki Kousaka

GR5.00002 4:45PM - 5:00PM Gas phase diagnostics on high power pulsed magnetron sputtering using double-pulse target-voltage
Hiro Kunieda, Akinori Oda, Kousaka Hiroyuki, Ohta Takayuki
GR5.00003  4:30PM - 4:45PM
Effect of xenon gas on deposition of diamond-like carbon film using high power pulsed magnetron sputtering
Keita Takeda, Akinori Oda, Hiroyuki Kousaka, Ohta Takayuki

GR5.00004  4:45PM - 5:00PM
Deposition of hydrogenated diamond-like carbon using high power impulse magnetron sputtering
Sota Okumura, Akinori Oda, Hiroyuki Kousaka, Takayuki Ohta

GR5.00005  5:00PM - 5:15PM
Optimization of hexagonal boron nitride deposition by micro hollow cathode discharge
Claudia Lazzaroni, Alice Remigy, Manoel Jacquemin, Vianney Mille, Ovidiu Brinza, Xavier Aubert, Swaminathan Prasanna, Kristaq Gazeli, Guillaume Lombardi

GR5.00006  5:15PM - 5:30PM
Evaluation of carbon bonding of DLC films using HF-HiPIMS method by Raman spectroscopy
Hiroyuki Fukue, Tatsuuki Nakatani, Tadayuki Okano, Masahide Kuroiwa, Shinsuke Kunitzugu, Hiroki Oota, Ken Yonezawa

GR5.00007  5:30PM - 5:45PM
Single Crystal Diamond Growth by High-Flow Ar/CH₄/H₂ Modulated Induction Meso-Plasmas at Reduced Pressures
Taizo Higashi, Yasunori Tanaka, Tatsuo Ishijima, Yusuke Nakano

GR5.00008  5:45PM - 6:00PM
Deposition mechanism of hydrogenated amorphous carbon film by C₃H₆/H₂ mixture gas plasma
Hiroki Kondo, Jumpei Kurokawa, Takayoshi Tsutsumi, Makoto Sekine, Kenji Ishikawa, Masaru Hori

4:00PM - 6:00PM  Room: Sakura 2

IR5  Plasma Liquid Interaction IV
Chair: Toshiro Kaneko (Tohoku University)

IR5.00001  4:00PM - 4:30PM
Production of nanomaterials by pulsed electrical discharges in dielectric liquid
Invited Speaker: Ahmad Hamdan

IR5.00002  4:30PM - 4:45PM
Plasma Discharge Inside Liquid: A Novel Single-step Green Approach to Fabricate Metal/Metal Oxide Nanocomposites
Palash J Boruah, Rakesh R Khanikar, Parmita Kalita, Heremba Bailung

IR5.00003  4:45PM - 5:00PM
Carbon-doped TiO₂ via Solution Plasma
Chayanaphat Chokradjaroen, Jiangqi Niu, Satita Thiangtham, Gasidit Panoomsuwan, Nagahiro Saito

IR5.00004  5:00PM - 5:30PM
Continuous liquid treatment by high-density microwave plasma in flowing liquid
Invited Speaker: Haruka Suzuki

IR5.00005  5:30PM - 6:00PM
Plasma / liquid (P/L) interfacial reaction for gas reduction reaction
Invited Speaker: Tetsuya Haruyama
7:00PM - 9:00PM  Room: Westin Hotel Sendai

**DR6**  Banquet

* See the Attendee Instructions page
Friday, October 7th, 2022

8:00AM - 9:00AM Room: Tachibana

DF1 Plasmas and Nanotechnology III
Chair: Renato Camata (University of Alabama)

DF1.00001
Microplasma Engineering of Functional Nanomaterials: Synthesis and Applications
Invited Speaker: Wei-Hung Chiang

DF1.00002
Multiscale transport modeling of reactive sputtering for fabrication of neuromorphic hardware
Luca Vialletto, Rouven Lamprecht, Christian Stuewe, Torben Hemke, Finn Zahari, Hermann Kohlstedt, Thomas Mussenbrock, Jan Trieschmann

DF1.00003
Ion fluxes in EUV-induced plasma and their applications for optical components tests
Andrey Ushakov, Jacqueline van Veldhoven, Chien-Ching Wu, Michel van Putten, Joop Meijlink

8:00AM - 9:30AM Room: Hagi

EF1 Plasma Medical & Agricultural Application I
Chair: Kazunori Koga (Kyushu University)

EF1.00001
Air discharge plasma used for preventing SARS-CoV-2 infections
Invited Speaker: Dingxin Liu

EF1.00002
Investigation of Plasma-generated Reactive Species Responsible for Human Coronavirus Inactivation
Shota Sasaki, Shion Osana, Mutsuo Yamaya, Hidekazu Nishimura, Ryoichi Nagatomi, Toshiro Kaneko

EF1.00003
Optimized treatment approach for inactivation of Escherichia coli and Klebsiella pneumoniae through non-thermal plasma
Milad Rasouli, Elham Hamidi, Bizhan Farokhi, Majid Mahdieh, Mahmood Ghoranneviss

EF1.00004
Characterization of Novel Flexible Surface Dielectric Barrier Discharge Electrodes for the Purpose of In-Package Microbe Deactivation on the Surface of Fresh Produce
Duncan P Trosan, Patrick D Walther, Qingyang Wang, Stephen D Mclaughlin, Aaron Mazzeo, Deepit Salvi, Katharina Stapelmann

EF1.00005
An Efficient Two-stage Type Electrostatic Precipitator for Aerosol Collection Operated by Compact Pulsed Power Generator
Katsuyuki Takahashi, Ryo Saito, Takuto Kikuchi, Riku Yamaguchi, Koichi Takaki, Akinori Zukeran, Tatsuya Terazawa, Yasuyuki Ito
**FF1  Inductively Coupled Plasmas**

**Chair:** Mate Vass (Ruhr University Bochum, Germany)

**FF1.00001**

8:00AM - 8:15AM  
Formation of atomic hydrogen and negative ions in low-pressure inductively coupled hydrogen plasmas: two-dimensional simulations incorporating vibrational kinetics and gas heating

James Dedrick, Gregory J Smith, Paola Diomede, Andrew R Gibson, Scott J Doyle, Vasco Guerra, Mark J Kushner, Timo Gans

**FF1.00002**

8:15AM - 8:30AM  
Spatial electromagnetic diagnostics of overshoot phenomenon in pulsed inductively coupled Ar plasmas

Xiangyun Lv, Kai Zhao, Quan-Zhi Zhang, Fei Gao, You-Nian Wang

**FF1.00003**

8:30AM - 8:45AM  
Hardware design and process optimization of industrial ICP $\text{N}_2$ reactor using Two and Three Dimensional CFD models

Meihua Zhang, Abhra Roy, Ryong Hwang, Jeonghee Jo, Amir Kiaee, David Solomon, Yun Yang

**FF1.00004**

8:45AM - 9:00AM  
An introduction to the role of chemical models in the enthalpy rebuilding procedure of Inductively Coupled Plasma facilities

Enrico Anfuso, Andrea Fagnani, Olivier Chazot

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**GF1  Dissociative Electron Attachment and Distribution Functions**

**Chair:** Mariusz Piwiński (Nicolaus Copernicus University in Toruń)

**GF1.00001**

8:00AM - 8:30AM  
Dissociative Electron Attachment to Amides

*Invited Speaker* Sylwia Ptasinska

**GF1.00002**

8:30AM - 8:45AM  
An Analytic Electron-Impact Ionization Anisotropic Scattering Model for Monte Carlo Plasma and Swarm Applications

Mark C Zammit, James Colgan, Ryan Park, Christopher J Fontes, Brett S Scheiner, Eddy M Timmermans, Xianzhu Tang, Nathan Garland

**GF1.00003**

8:45AM - 9:00AM  
Electron Energy Deposition in Molecular Hydrogen : A Simulation Using Molecular Convergent Close Coupling Cross Sections

Reese K Horton, Liam H Scarlett, Mark C Zammit, Igor Bray, Dmitry V Fursa

**GF1.00004**

9:00AM - 9:15AM  
A General Analytic Electron-Impact Ionization Electron Energy Sharing Model for Monte Carlo Plasma and Swarm Applications

Mark C Zammit, Ryan Park, Brett S Scheiner, James Colgan, Christopher J Fontes, Eddy M Timmermans, Xianzhu Tang, Nathan Garland
## IF1  Green Plasma Science and Technology III

### Chair: Keiichiro Urabe (Kyoto University)

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Speakers</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00AM - 9:00AM</td>
<td>IF1.00001</td>
<td>Non-equilibrium plasma discharges for combustion applications: experiments and diagnostics</td>
<td>Invited Speaker Deanna A Lacoste</td>
</tr>
<tr>
<td>8:30AM - 9:00AM</td>
<td>IF1.00002</td>
<td>Probing the Detailed Chemistry of Plasma-Assisted Processes: Opportunities for Mass Spectrometry</td>
<td>Nils n Hansen, Angie Zang, Christopher Burger, Yiguang Ju, Jinhoon Choe, Wenting Sun</td>
</tr>
<tr>
<td>8:45AM - 9:00AM</td>
<td>IF1.00003</td>
<td>Improvement of the cleaning performance of different waste incineration plants after conversion to three-phase generators</td>
<td>Daniel Szeremley</td>
</tr>
</tbody>
</table>

## DF2  Laser Diagnostics II

### Chair: Uwe Czarnetzki (Ruhr University Bochum, Germany)

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Speakers</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:00AM - 12:00PM</td>
<td>DF2.00001</td>
<td>Low temperature plasma diagnostics using Brewster angle-cavity ringdown spectroscopy</td>
<td>Rongrong Wu, Chuji Wang</td>
</tr>
<tr>
<td>10:15AM - 12:00PM</td>
<td>DF2.00002</td>
<td>Optical trapping and manipulation of single particles in dusty plasma</td>
<td>Pubuduni AK Ekanayaka MEW, Chuji Wang, Saikat Chakraborty Thakur, Edward Thomas</td>
</tr>
<tr>
<td>10:30AM - 12:00PM</td>
<td>DF2.00003</td>
<td>Plasma sheath diagnostic using microscopic particle probes manipulated in laser tweezers</td>
<td>Invited Speaker Holger Kersten</td>
</tr>
<tr>
<td>11:00AM - 12:00PM</td>
<td>DF2.00004</td>
<td>Probing plasma-chemistry interactions through novel ultrafast nonlinear laser diagnostics</td>
<td>Christopher J Kliwer, Madeline Vorenkamp, Scott Steinmetz, Timothy Chen, Yiguang Ju, Peter Bruggeman</td>
</tr>
<tr>
<td>11:15AM - 12:00PM</td>
<td>DF2.00005</td>
<td>Investigation of the early-stage dynamics of laser-produced plasma using collective Thomson scattering</td>
<td>Yiming Pan, Kentaro Tomita, Atsushi Sunahara, Katsunobu Nishihara</td>
</tr>
<tr>
<td>11:30AM - 12:00PM</td>
<td>DF2.00006</td>
<td>Time resolved CO$_2$ ro-vibrational excitation in a nanosecond discharge measured with quantum cascade laser absorption spectroscopy</td>
<td>Dirk Luggenhölscher, Yanjun Du, Tsanko V Tsankov, Uwe Czarnetzki</td>
</tr>
<tr>
<td>12:00PM - 12:15PM</td>
<td>DF2.00007</td>
<td>Ro-vibrational kinetics in CO$_2$-N$_2$ ns pulsed discharge</td>
<td>Yanjun Du, Tsanko Vaskov Tsankov, Jan Kuhfeld, Nikita D Lepikhin, Dirk Luggenhölscher, Uwe Czarnetzki</td>
</tr>
</tbody>
</table>
## EF2  Plasma Medical & Agricultural Application II

**Chair:** Nevena Puac *(Institute of Physics Belgrade Serbia)*

<table>
<thead>
<tr>
<th>Session</th>
<th>Title</th>
<th>Time</th>
<th>Speakers</th>
</tr>
</thead>
<tbody>
<tr>
<td>EF2.00001</td>
<td>Plasma-based in situ functionalization based on functional nitrogen science</td>
<td>10:00AM - 10:30AM</td>
<td>Invited Speaker Kenji Ishikawa</td>
</tr>
<tr>
<td>EF2.00002</td>
<td>Plasma Activated Water Developments for Lunar and Martian Applications</td>
<td>10:30AM - 10:45AM</td>
<td>Ryan P Gott, Kenneth Engeling, Joel Olson, Carolina Franco, Christina Johnson, Mary Hummerick</td>
</tr>
<tr>
<td>EF2.00003</td>
<td>Influence of COST-Jet produced Short-lived RONS on Cellular Responses</td>
<td>10:45AM - 11:00AM</td>
<td>Maria J Herrera Quesada, Cameron Wagoner, Katharina Stapelmann</td>
</tr>
<tr>
<td>EF2.00004</td>
<td>Effective Area of Relatively Short-lived Reactive Oxygen Species Generated by Atmospheric-pressure Helium Microplasma Jet</td>
<td>11:00AM - 11:15AM</td>
<td>Jun-Seok Oh, Yuta Matsumoto, Shunya Hashimoto, Tatsuru Shirafuji</td>
</tr>
<tr>
<td>EF2.00005</td>
<td>Influence of Skin Temperature Increase During Helium Plasma Jet Irradiation</td>
<td>11:15AM - 11:30AM</td>
<td>Shunya Hashimoto, Yuta Matsumoto, Tatsuru Shirafuji, Hideo Fukuhara, Chiaki Kakawa, Keiji Inoue, Masayuki Tsuda, Endre J Szili, Jun-Seok Oh</td>
</tr>
<tr>
<td>EF2.00006</td>
<td>Biological effects of the combination with low temperature plasmas and nanoparticles-platinum and gold-</td>
<td>11:30AM - 11:45AM</td>
<td>Kenji Ishikawa, Takashi Kondo, Hirofumi Tanaka, Masaru Hori, Shinya Toyokuni, Masaaki Mizuno</td>
</tr>
</tbody>
</table>

## FF2  Green Plasma Science & Technology IV

**Chair:** Tomohiro Nozaki *(Tokyo Institute of Technology)*

<table>
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<th>Session</th>
<th>Title</th>
<th>Time</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>FF2.00001</td>
<td>Interplay of Transport, Plasma Concentration, and Chemistry in Microwave Discharges</td>
<td>10:00AM - 10:15AM</td>
<td>Gerard J Van Rooij, Alex W van der Steeg, Omar Biondo, Ashley J Hughes, Annemie Bogaerts, M.C.M. van de Sanden</td>
</tr>
<tr>
<td>FF2.00002</td>
<td>High Efficiency CO₂ Conversion in the Rotating Argon Flow using Microwave Plasma at Atmospheric Pressure.</td>
<td>10:15AM - 10:30AM</td>
<td>Masuhiro Kogoma, Tomu Kobayashi, Kunihiro Tanaka, Kazuo Takahashi</td>
</tr>
<tr>
<td>FF2.00003</td>
<td>Direct non-oxidative methane conversion in arc plasma reactor: Physical and chemical solutions to lower energy cost</td>
<td>10:30AM - 10:45AM</td>
<td>Duy Khoe Dinh, Dae Hoon Lee</td>
</tr>
<tr>
<td>FF2.00004</td>
<td>Effect of pulse repetition rate on filamentary discharge assisted low-temperature ignition in methane-air flows</td>
<td>10:45AM - 11:00AM</td>
<td>Ravi B Patel, Jeroen van Oijen, Nico Dam, Sander Nijdam</td>
</tr>
<tr>
<td>FF2.00005</td>
<td>Plasma induced conversion of CO₂ with water to useful compounds</td>
<td>11:00AM - 11:15AM</td>
<td>Pankaj Attri, Takamasa Okumura, Kazunori Koga, Kunihiro Kamataki, Naho Itagaki, Masaharu Shiratani, Nozomi Takeuchi</td>
</tr>
</tbody>
</table>
GF2.00006
11:15AM - 11:30AM
Plasma-enhanced Carbon Capture and Utilization in CO₂ Methanation
Chunyuan Zhan, Shuya Xu, Hyun-Ha Kim, Tomohiro Nozaki

GF2.00007
11:30AM - 11:45AM
Chemical Feedback and Control of Chemical Processes Using Non-Equilibrium Plasmas
Charan R Nallapareddy, Thomas C Underwood

GF2.00008
11:45AM - 12:00PM
Photo-plasma: A new approach for efficient and enhanced mineralization of organic molecules
Shaik Mahamad M Allabakshi, Pnsr R Srikar, Reetesh K Gangwar, Shihabudheen M Maliyekkal

10:00AM - 12:00PM
Room: Shirakashi 2

GF2 | Plasmas for Energy Applications

Chair: Ahmad Hamdan (University de Montreal)

GF2.00001
10:00AM - 10:15AM
Facile synthesis of sulfonated cellulose derived from sugarcane bagasse via solution plasma process toward bio-filler separator membrane for lithium-ion battery
Satita Thiangtham, Nagahiro Saito, Hathaikarn Manuspiya

GF2.00002
10:15AM - 10:30AM
Reduction of iron phthalocyanine/ graphene oxide composites using atmospheric pressure plasma
Fuka Hayakawa, Ikumi Ohsawa, Takahiro Saída, Takayuki Ohta

GF2.00003
10:30AM - 10:45AM
Fabrication of highly-transparent solar cell in centimeter scale based on atomically thin 2D materials
Kohei Kanaya, Xing He, Toshiro Kaneko, Toshiaki Kato

GF2.00004
10:45AM - 11:00AM
The Selectivity-Conversion Tradeoff in Partial Methane Oxidation Using Non-Equilibrium Plasmas
Charan R Nallapareddy, Thomas C Underwood

GF2.00005
11:00AM - 11:15AM
A Mask-free and Contactless Patterned Plasma Processing Technique for Interdigitated Back Contact Silicon Heterojunction Solar Cells Fabrication
Junkang Wang, Pavel Bulkin, Monalisa Ghosh, Dmitri Daineka, Pere Roca i Cabarrocas, Sergej Filonovich, José Alvarez, Erik Johnson

GF2.00006
11:15AM - 11:45AM
Plasma-induced electronic defects: formation and recovery kinetics for advanced processing
Invited Speaker Shota Nunomura

GF2.00007
11:45AM - 12:00PM
Electron Properties and Reaction Mechanisms in Plasma-Assisted Catalysis of Ammonia Synthesis
David D Caron, Ahmed Diallo, Bruce E Koel, Shurik Yatom
## 10:00AM - 12:00PM  Room: Sakura 2

### IF2  Discharge Physics

**Chair:** Daisuke Ogawa *(Chubu University)*

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<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Authors</th>
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</thead>
<tbody>
<tr>
<td>10:00AM - 10:15AM</td>
<td>Rotating Surface Wave Excitation by Time-varying Phase Agitation and Amplitude Modulation using Cylindrical Resonator</td>
<td>Ju-Hong Cha, Seong-Tae Han, DoHan Kim, Jong-Soo Kim, Chae-Hwa Shon</td>
</tr>
<tr>
<td>10:15AM - 10:30AM</td>
<td>Numerical Simulation of Frequency Dependence of Millimeter-wave Discharge at Subcritical Condition</td>
<td>Soichiro Suzuki, Masayuki Takahashi</td>
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<tr>
<td>10:30AM - 10:45AM</td>
<td>Characterization of DC driven moderate pressure water vapor glow discharge</td>
<td>Md Ebrahim Khalil Bhuiyan, Tanvir Farouk</td>
</tr>
<tr>
<td>10:45AM - 11:00AM</td>
<td>Time evolution of NO X ( ^2 \Pi ) (ground), A ( ^2 \Sigma^+ ) state and O ( ^3 \Pi ) atomic ground state density in downstream of a nitrogen-oxygen pulsed microwave surfaguide discharge</td>
<td>Abhyuday Chatterjee, Omid Samadi, Kseniia Leonova, Nikolay Britun, Rony Snyders</td>
</tr>
<tr>
<td>11:00AM - 11:15AM</td>
<td>Investigation of conditions necessary for inception of positive corona in air based on differential formulation of photoionization</td>
<td>Victor P Pasko, Reza Janalizadeh, Jaroslav Jansky</td>
</tr>
<tr>
<td>11:15AM - 11:30AM</td>
<td>Repetitively pulsed positive streamer discharge in electronegative gas mixtures at high pressure</td>
<td>Zheng Zhao, Xinlei Zheng, Anbang Sun, Jiangtao Li</td>
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<tr>
<td>11:30AM - 12:00PM</td>
<td>Streamer discharge development in long air gaps</td>
<td>Andrey Starikovskiy, Eduard Bazelyan, Nickolay Aleksandrov</td>
</tr>
<tr>
<td>12:00PM - 12:15PM</td>
<td>Fluid modeling and coherent Rayleigh-Brillouin scattering measurements of gas temperature in a xenon DC glow discharge plasma</td>
<td>Shigemitsu Suzuki, Robert Randolph, Alexandros Gerakis, Kentaro Hara</td>
</tr>
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</table>

## 1:30PM - 3:30PM  Room: Tachibana

### DF3  Plasma Propulsion III

**Chair:** Justin Little *(University of Washington)*

<table>
<thead>
<tr>
<th>Time</th>
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<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:30PM - 1:45PM</td>
<td>Electrostatic instabilities in ExB discharges: comparison of the linear theory dispersion relation with the reconstructed power spectrum</td>
<td>Federico Petronio, Alejandro Alvarez Laguna, Anne Bourdon, Pascal Chabert</td>
</tr>
<tr>
<td>1:45PM - 2:00PM</td>
<td>Observation of Instability driven propagating localized patterns in ExB discharges in 2D-axial azimuthal PIC-MCC simulations</td>
<td>Bhaskar Chaudhury, Teja V Reddy, Durgesh Mishra, Miral Shah, Mainak Bandyopadhyay</td>
</tr>
<tr>
<td>2:00PM - 2:15PM</td>
<td>Plasma flow and acceleration in the magnetic nozzle</td>
<td><strong>Invited Speaker:</strong> Andrei Smolyakov</td>
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<tr>
<td>Session</td>
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<td>Speakers</td>
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</tr>
<tr>
<td>DF3.00004</td>
<td>Assessment of cross-field electron transport in a magnetic nozzle</td>
<td>Kazunori Takahashi, Christine Charles, Roderick W Boswell</td>
</tr>
<tr>
<td>DF3.00005</td>
<td>Numerical investigation on plasma expansion and particle energy in a magnetic nozzle</td>
<td>Kazuma Emoto, Kazunori Takahashi, Yoshinori Takao</td>
</tr>
<tr>
<td>DF3.00006</td>
<td>Identification of plasma fluctuations and energy flow in hall thruster</td>
<td>Kouki Teshima, Naoji Yamamoto, Daisuke Kuwabara</td>
</tr>
<tr>
<td>DF3.00007</td>
<td>Characterization of a 2 MHz magnetically expanding RF plasma source for thruster development</td>
<td>Thanatith Nakul, Kazunori Takahashi</td>
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</tbody>
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### EF3: Plasma Medical & Agricultural Application III

**Room:** Hagi

**Chair:** Jun-Seok Oh *(Osaka Metropolitan University)*

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<tr>
<th>Session</th>
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<tbody>
<tr>
<td>EF3.00001</td>
<td>Role of atmospheric pressure plasma in triggering of cell mechanisms in plant cells</td>
<td>Invited Speaker Nevena Puac</td>
</tr>
<tr>
<td>EF3.00002</td>
<td>Reproducibility in plasma agriculture</td>
<td>Masaharu Shiratani, Teruki Anan, Takumi Nakao, Takamasa Okumura, Pankaj Attri, Kazunori Koga</td>
</tr>
<tr>
<td>EF3.00003</td>
<td>Various approaches of cold plasma treatment to brewer's rice plant for improvement of grain quality</td>
<td>Hiroshi Hashizume, Hidemi Kitano, Hiroko Mizuno, Akiko Abe, Kaoru Sanda, Genki Yuasa, Satoe Tohno, Shih-Nan Hsiao, Hiromasa Tanaka, Kenji Ishikawa, Shogo Matsumoto, Hitoshi Sakakibara, Yoji Hirose, Masayoshi Maeshima, Masaaki Mizuno, Masaru Hori</td>
</tr>
<tr>
<td>EF3.00004</td>
<td>Surface Modification Analysis of the Closed Containers that are used in Plasma Treatments of Food, Agriculture, and Biomedical Samples</td>
<td>Naman Bhatt, Joshua Morsell, Duncan P Trosan, Patrick D Walther, Katharina Stapelmann, Steven Shannon</td>
</tr>
<tr>
<td>EF3.00005</td>
<td>Effect of plasma irradiation on germination of lettuce seeds with fluctuating dormancy</td>
<td>Teruki Anan, Takumi Nakao, Takamasa Okumura, Pankaj Attri, Kunihiro Kamataki, Naoto Yamashita, Naho Itagaki, Kazunori Koga, Masaharu Shiratani</td>
</tr>
<tr>
<td>EF3.00006</td>
<td>Plasma irradiation-introduced RONS amount into plant seeds and their response analysis</td>
<td>Takamasa Okumura, Teruki Anan, Pankaj Attri, Yuichi Tsukada, Kunihiro Kamataki, Naoto Yamashita, Naho Itagaki, Kazunori Koga, Masaharu Shiratani, Yushi Ishibashi</td>
</tr>
</tbody>
</table>
### FF3 Modeling - Thrusters and Wave-Plasma Interactions

**Chair:** Scott Doyle (*University of Michigan*)

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<th>Session</th>
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<tbody>
<tr>
<td>FF3.00001</td>
<td>Dielectric boundary for an unstructured 2D radial-axial fluid simulation of a Hall thruster</td>
<td>Guillaume Bogopolsky, Olivier Vermorel, Bénédicte Cuenot</td>
</tr>
<tr>
<td>FF3.00002</td>
<td>Chemistry of low-pressure iodine plasmas</td>
<td>Invited Speaker: Anne Bourdon</td>
</tr>
<tr>
<td>FF3.00003</td>
<td>Deep Learning based approach for investigating Electromagnetic Wave Propagation in Plasmas</td>
<td>Mihir Desai, Pratik Ghosh, Ahammad Kumar, Bhaskar Chaudhury</td>
</tr>
<tr>
<td>FF3.00004</td>
<td>PIC simulation of plasma sources for the on-ground reproduction of orbital flows</td>
<td>Pietro Parodi, Thierry Magin, Giovanni Lapenta</td>
</tr>
<tr>
<td>FF3.00005</td>
<td>Development and validation of iodine plasma models for electric propulsion systems</td>
<td>Trevor Lafleur, Lui Habl, Elena Zorzoli Rossi, Dmytro Rafalskyi</td>
</tr>
<tr>
<td>FF3.00006</td>
<td>PIC modeling of iodine plasma for electric propulsion conditions</td>
<td>Nicolas Lequette, Benjamin Esteves, Alejandro Alvarez Laguna, Anne Bourdon, Pascal Chabert</td>
</tr>
<tr>
<td>FF3.00007</td>
<td>2D axisymmetric Particle-In-Cell study of a hollow cathode and its near plume region</td>
<td>Willca Villafana, Svetlana Selezenova, Andrew Tasman Powis, David Smith, Alexander V Khrabrov, Dmytro Sydorenko, Igor D Kaganovich</td>
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</tbody>
</table>

### GF3 Plasma Deposition

**Chair:** Masaru Hori (*Nagoya University*)

<table>
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<th>Session</th>
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<th>Presenter(s)</th>
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<tbody>
<tr>
<td>GF3.00001</td>
<td>Deposition of silicon-based thin films with atmospheric-pressure plasmas</td>
<td>Invited Speaker: Matteo Gherardi</td>
</tr>
<tr>
<td>GF3.00002</td>
<td>Process analysis of cracking a-C:H/CNP/a-C:H sandwich films under stress using nanoindentation</td>
<td>Shinjiro Ono, Takamasa Okumura, Kunihiro Kamataki, Naoto Yamashita, Naho Itagaki, Kazunori Koga, Masaharu Shiratani</td>
</tr>
<tr>
<td>GF3.00003</td>
<td>Deposition of zinc oxide film using high power impulse magnetron sputtering</td>
<td>Katsunori Nagahashi, Takayuki Ohta</td>
</tr>
<tr>
<td>GF3.00004</td>
<td>Sputter epitaxy of Mg-doped ZnO films on sapphire substrates using inverted Stranski-Krastanov mode</td>
<td>Masaharu Shiratani, Daichi Takahashi, Naoto Yamashita, Naho Itagaki</td>
</tr>
</tbody>
</table>
Deposition of Rutile TiO$_2$ Thin Films Using high power pulsed magnetron sputtering
Miyuki Nishimura, Takayuki Ohta

Next-generation Li-ion battery achieved by the low temperature plasma processes
Invited Speaker Giichiro Uchida

1:30PM - 3:15PM  Room: Sakura 2

**IF3**  Probe Diagnostics
Chair: Yasunori Ohtsu (Saga University)

**IF3.00001**  A novel approach for calculating the plasma resonance behavior excited by wall-integrated planar diagnostic probes with arbitrary geometry
Michael Friedrichs, Peng Liang, Chun Jie Wang, Ralf Peter Brinkmann, Jens Oberrath

**IF3.00002**  Second harmonic currents in rf-biased, inductively coupled plasmas
Mark Sobolewski

**IF3.00003**  The performance of the pulse bias hairpin resonator probe for negative ion diagnostic
Pawandeep Singh, Swati Swati, Jay K Joshi, Nageswara R Epuru, Yashshri Patil, Shantanu Karkari

**IF3.00004**  Power law parametrization of the ion collecting area for a planar Langmuir probe diagnostic
Invited Speaker Yegeon Lim

**IF3.00005**  Analysis of temperature dependency of the resonant frequency for electron density measurement with curling probe
Daisuke Ogawa, Keiji Nakamura, Hideo Sugai

**IF3.00006**  Langmuir probe and Laser Photodetachment Study of Afterglow Phase in Dual RF Frequency Pulsed Plasma Etching Processes Operated with Synchronized DC Bias
Makoto Sekine, Bibhuti B Sahu, Shogo Hattori, Takayoshi Tsutsumi, Nikolay Britun, Kenji Ishikawa, Hirohiko Tanaka, Taku Gohira, Noriyasu Ohno, Masaru Hori

4:00PM - 5:15PM  Room: Tachibana

**DF4**  Fundamental Processes
Chair: Ahmed Hala (Gaseous Electronics, LLC)

**DF4.00001**  Study of the effect of a longitudinal magnetic field on streamer properties following Juno's observation of possible transient luminous events on Jupiter
Reza Janalizadeh, Victor P Pasko
Dressed ion acoustic solitons with electron beam in Earth’s magnetosphere
Sunidhi Singla, N. S. Saini

Reconfigurable Mode coupling between Bragg and Surface Plasmon Modes in Super Three-dimensional Microplasma Photonic Crystals
Xinhang Song, Wenyuan Chen, Peter Sun, J. Gary Eden

Effect of Preheating Temperature of Al₂O₃ on Reduction Ratio by Laser Diode Ablation under Hydrogen Atmosphere
Kanta Ishiguro, Ryohei Oishi, Makoto Matsui

KP Burgers equation in Beam Plasma with Non-Maxwellian Electrons
Manveet Kaur, N. S. Saini, Sunidhi Singla

Plasma Medical & Agricultural Application IV
Chair: Kenji Ishikawa (Nagoya University)

Cold Atmospheric Plasmas in Biology and Medicine: The Fundamentals
Invited Speaker: Mounir Laroussi

Numerical modeling of how plasma interferes with cell fate
Tomoyuki Murakami

Medical plasma gas improves corneal burn ulcers in rabbits
Milad Rasouli, Maryam Amini, Amir Hossein Toghraee, Alireza Jahandideh

Analysis of cell exposed to non-thermal atmospheric pressure plasma for effective gene transfer
Tatsuya Kitazaki, Linhao Sun, Han N GIA, Shinji Watanabe, Shinya Kumagai

Transdermal Administration of Adenosine and Eosin Y Using Microplasma
Maliha Marium, Jaroslav Kristof, Ahmad Guji Yahaya, Sadia Afrin Rimi, Kazuo Shimizu

Basic Plasma Phenomena
Chair: Atsushi Komuro (University of Tokyo)

Transient phenomena during dense argon micro-plasma formation
Dmitry Levko, Vivek Subramaniam, Laxminarayan L Raja

Study on Light Emission of Arcing Before Arcing Explosion in a Low-Temperature Plasma
One-dimensional Particle-based Kinetic Simulations of DC and RF gas breakdown
Yusuke Yamashita, Kentaro Hara, Saravanapriyan Sriraman

Numerical modeling of ns discharge development in inhomogeneous magnetic field
Andrey Starikovskiy, Nickolay Aleksandrov, Mikhail N Shneider

4:00PM - 5:30PM  Room: Sakura 2

IF4  Dielectric Barrier and Corona Discharges

Chair: Keisuke Takashima (Tohoku University)

Consequences of Photoelectron and Electric Field Emission on Propagation of Surface Ionization Waves
Kseniia Konina, Mackenzie Meyer, Mark J Kushner

Interactions between adjacent surface streamers in a packed bed dielectric barrier discharges (PBDBDs)
Zaka-ul-Islam Mujahid, Ihor Korolov, Yue Liu, Thomas Mussenbrock, Julian Schulze

Numerical simulation of discharge process in surface dielectric-barrier-discharge on split covered electrode
Hideto Tamura, Shintaro Sato, Naofumi Ohnishi

Plasma Characteristics of Atmospheric DBD Argon Discharges Simulated by Fluid Model
Zehui Zhang, Yue Liu, Wei Wang, Yinan Wang, Yuanzhen Wang, Nannan Li, Dezheng Yang

Influence of dielectric shape on the propagation speed and selectivity of cathode or anode directed surface ionization waves in dielectric barriers discharges
Constantin Neuroth, Zaka-ul-Islam Mujahid, Ihor Korolov, Quan-Zhi Zhang, Thomas Mussenbrock, Julian Schulze

Multi-inception patterns of emitter array/collector systems in DC corona discharge
Corentin Marion, Franck Plouraboue, David Fabre, Julien Lemetayer

5:30PM - 6:00PM  Room: Tachibana

DF5  Closing Ceremony

Chair: Toshiro Kaneko (Tohoku University)

Closing Remarks
Toshiro Kaneko

GEC Chair Closing Remarks
Julian Schulze

GEC New Chair Closing Remarks
Shahid Rauf