The 4th International Conference on Data Driven Plasma Sciences
ICDDPS-4

The 14th EU-Japan Joint Symposium on Plasma Processing
JSPP-14

PROGRAM

iCDDPS
DATA DRIVEN
PLASMA SCIENCE

CONTENTS

Foreword

On behalf of the Executive Scientific Committee of the 4th International Conference on Data-Driven Plasma Science (ICDDPS-4) and the Organizing Committee of the 14th EU-Japan Joint Symposium on Plasma Processing (JSPP-14), we would like to welcome all participants wholeheartedly at the Okinawa Institute of Science and Technology (OIST) Conference Center in Okinawa, Japan, especially after a long period of travel restrictions caused by the COVID-19 pandemic. The goal of the ICDDPS is to provide a venue for discussion on the latest research results in data-driven science (such as artificial intelligence, machine learning, image processing, data mining, etc.) applied to plasma science and technologies, including, but not limited to, nuclear fusion and plasma processing research. Thanks to the recent advancement of sophisticated diagnostics techniques and first-principles computer simulations, the amount of data that accumulates in research is increasing exponentially. Plasma scientists should take full advantage of and also contribute to the latest development of data-driven science and find a way to extract essential and useful information efficiently from such data. On the other hand, the EU-Japan JSPP is an international symposium open to anyone from around the world (not limited to those from the EU or Japan) who is interested in science and technologies of plasma processing and low-temperature plasmas, including fundamental plasma physics, atomic processes, material surface processing, and plasma applications to biology, medicine, and agriculture.

We believe that having these two different meetings simultaneously and allowing the participants of each meeting to attend sessions of the other meeting freely will benefit all participants in gaining a broader perspective of their work. We hope all participants will reap the maximum benefits from the ICDDPS-4 and JSPP-14.

Satoshi Hamaguchi, Osaka University, Co-Chair
Sadruddin Benkadda, Aix-Marseille University, Co-Chair
4th International Conference on Data-Driven Plasma Science

Satoshi Hamaguchi, Osaka University, Chair
14th EU-Japan Joint Symposium on Plasma Processing

4th International Conference on Data-Driven Plasma Science (ICDDPS-4)

Executive Scientific Committee

Satoshi Hamaguchi   (Co-Chaira), Osaka University, Osaka, Japan

Sadruddin Benkadda   (Co-Chiar), Aix Marseille University-CNRS, Marseille, France

Deborah O'Connell   (Program Chair), Dublin City University, Dublin, Ireland

Choong-Seock Chang   Princeton Plasma Physics Laboratory, Princeton, NJ, USA

Toyohiro Chikyo   NIMS, Tsukuba, Japan

Jonathan Citrin   Dutch Institute for Fundamental Energy Research, Eindhoven, Netherlands

Jim A. Gaffney   Laurence Livermore National Laboratory, Livermore, CA, USA

Nigel Mason   University of Kent, Kent, UK

Ali Mesbah   University of California, Berkeley, USA

Sang-Ki Nam   Samsung Electronics, Suwon, South Korea

Jun Shinagawa   Tokyo Electron America, Austin, TX, USA

Brian Spears   Laurence Livermore National Laboratory, Livermore, CA, USA

Jan Trieschmann   Kiel University, Kiel, Germany

Ryo Yoshida   National Institute for Materials Science, Tokyo, Japan

Zhehui (Jeph) Wang   Los Alamos National Laboratory, Los Alamos, NM, USA

The 14th EU-Japan Joint Symposium on Plasma Processing

<u>Organizing Committee</u>

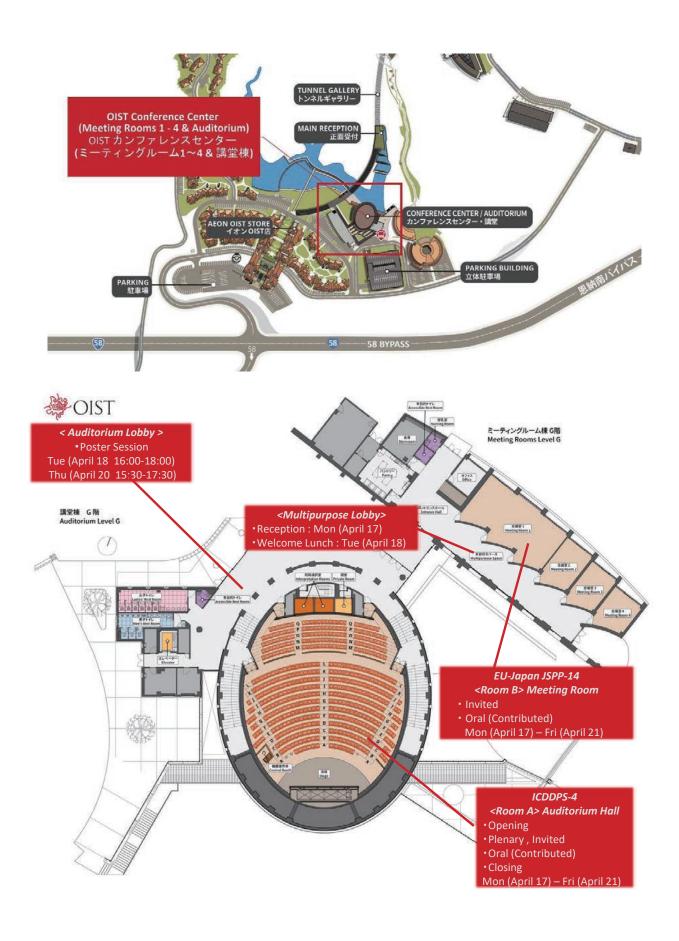|	
Satoshi Hamaguchi	(Chaira), Osaka University, Japan
Nigel Mason	(Co-Chiar), University of Kent, UK
Zoran Petrovic	(Co-Chair), Serbian Academy of Sciences and Arts, Serbia
Katsuhisa Kitano	(Secretary), Osaka University, Japan
Uroš Cvelbar	Jožef Stefan Institute., Slovenia
Uwe Czarnetzki	Ruhr University Bochum, Germany
Štefan Matejčík	Comenius University, Slovakia
Masaharu Shiratani	Kyushu University, Japan
Peter L. G. Ventzek	Tokyo Electron America, USA

Conference Schedule — ICDDPS-4 (Room A) / EU-Japan JSPP-14 (Room B)

Sun 2023/4/16: registration 16:00–18:00

Time	Mon 4/17 Room A (ICDDPS-4)	Mon 4/17 Room B (JSPP-14)	Tue 4/18 Room A	Tue 4/18 Room B	Wed 4/19 Room A	Wed 4/19 Room B	Thu 4/20 Room A	Thu 4/20 Room B	Fri 4/21 Room A	Fri 4/21 Room B
8:30–9:00	registration / coffee break		registration / coffee break		registration / coffee break		registration / coffee break		registration / coffee break	
9:00–9:15	opening								Jean-Baptiste Bordes	I-43 Pankaj Attri
9:15–10:00	Plenary PL-1 Ana Kupresanin		Plenary PL-2 Toyohiro Chikyow		Plenary PL-3 Scott Klasky		Plenary PL-4 Jongchul Park		O-24 Ben Zhu	I-44 Saša Dujko
9:45–10:00									I-18 Udo von Toussaint	I-45 Nikita D. Lepikhin
10:00–10:15									I-19 Sven Wiesen	
10:15–10:30	15 min break		15 min break		15 min break		15 min break		15 min break	
10:30–10:45	I-1 Michael Churchill	I-21 Masaru Izawa	I-6 Jung-Sik Yoon	I-29 Masaru Hori	I-11 Jim Gaffney	I-34 Kinga Kutasi	I-14 Zhehui Wang	I-36 Kazunori Shinoda	I-20 Choongseok Chang	I-46 Tomoko Ito
11:00–11:15	I-2 Yasuhiko Igarashi	I-22 Paul Moroz	I-7 Ali Mesbah	I-30 Yuzuru Ikehara	I-12 William Lewis	I-35 Katsuhisa Kitano	I-15 Alexander Scheinker	I-37 Kazuki Denpoh	O-25 Linlin Zhong	I-47 Pierre Vinchon
11:15–11:30			I-8 Tomoyuki Murakami	O-32 Shota Sasaki	I-13 Luc Peterson	O-36 Kathryn VanderEspt	O-18 James Buchanan	I-38 Masanaga Fukasawa	O-26 Sadruddin Benkadda	
11:30–11:45	I-3 Federico Felici	I-23 Remi Dussart		O-33 Sayma Khanom		O-37 Magdaleno R. Vasquez Jr.	O-19 Nathan Cummings		closing	
11:30–11:45			O-12 Yusuke Ando	O-34 Rimi Sadia Afrin	O-16 Andrew Angus	O-38 Jan Kuhfeld	O-20 Yasuhiro Kuramitsu	I-39 Masaharu Shiratani		
11:45–12:00			O-13 Jinkyu Bae	O-35 Svetlana Radovanov	O-17 Andreas Döpp	O-39 Enggar Alfianto	O-21 Mayuko Koga			
Midday	Lunch		Lunch & Social Event		Excursion (optional)		Lunch			
13:30–13:45	I-4 Mitsuru Honda	I-24 Toshiaki Makabe	I-9 Ryo Yoshida	I-31 Zoran Petrovic			I-16 Kai Schneider	I-40 Shunjiro Shinohara		
14:00–14:15	I-5 Aaron Ho	I-25 Yongxin Liu					I-17 Ryo Onishi	I-41 Miran Mozetič		
14:30–14:45	O-1 Emily Lewis	I-26 Hae June Lee	I-10 Masahiko Okumura	I-32 Behnaz Bagheri			O-22 Shogo Isayama	I-42 Yun-Chien Cheng		
14:45–15:00	O-2 Geert Verdoolaege						O-23 Chun-Sung Jao			
15:00–15:30	30 min coffee break		O-14 Michael Probst	I-33 Tatsuru Shirafuji						
15:15–15:30			O-15 Inda Chaerony Siffa							
15:30–15:45	O-3 Pablo Rodriguez-Fernandez	O-27 Seol Choi	30 min coffee break				30 min coffee break			
15:45–16:00	O-4 Lucy Harris	O-28 Xiangyun Lv								
16:00–16:15	O-5 Azarakhsh Jalalvand	O-29 Makoto Kambara	poster 16:00–18:00				poster 15:30–17:30			
16:15–16:30	O-6 Francesca Schiavello	O-30 Kazuo Takahashi								
16:30–16:45	O-7 Adam Kit	O-31 Vincenzo Laporta								
16:45–17:00	O-8 Jacques Blum	I-27 Uroš Cvelbar								
17:00–17:15	O-9 Sajidah Ahmed									
17:15–17:30	O-10 Sebastian De Pasquale	I-28 Xin Tu								
17:30–17:45	O-11 Todd Munson									
18:00–20:00	Reception 18:00–20:00						Banquet 18:30–21:00 (optional)			

OIST Conference Center
(Meeting Rooms 1 - 4 & Auditorium)
OIST カンファレンスセンター
(ミーティングルーム1〜4 & 講堂棟)

TUNNEL GALLERY
トンネルギャラリー

MAIN RECEPTION
正面受付

CONFERENCE CENTER / AUDITORIUM
カンファレンスセンター・講堂

AEON OIST STORE
イオン OIST店

PARKING BUILDING
立体駐車場

PARKING
駐車場

恩納南バイパス

58 BYPASS

< Auditorium Lobby >
・Poster Session
Tue (April 18 16:00-18:00)
Thu (April 20 15:30-17:30)

ミーティングルーム棟 G階
Meeting Rooms Level G

講堂棟　G階
Auditorium Level G

<Multipurpose Lobby>
・Reception : Mon (April 17)
・Welcome Lunch : Tue (April 18)

EU-Japan JSPP-14
<Room B> Meeting Room
・Invited
・Oral (Contributed)
Mon (April 17) – Fri (April 21)

ICDDPS-4
<Room A> Auditorium Hall
・Opening
・Plenary , Invited
・Oral (Contributed)
・Closing
Mon (April 17) – Fri (April 21)

Conference/Symposium Venue Map

Social Events

Opening & Introduction:

Date: 9:15-9:30, Monday, April 17.

Venue: Room A (Auditorium Hall), OIST Conference Center

Reception (drinks & snack):

Date: 18:00-20:00, Monday, April 17.

Venue: Multipurpose Lobby, OIST Conference Center

Welcome Lunch (buffet):

Date: 12:00-14:00, Tuesday, April 18.

Venue: Multipurpose Lobby, OIST Conference Center

Excursion (optional): Prior reservation is required.

Date: 13:00- Wednesday April 19.

Fee: 10,000 JPY

Visit to Ocean Expo Park including Okinawa Churaumi Aquarium, and Okinawa-style dinner at in the evening.
The tour will start after the morning session and return to the hotels by 9PM.

Conference Banquet (optional): Prior reservation is required.

Date: 18:30-21:00, Thursday, April 20.

Venue: Ocean view dome, Rizzan Sea Park Hotel Tancha Bay

Fee: 10,000 JPY

A sit-down buffet dinner

Closing:

Date: 11:45-12:00, Friday, April 21.

Venue: Room A (Auditorium Hall), OIST Conference Center

General Information

-Registration Desk
  Hours of Operation:
  April 16   16:00 - 18:00
  April 17   8:30 - 18:00
  April 18   8:30 - 18:00
  April 19   8:30 - 13:00
  April 20   8:30 - 18:00
  April 21   8:30 - 12:00

Lunch:

Welcome Lunch will served on Tuesday, April 18 at Multipurpose Lobby
Boxed lunch called "*Bento*" will be served on April 17 and 20 at Spacious lobby area.

Wi-Fi Area:

Free Wi-Fi is available. Search for "OIST-Public" and simply connect. No password required.

Conference Bus:

Conference Bus Transportation (Free) is available between some hotels and the venue (OIST) during the Conference. We will also offer Conference Bus Transportation (Free) from the venue to Naha Airport after the conference closes on April 21.

Lost and Found:

If you lose or find an item, please stop by the registration desk.

First Aid:

If you require medical assistance during the Conference, please contact the secretariat office staff immediately.

Cloak Room:

No cloakroom is available. Please note it in advance.

Taxi:

If a taxi is required, please contact the Registration Desk.

Instructions for Presenters

Oral Presentation

- The presentation time is as follows

  (including the time for you to connect your PC to the projector):

  - Plenary   45 min (40 min presentation and 5 min discussion)

  - Invited   30 min (25 min presentation and 5 min discussion)

  - Oral (Contributed)   15 min (12 min presentation and 3 min discussion)

- Equipment

  Windows laptop computers for common use will be available for your presentations

  in the conference room.

  Please bring your presentation data saved to a USB storage device.

  Notes when using your own laptop for presentation

  Please bring all required connection cables (with a d-sub 15-pin adapter) for your

  laptop, and a power adapter, if necessary.

  If you wish to use your own Mac computer, you will need the appropriate VGA

  video adapter.

Poster Presentation

- Poster sessions are held on Tuesday, 18 (16:00-18:00) and Thursday, 20 (15:30-17:30).

- Please prepare to print it yourselves for your poster.

- The board size is 900-mm width & 1530-mm height and recommends an A0-format size

  (841 x 1189 mm).

- Posters can be pinned on the boards. Pins (thumbtacks) are supplied by the organizers.

- Please put up your poster before your poster session starts.

- Please remove your poster promptly after the presentation.

- Posters left on the board after this time may be removed by the Conference staff.

ICDDPS-4 Presentations Program

ICDDPS-4 Presentations Program

========= Monday, April 17, 2023 =========

<div align="right"><Room A> Auditorium Hall</div>

Opening（9:15-9:30）

Plenary Sessions（9:30-10:15）　Chairperson: Jim A. Gaffney

[Pl-1]
   Ana Kupresanin (Lawrence Livermore National Laboratory, USA)
  "Advancing Fusion with Machine Learning"

-- Break （10:15-10:30）--

Invited & Oral Sessions（10:30-12:00）　Chairperson: Sadruddin Benkadda

[I-1] Invited (10:30-11:00)
   Michael Churchill (Princeton Plasma Physics Laboratory, USA)
  "Physics-conserving neural network surrogates for the Fokker-Planck collision solver
   in a large-scale tokamak turbulence code"

[I-2] Invited (11:00-11:30)
   Yasuhiko Igarashi (University of Tsukuba, Japan)
  "Prediction for Radiative Collapse in the Large Helical Device based on Sparse Dynamic
   Mode Decomposition"

[I-3] Invited (11:30-12:00)
   Federico Felici (École Polytechnique Fédérale, EPFL, Switzerland)
  "Control of tokamak plasmas through Deep Reinforcement Learning: application to
   magnetic control on TCV"

-- Lunch (12:00-13:30) --

Invited & Oral Sessions（13:30-15:00）　Chairperson: Jonathan Citrin

[I-4] Invited (13:30-14:00)
   Mitsuru Honda (Kyoto University, Japan)
  "Supervised and unsupervised learning approaches to assist numerical simulations of
   fusion plasmas"

[I-5] Invited (14:00-14:30)
   Aaron Ho (DIFFER, the Netherlands)
   "Emulation of QuaLiKiz turbulent transport model using neural networks trained using
    experimentally-based data"

[O-1] (14:30-14:45)
   Emily Lewis (University College London, UK)
   "Physics-informed Neural Networks for Fast Plasma Equilibria Reconstruction"

[O-2] (14:45-15:00)
   Geert Verdoolaege (Ghent University, Belgium)
   "Estimation of uncertainties in the updated ITPA global H-Mode confinement scaling using
   Bayesian techniques and origin of the reduced size scaling"

--- Break （15:00-15:30） ---

Invited & Oral Sessions （15:30-17:45）   Chairperson: Mitsuru Honda

[O-3] (15:30-15:45)
   Pablo Rodriguez-Fernandez (MIT Plasma Science and Fusion Center, USA)
   "Leveraging surrogate-based optimization to enable profile predictions with nonlinear
   turbulence codes"

[O-4] (15:45-16:00)
   Lucy Harris (UK Atomic Energy Authority, UK)
   "Scaling and Distribution of Physics-Informed Neural Networks for Fusion-Relevant Nonlinear
   Partial Differential Equations"

[O-5] (16:00-16:15)
   Azarakhsh Jalalvand (Princeton University, USA)
   "Towards Control of Alfvén Eigenmodes at DIII-D using Data-Driven Models and
   High-Resolution Diagnostics"

[O-6] (16:15-16:30)
   Francesca Schiavello (UKRI-STFC Hartree Centre, UK)
   "StyleGAN as an AI Deconvolution Operator for Large Eddy Simulations of Turbulent Plasma
   Equations in BOUT++"

[O-7] (16:30-16:45)
   Adam Kit (University of Helsinki, Finland)
   "On learning latent dynamics of the AUG plasma state"

[O-8] (16:45-17:00)
   Jacques Blum (Universit´e Cˆote d'Azur, France)
   "Real-time plasma equilibrium reconstruction in a Tokamak"

[O-9] (17:00-17:15)
    Sajidah Ahmed (UiT The Arctic University of Norway, Norway)
"Intermittent plasma fluctuations in the Alcator C-Mod scrape-off layer at high Greenwald fractions"

[O-10] (17:15-17:30)
    Sebastian De Pascuale (Oak Ridge National Laboratory, USA)
"Time-Dependent SOLPS-ITER Simulations Enabling Data-Driven Model Predictive Control of the Tokamak Plasma Boundary"

[O-11] (17:30-17:45)
    Todd Munson (Argonne National Laboratory, USA)
"The Stochastic Augmented Lagrangian Method for Training Physics-Informed Neural Networks"

========= Tuesday, April 18, 2023 =========

\<Room A\> Auditorium Hall

Plenary Sessions（9:00-9:45）　Chairperson: Satoshi Hamaguchi

[Pl-2]
    Toyohiro Chikyow (National Institute for Materials Science, NIMS, Japan)
"Trends in autonomous materials discovery with automatic workflow and its application to plasma process"

--- Break （9:45-10:00） ---

Invited & Oral Sessions（10:00-12:00）　Chairperson: Jun Shinagawa

[I-6] Invited (10:00-10:30)
    Jung-Sik Yoon (Korea Institute of Fusion Energy, Korea)
"Data-Informed Advanced Plasma Equipment/Process Control Technologies for Plasma Applications"

[I-7] Invited (10:30-11:00)
    Ali Mesbah (University of California, USA)
"Bayesian Optimization for Active Machine Learning to Guide Discovery of Non-Equilibrium Plasma Interactions with Complex Interfaces"

[I-8] Invited (11:00-11:30)
    Tomoyuki Murakami (Seikei University, Japan)
"Complexity visualization for low-temperature plasma chemistry"

[O-12] (11:30-11:45)
  Yusuke Ando (Nagoya University, Japan)
 "Global and local contribution analysis of process parameters in Plasmaenhanced chemical vapor deposition of amorphous carbon hard mask"

[O-13] (11:45-12:00)
  Sang Ki Nam (Samsung electronics, Korea)
 "Deep Learning-enabled Chamber Design Optimization in Semiconductor Process"

--- Lunch (12:00-14:00) ---

Invited & Oral Sessions （14:00-15:30） Chairperson: Ali Mesbah

[I-9] Invited (14:00-14:30)
  Ryo Yoshida (The Institute of Statistical Mathematics, Japan)
 "Machine Learning for Overcoming Data Scarcity"

[I-10] Invited (14:30-15:00)
  Masahiko Okumura (Japan Atomic Energy Agency, Japan)
 "Machine Learning Molecular Dynamics: A Fast and Highly Accurate Simulation Method for Materials"

[O-14] (15:00-15:15)
  Michael Probst (University of Innsbruck, Austria)
 "Modelling Plasma-Wall Interactions by Molecular Dynamics Simulations with Machine-Learned Potential Energy Functions"

[O-15] (15:15-15:30)
  Ihda Chaerony Siffa (INP, Kiel University, Germany)
 "Towards machine-learned surrogate Poisson solvers for plasma simulations in complex geometries"

--- Break （15:30-16:00） ---

Poster Sessions Day1 （16:00-18:00）   \<Auditorium Lobby\>
 Chairperson: Satoshi Hamaguchi

========= Wednesday, April 19, 2023 =========

\<Room A\> Auditorium Hall

Plenary Sessions （9:00-9:45）　Chairperson: Zhehui (Jeph) Wang

[Pl-3]
　　Scott Klasky (Oak Ridge National Laboratory, USA)
　"To the exascale and beyond"

-- Break　（9:45-10:00）--

Invited & Oral Sessions （10:00-12:00）　Chairperson: Yasuhiro Kuramitsu

[I-11] Invited (10:00-10:30)
　　Jim Gaffney (Lawrence Livermore National Laboratory, USA)
　"Data-Driven Prediction of Performance and Variability in Igniting Inertial Fusion Experiments"

[I-12] Invited (10:30-11:00)
　　William Lewis (Sandia National Laboratories, USA)
　"A framework for experimental-data-driven assessment of Magnetized Liner Inertial Fusion stagnation image metrics"

[I-13] Invited (11:00-11:30)
　　Luc Peterson (Lawrence Livermore National Laboratory, USA)
　"Accelerating the Quest for Fusion with Data-Driven Methods on Exascale Computers"

[O-16] (11:30-11:45)
　　Andrew Angus (University of Warwick, UK)
　"A Gaussian Process Augmented Ray-Tracing Framework for Multi-Scale Modelling of Stimulated Raman Scattering in ICF"

[O-17] (11:45-12:00)
　　Andreas Döpp (LMU Munich / MPQ, Germany)
　"Data-driven Science and Machine Learning Methods in Laser-Plasma Physics"

========= Thursday, April 20, 2023 =========

Plenary Sessions（9:00-9:45） Chairperson: Sang-Ki Nam

[Pl-4]
 Jongchul Park (Samsung Electronics, Korea)
 "Data Driven equipment TTTM for semiconductor chip productivity "

--- Break （9:45-10:00）---

Invited & Oral Sessions（10:00-12:00） Chairperson: Randy Michael Churchill

[I-14] Invited (10:00-10:30)
 Zhehui Wang (Los Alamos National Laboratory, USA)
 "Physics-informed multiprobe instrument for plasma experiments"

[I-15] Invited (10:30-11:00)
 Alexander Scheinker (Los Alamos National Laboratory, USA)
 "Incorporating Hard Physics-constraints and Uncertainty Quantification in Convolutional Neural Networks for Charged Particle Beam Dynamics"

[O-18] (11:00-11:15)
 James Buchanan (UKAEA, UK)
 "The UKAEA/Hartree Centre of Excellence in Extreme Scale Computing for Fusion: Latest Advances"

[O-19] (11:15-11:30)
 Nathan Cummings (UK Atomic Energy Authority, UK)
 "Making MAST data open and FAIR"

[O-20] (11:30-11:45)
 Yasuhiro Kuramitsu (Osaka University, Japan)
 "Optimization of laser-driven quantum beam generation and the applications with artificial intelligence"

[O-21] (11:45-12:00)
 Mayuko Koga (University of Hyogo, Japan)
 "Image reconstruction from distributions of microwave complex amplitude using machine learning"

--- Lunch (12:00-13:30) ---

Invited & Oral Sessions （13:30-15:00）　Chairperson: Ryo Yoshida

[I-16] Invited (13:30-14:00)
　　Kai Schneider (Aix-Marseille Université, France)
　"Data-driven machine learning techniques for modeling fluid turbulence"

[I-17] Invited (14:00-14:30)
　　Ryo Onishi (Tokyo Institute of Technology, Japan)
　"AI-Simulation Integrated Technology: Super-Resolution Simulation for Real-Time Prediction of
　　Urban Micro-Meteorology"

[O-22] (14:30-14:45)
　　Shogo Isayama (Kyushu University, Japan)
　"Estimation of plasma parameters by Physics-Informed Neural Network (PINN)"

[O-23] (14:45-15:00)
　　Chun-Sung Jao (National Central University, Taiwan)
　"Physics-Informed Neural Network Reconstruction of Electromagnetic Field with the Application
　　to Ion Radiography"

--- Break 　（15:00-15:30）---

Poster Sessions Day2 （15:30-17:30）　　　　　　　　　<Auditorium Lobby>
　Chairperson: Satoshi Hamaguchi

======== Friday, April 21, 2023 ========

<Room A> Auditorium Hall

Guest Talk (9:00-:915)　Chairperson: Sadruddin Benkadda
　Jean-Baptiste Bordes (Ambassade de France au Japon, Japan)
　"Investing in the future of AI : the French government's latest initiatives"

Invited & Oral Sessions （9:15-11:45）　Chairperson: Alex Scheinker

[O-24] (9:15-9:30)
　　Ben Zhu (Lawrence Livermore National Laboratory, USA)
　"Data-driven model for divertor plasma detachment prediction and control"

[I-18] Invited (9:30-10:00)
    Udo von Toussaint (Max-Planck-Institute for Plasmaphysics, Germany)
"Global optimization and robust regression for plasma-wall-interaction data using Gaussian and Student-t processes"

[I-19] Invited (10:00-10:30)
    Sven Wiesen (Forschungszentrum Jülich GmbH, Germany)
"Data-driven models in fusion exhaust: methods and perspectives"

-- Break （10:30-10:45） --

[I-20] Invited (10:45-11:15)
    Choongseok Chang (Princeton Plasma Physics Laboratory, USA)
"Data Science for Exascale Simulations"

[O-25] (11:15-11:30)
    Linlin Zhong (Southeast University, China)
"Meta-learning Physics-Informed Neural Network (Meta-PINN) for plasma simulation"

[O-26] (11:30-11:45)
    Nathaniel Saura (Aix-Marseille Aix-Universite, France)
"Atomic spectra analysis improvement using convolutional neural networks"

Closing （11:45-12:00）

JSPP-14 Presentations Program

JSPP-14 Presentations Program

========= Monday, April 17, 2023 =========

<div align="right"><Room A> Auditorium Hall</div>

Opening（9:15-9:30）

Plenary Sessions（9:30-10:15）　Chairperson: Jim A. Gaffney

[Pl-1]
   Ana Kupresanin (Lawrence Livermore National Laboratory, USA)
   "Advancing Fusion with Machine Learning"

-- Break （10:15-10:30） --

<div align="right"><Room B> Meeting Room</div>

Invited & Oral Sessions（10:30-12:00）　Chairperson: Masaaki Matsukuma

[I-21] Invited (10:30-11:00)
   Masaru Izawa (Hitachi High-Tech Corp., Japan)
   "Challenges of Dry Etching Technology for Future Logic LSI"

[I-22] Invited (11:00-11:30)
   Paul Moroz (Tokyo Electron America, Inc., USA)
   "Feature-Scale Simulations for Materials Processing"

[I-23] Invited (11:30-12:00)
   Remi Dussart (University of Orléans – CNRS, France)
   "Plasma cryogenic etching processes: what are the mechanisms involved at very low temperature?"

-- Lunch (12:00-13:30) --

Invited & Oral Sessions （13:30-15:00）　　Chairperson: Paul Moroz

[I-24] Invited (13:30-14:00)
　　Toshiaki Makabe (Keio University, Japan)
　"150 years since the birth of the Boltzmann equation:historical steps of the electron Boltzmann
　　equation towards science & technology in a low-temperature collisional plasma"

[I-25] Invited (14:00-14:30)
　　Yongxin Liu (Dalian University of Technology, China)
　"Effect of amplitude-modulation on the re-ignition of a pulsed capacitively coupled RF discharge"

[I-26] Invited (14:30-15:00)
　　Hae June Lee (Pusan National University, Korea)
　"Mechanism of pattern formation in capacitively coupled RF plasma reactors investigated by the
　two-dimensional particle-in-cell simulation of Ar plasmas"

-- Break　（15:00-15:30）--

Invited & Oral Sessions （15:30-17:45）Chairperson: Magdaleno R. Vasquez Jr.

[O-27] (15:30-15:45)
　　Seo I Choi (Pusan National University, Korea)
　"Transient Phenomena of Electron Heating in Pulse-Driven Capacitivley Coupled Ar Plasmas"

[O-28] (15:45-16:00)
　　Xiangyun Lv (Dalian University of Technology, China)
　"Optimization of overshoot in pulsed inductively coupled Ar plasma by step waveform modulation"

[O-29] (16:00-16:15)
　　Makoto Kambara (Osaka University, Japan)
　"Controlled oxidation of silicon nanoparticles during PS-PVD for enhancement in cycle capacity of
　all solid-state lithium-ion storage"

[O-30] (16:15-16:30)
　　Kazuo Takahashi (Kyoto institute of Technology, Japan)
　"Etching Characteristics of GaN in Hydrogen-added Fluorocarbon Plasmas"

[O-31] (16:30-16:45)
　　Vincenzo Laporta (CNR, Italy)
　"The role of electron-molecule collisions on vibrational relaxation times for non-equilibrium plasma
　modelling"

[I-27] Invited (16:45-17:15)
    Uroš Cvelbar (Jožef Stefan Institute, Slovenia)
"Plasma fabrication on hybrid carbon nanoplatforms for energy storage"

[I-28] Invited (17:15-17:45)
    Xin Tu (University of Liverpool, UK)
"Plasma electrification: An emerging technology for sustainable production of fuels and chemicals"

========= Tuesday, April 18, 2023 =========

\<Room A\> Auditorium Hall

Plenary Sessions（9:00-9:45） Chairperson: Satoshi Hamaguchi

[Pl-2]
    Toyohiro Chikyow (National Institute for Materials Science, NIMS, Japan)
  "Trends in autonomous materials discovery with automatic workflow and its application to plasma process"

-- Break （9:45-10:00） --

\<Room B\> Meeting Room

Invited & Oral Sessions（10:00-12:00） Chairperson: Behnaz Bagheri

[I-29] Invited (10:00-10:30)
    Masaru Hori (Nagoya University, Japan)
  "High Performances of Plasma-activated Lactated Ringer's Solution for Medical Treatment"

[I-30] Invited (10:30-11:00)
    Yuzuru Ikehara (Yuzuru Ikehara, Japan)
  "Developing diagnostic techniques by the control of tissue charge using the plasma technologies"

[O-32] (11:00-11:15)
    Shota Sasaki (Tohoku University, Japan)
  "Inactivation of Human Coronavirus Using Reactive Oxygen and Nitrogen Species Generated by Atmospheric Pressure Plasmas"

[O-33] (11:15-11:30)
    Sayma Khanom (Kyushu University, Japan)
"Plant Growth Response to Irrigation with Oxygen Plasma Treated Water"

[O-34] (11:30-11:45)
    Rimi Sadia Afrin (Shizuoka University, Japan)
"Study of the Microplasma Irradiation Effect on Cells for Delivering High Molecular Weight Drugs"

[O-35] (11:45-12:00)
    Svetlana Radovanov (Beam Physics and Plasma Applications LLC, USA)
"Neutral mass spectrometry of atmospheric plasmas for methane conversion"

-- Lunch (12:00-14:00) --

Invited & Oral Sessions （14:00-15:30）   Chairperson: Uroš Cvelbar

[I-31] Invited (14:00-14:30)
    Zoran Petrovic (Serbian Academy for Sciences and Arts, Serbia)
"On the Use of Low Temperature Plasma to Induce Dendritic Cell-Mediated Anti-Tumor Response"

[I-32] Invited (14:30-15:00)
    Behnaz Bagheri (Eindhoven University of Technology, the Netherlands)
"Effect of oxidation induced by cold plasma on physiological properties of cell membranes: a molecular dynamics study"

[I-33] Invited (15:00-15:30)
    Tatsuru Shirafuji (Osaka Metropolitan University, Japan)
"Generation of Surface-Launched Plasma Bullets - Its Basic Characteristics and Applications -"

-- Break （15:30-16:00） --

Poster Sessions Day1 （16:00-18:00）   **<Auditorium Lobby>**
Chairperson: Satoshi Hamaguchi

========= Wednesday, April 19, 2023 =========

<Room A> Auditorium Hall

Plenary Sessions（9:00-9:45）　Chairperson: Zhehui (Jeph) Wang

[Pl-3]
　　Scott Klasky (Oak Ridge National Laboratory, USA)
　"To the exascale and beyond"

-- Break　（9:45-10:00）--

<Room B> Meeting Room

Invited & Oral Sessions（10:00-12:00）　Chairperson: Pankaj Attri

[I-34] Invited (10:00-10:30)
　　Kinga Kutasi (Wigner Research Centre for Physics, Hungary)
　"Surface-wave microwave discharge for deposition of reactive species into liquids"

[I-35] Invited (10:30-11:00)
　　Katsuhisa Kitano (Osaka University, Japan)
　"Investigation of elementary reactive processes for research on plasma medicine"

[O-36] (11:00-11:15)
　　Kathryn VanderEspt (Jožef Stefan Institute, Slovenia)
　"Treatment of Bisphenol-A and Bisphenol-S using Atmospheric Plasma and An In-Depth Study of Their Degradation Pathways"

[O-37] (11:15-11:30)
　　Magdaleno R. Vasquez Jr. (University of the Philippines, Philippines)
　"Deposition of AZO films using custom-made targets from powder precursors"

[O-38] (11:30-11:45)
　　Jan Kuhfeld (Ruhr University Bochum, Germany)
　"A nanosecond pulsed (near-)atmospheric pressure plasma source as reference for modeling and experiment"

[O-39] (11:45-12:00)
　　Enggar Alfianto (Osaka University, Japan)
　"Generation of solvated electrons and water ions in phosphate-buffered saline (PBS) solutions exposed to pulsed He plasmas"

========= Thursday, April 20, 2023 =========

<Room A> Auditorium Hall

Plenary Sessions（9:00-9:45） Chairperson: Sang-Ki Nam

[Pl-4]
  Jongchul Park (Samsung Electronics, Korea)
  "Data driven TTTM (Tool To Tool Matching) at the mass production of semiconductor chips"

-- Break （9:45-10:00） --

<Room B> Meeting Room

Invited Sessions（10:00-12:00） Chairperson: Remi Dussart

[I-36] Invited (10:00-10:30)
  Kazunori Shinoda (Hitachi, Ltd., Japan)
  "*In-situ* analysis of surface reactions in plasma-assisted thermal-cyclic atomic layer etching of thin films"

[I-37] Invited (10:30-11:00)
  Kazuki Denpoh (Tokyo Electron Technology Solutions Ltd., Japan)
  "Comprehensive Ion-Molecule Reactive Collision Model for Particle-based Plasma Simulation Models"

[I-38] Invited (11:00-11:30)
  Masanaga Fukasawa (Sony Semiconductor Solutions Corp., Japan)
  "Damaged Layer Control for Atomic-precision Etching"

[I-39] Invited (11:30-12:00)
  Masaharu Shiratrani (Kyushu University, Japan)
  "Tuning Mechanical Properties of Plasma CVD a-C:H films using Carbon Nanoparticles"

--- Lunch (12:00-13:30) ---

Invited Sessions（13:30-15:00） Chairperson: Masaharu Shiratani

[I-40] Invited (13:30-14:00)
  Shunjiro Shinohara (Tokyo University of Agriculture and Technology, Japan)
  "Characterization and Application of Developed, High-Density RF Plasmas, Focusing on Extremely Small Size and Neutrals Pressure"

[I-41] Invited (14:00-14:30)
   Miran Mozetič (Jozef Stefan Institute, Slovenia)
"Surface kinetics upon hydrophilization of polymers"

[I-42] Invited (14:30-15:00)
   Yun-Chien Cheng (National Yang Ming Chiao Tung University, Taiwan)
"Atmospheric-pressure Plasma Discharge Current Classification with Deep Convolutional Neural Networks"

--------------------------------------- Break （15:00-15:30） ---------------------------------------

Poster Sessions Day2 （15:30-17:30）   <Auditorium Lobby>
Chairperson: Satoshi Hamaguchi

======== Friday, April 21, 2023 ========

<Room B> Meeting Room

Invited Sessions （9:00-11:45）   Chairperson: Miran Mozetič

[I-43] Invited (9:00-9:30)
   Pankaj Attri (Kyushu University, Japan)
"Atmospheric pressure plasma-induced CO_2 conversion"

[I-44] Invited (9:30-10:00)
   Saša Dujko (University of Belgrade, Serbia)
"Transport of electrons and propagation of streamers in N_2-CH_4 mixtures"

[I-45] Invited (10:00-10:30)
   Nikita D. Lepikhin (Ruhr University Bochum, Germany)
"Mechanisms of anomalous $N_2^+(B^2\Sigma u+)$ population in near-atmospheric pressure plasma jet in nitrogen"

-- Break （10:30-10:45） --

[I-46] Invited (10:45-11:15)
   Tomoko Ito (Osaka University, Japan)
"Surface analyses of β-diketone-adsorbed transition metal materials in atomic layer etching (ALE) processes"

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[I-47] Invited (11:15-11:45)
   Pierre Vinchon (Osaka University, Japan)
  "Monolayer Graphene, a perfect hub for the study of out-of-equilibrium phenomena in plasma-surface interactions"

Closing（11:45-12:00）

Poster Sessions Program

========= Tuesday, April 18, 2023 =========

Poster Sessions Day1 (16:00-18:00)　　　　<Auditorium Lobby>

[P-1] Yudai Kotani (Osaka University, Japan)
　"Development of machine-learning-based interatomic potentials for sputtering simulation of silicon and silicon dioxide"

[P-2] Fadilla Zennifa (Kyushu University, Japan)
　"Interlock Event Prediction on Gyrotron Operation by Using Supervised Machine Learning"

[P-3] Toby James (UKAEA, UK)
　"MAST-U Data Management with ADIOS"

[P-4] Norbert Podhorszki (Oak Ridge National Laboratory, USA)
　"The Benefits of Data Reduction for Fusion Datasets"

[P-5] Fran Jurinec (University of Helsinki, Finland)
　"Feature storage framework for accelerating machine learning workflows on fusion data"

[P-6] Semin Joung (University of Wisconsin-Madison, USA)
　"Real-time ELM onset prediction based on the BES system using deep neural networks in DIII-D"

[P-7] Kenji Imadera (Kyoto University, Japan)
　"Inference of differential equations governing global plasma dynamics"

[P-8] Masayuki Yokoyama (National Institutes of Natiral Sciences, Japan)
　"Plausible model creation by means of data assimilation ~ an example: on the thermal transport of fusion plasmas ~"

[P-9] Christoph Eberle (LMU Munich, Germany)
　"Multi-Objective Multi-Fidelity Bayesian Optimization of Neural Network Architectures and Laser-Plasma Experiments"

[P-10] Charlotte Rogerson (University of Warwick, UK)
　"Framework for optimizing free parameters in ICF hydrodynamic simulations using Gaussian Process surrogate models."

[P-11] Enrico Crovini (Imperial College London, UK)
　"Automatic JOREK Calibration via Batch Bayesian Optimization"

[P-12] Aaro Järvinen (VTT Technical Research Centre of Finland, Finland)
"Representation Learning Algorithms for Inferring Machine Independent Latent Features in Pedestal Plasmas in JET and AUG"

[P-14] Saša Dujko (University of Belgrade, Serbia)
"Effects of anisotropic scattering and ionization energy partitioning on the electron transport in argon"

[P-15] Allen Vincent Catapang (Doshisha University, Japan)
"Measurement of positive and negative ion energy of Ar-water vapor plasma in a DC reactive magnetron sputtering"

[P-16] Kenzo Ibano (Osaka University, Japan)
"Plasma-enhanced pulsed laser deposition of metal oxide thin films"

[P-17] Joy Kristelle De Mata (University of the Philippines Diliman, Philippines)
"Low energy fs-PLA of Nd:YAG target in high-pressure oxygen and nitrogen background gas"

[P-18] Katrinne Clea Pinca (University of the Philippines Diliman, Philippines)
"Sputter-deposited titanium-based coatings for surgical tool applications"

[P-19] Junya Matsuno (Ritsumeikan University, Japan)
"Reproduction of the early solar system materials by radio frequency thermal plasma with consideration of hydrogen addition"

[P-20] Elif Muslu (Suleyman Demirel University, Turkey)
"Preparation of Sandwich-like Silicon-Based Thin Film Anode via Radio Frequency Magnetron Sputtering Technique for Lithium-Ion Battery Application"

[P-21] Zoran Petrović (Serbian Academy for Sciences and Arts, Serbia)
"Deriving the Breakdown Voltage from Relaxation Oscillations in Low-Current Discharge"

[P-22] Kazuhiro Karahashi (Osaka University, Japan)
"Etching reactions by polyatomic ion bombardment"

[P-23] Sarah Alamri (Osaka University, Japan)
"Numerical simulation of radio-frequency (RF) capacitively coupled plasmas (CCPs) of argon and comparison with experimental observations"

[P-24] Jomar U. Tercero (Osaka University, Japan)
"Surface-reaction analyses of multi-step plasma-enhanced atomic layer etching for SiN with molecular dynamics simulation"

[P-25] Fatima Jenina Arellano (Osaka University, Japan)
"First-principles simulation of optical emission spectra for low-pressure argon plasmas and its experimental validation"

[P-26] Yi-Fan Zhang (Dalian University of Technology, China)
"Fluid study on uniformity in capacitively coupled silane mixture discharges"

[P-27] Po-Chun Huang (National Yang Ming Chiao Tung University, Taiwan)
"Comparing the Effects of Different Dielectric Materials on Atmospheric Pressure Plasma Jet by Experiments and Simulations"

[P-28] Susumu Kato (AIST, Japan)
"Kinetic analysis of a flowing nitrogen post discharge at near-atmospheric-pressure"

[P-42] Xinyu Wei (University of Science and Technology of China, China)
"The boron catalytic graphitization of carbon fiber using microwave plasma"

========= Thursday, April 20, 2023 =========

Poster Sessions Day2（15:30-17:30）　　　<Auditorium Lobby>

[P-29] Cheol Woong Kim (Pusan National University, Korea)
"Datasets using truncated SVD for predictive potential distribution machine learning model"

[P-30] Jarl Tynan Collado (Osaka University, Japan)
"Deep neural network surrogate model for predicting 2D plasma profiles"

[P-31] Yugo Isobe (The University of Tokyo, Japan)
"Data-driven study on occurrence condition of detached plasmas in a magnetic-confinement-fusion device"

[P-32] Gregor Decristoforo (UiT The Arctic University of Norway, Norway)
"Scrape-off layer profiles prediction using a data driven stochastic model for filament transport"

[P-33] Grégoire Clarté (University of Helsinki, Finland)
    "Maximizing Pedestal Pressure Height through Bayesian Optimisation"

[P-34] Andreas Gillgren (Chalmers University of Technology, Sweden)
    "Interpretable machine learning based approach to identify coupled pedestal density
     dependencies at JET"

[P-35] Stefan Dasbach (Forschungszentrum Jülich GmbH, Germany)
    "Neural networks for fast tokamak scrape-off layer models"

[P-36] George Holt (Science and Technology Facilities Council, UK)
    "Divertor Modelling Emulation and Detachment Control for the MAST-U Tokamak"

[P-37] Adriano Agnello (STFC Hartree Centre, UK)
    "Phase space transport and emulators in ITG Turbulence"

[P-38] Nicola Amorisco (STFC Hartree Centre, UK)
    "Machine Learning for Plasma Shape Control on MAST-U"

[P-39] Yoeri Poels (Eindhoven University of Technology, the Netherlands)
    "Fast Divertor Plasma Simulation using Deep Learning-based Surrogate Modeling"

[P-40] Jonathan Citrin (DIFFER, the Netherlands)
    "Fast transport simulations with higher-fidelity surrogate models for ITER"

[P-41] Yao-Li Liu (National Cheng Kung University, Taiwan)
    "Machine learning for laser-driven ion beam via radiation pressure acceleration"

[P-43] Jong Woo Hong (Sungkyunkwan University, Korea)
    "Indium Tin Oxide Etch Characteristics using $CxH_2x+_2(x=1,2,3)/Ar$"

[P-44] Hong Seong Gil (Sungkyunkwan University, Korea)
    "Isotropic Etching of SiO2 using NF3/H2 Remote Plasma and Methanol Gas"

[P-45] Charisse Marie Donato Cagomoc (Osaka University, Japan)
    "Molecular Dynamics Simulation of SiO_2 Etching by CF_3^+ and Cl^+"

[P-46] Shameem Ahmed (Kyushu University, Japan)
    "Growth Characteristics of Plant by Irradiation on Seed and Leaf with Active Oxygen
     Species"

[P-47] Anjar Anggraini Harumningtyas (Osaka University, Japan)
    "Thermal and Plasma-enhanced Atomic Layer Deposition of Strontium Oxide on Artificial
     Spinal Cages"

[P-48] Akiko Hirata (Sony Semiconductor Solutions Corporation, Japan)
"Effect of Ar or Kr desorption steps on SiN ALE performances and its damage generation"

[P-49] Shota Nunomura (AIST, Japan)
"Real-time observation of silicon surface passivation for defect and band engineering"

[P-50] Hsing Che Tsai (National Yang Ming Chiao Tung University, Taiwan)
"Numerical Investigation of Argon Inductively Coupled Plasma Source Using a Parallel 2-D Axisymmetric Fluid Model with Unstructured Grid"

[P-51] Wan Dong (Dalian University of Technology, China)
"Electron dynamics in capacitive Ar/CHF_3 discharges driven by sawtoothtype voltage waveforms"

[P-52] Nicolas Mauchamp (Osaka University, Japan)
"Nano-scale trench etching of Si surfaces by Cl plasmas using Molecular Dynamics simulations"

[P-53] Shunta Kawabata (Osaka University, Japan)
"Surface reactions of Si and SiO_2 exposed to energetic tungsten fluoride ion beams"

[P-54] Keith Nealson M. Penado (Doshisha University, Japan)
"Ambient measurement of electron and Ar+ ion transport coefficients in a drift tube mobility spectrometer"

[P-55] Hsin Yu Lo (National Yang Ming Chiao Tung University, Taiwan)
"Improve the Discharge Efficiency of Atmospheric Pressure Plasma Jet by Changing Electrode Arrangement"

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