

ICPIG XXXV

Egmond aan Zee

2023



July 9th – 14th, 2023

Hotel Zuiderduin, Egmond aan Zee,
The Netherlands.

www.icpig2023.com

Version: July 3, 2023

TU/e

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1 ICPIG — a forum for discussion



1.1 History and mission

The International Conference on Phenomena in Ionized Gases (ICPIG), now in its XXXV edition, since 1953 has been a forum for the discussion of nearly all fields of plasma science, covering modelling and experiments, from the fundamentals of elementary processes, basic data and discharge physics (including transport and interaction with walls), to applications. Topics include plasma processing of surfaces and particles, high pressure and thermal plasma processing, development of radiation sources, plasma medicine, atmospheric and stellar plasmas, environmental protection and pollution control, plasma aerodynamics, and non-thermal plasmas in fusion devices.

In response to the Covid crisis, and to stay in an interchanging schedule with the ESCAMPIG, ICPIG XXXV has been postponed from July 2021 to July 2023. We are looking forward to resuming direct scientific exchange in a pleasant atmosphere.

1.2 Selection of talks

General and topical invited talks have been suggested and selected by the International Scientific Committee. The ISC also elected the winner of the von Engel and Franklin prize. The 36 selected talks have been selected by the ISC from the 125 abstracts whose authors applied for it; criteria were the scientific impact and a proper representation of participating countries. Other abstracts are presented as posters. The special session has been organised by the Local Organising Committee.

1.3 von Engel and Franklin prize

The 2023 winner of the von Engel and Franklin prize is:

Jean-Pierre Boeuf of Université P. Sabatier in Toulouse, France.

He was elected by ICPIG's international scientific committee. He will deliver his prize-lecture at the ICPIG on Friday morning. The "von Engel and Franklin Prize" was established in 1998. It is sponsored by the "Hans von Engel and Gordon Francis Fund" and is administered by the Board of Physical Sciences, University of Oxford. The prize is named in honour of two distinguished colleagues who had a major role in ICPIG and its community since the first meeting in 1953.

The prize is awarded every two years to an individual for work in the field of physics and technology of plasmas and ionized gases, as covered by ICPIG meetings. The selection is conducted by the International Scientific Committee, based either on long-standing and important contributions to the field, or an outstanding achievement giving rise to a new field, or both.

1.4 Information for Presenters

Selected orals are 20 minutes (16 min + 4 min questions), topical invited orals and special session invited orals are 30 minutes (25 min + 5 min questions), general invited orals are 45 minutes (40 min + 5 min questions) and the von Engel and Franklin prize is 60 minutes (55 min + 5 min questions). Orals will be presented from a modern Windows laptop, including Office 365 and Adobe Reader. Please upload your presentation to the laptop in the lecture hall well in advance of your scheduled presentation block.

Posterboards will be 1.25 meter high and 1.00 meter wide. Posters can be mounted before a poster session and should be removed in time before the next poster session.

1.5 Conference Topics

- T1** Elementary processes and fundamental data
- T2** Thermodynamics and transport phenomena
- T3** Plasma wall interactions, electrode and surface effects
- T4** Collective and nonlinear phenomena
- T5** Modeling and simulation techniques
- T6** Plasma diagnostic methods
- T7** Astrophysical, geophysical and other natural plasmas
- T8** Low pressure plasmas
- T9** High frequency and pulsed discharges
- T10** Non-equilibrium plasmas and microplasmas at high pressures
- T11** Plasmas in/with liquids
- T12** Thermal plasmas
- T13** Complex and dusty plasmas, ion-ion plasmas, mixed phase plasmas
- T14** Plasma created by external sources of ionization
- T15** Plasma processing of surfaces and particles
- T16** High pressure and thermal plasma processing
- T17** Medical, biological, environmental and aeronautical applications
- T18** Plasma power and pulsed power technology, particle and radiation sources
- T19** Other applications

1.6 Local Organizing Committee

Ute Ebert (chair), Centre for Mathematics and Computer Science (CWI) Amsterdam and Eindhoven University of Technology (TU/e)

Sander Nijdam (co-chair), TU/e

Jannis Teunissen CWI

Jan van Dijk TU/e

Job Beckers TU/e

Baohong Guo CWI

Hemaditya Malla CWI

Conference organisation is supported by:

Ms. Inge Sanders and Ms. Evy Koenen - van Elderen - Conferences department of the Eindhoven University of Technology.

Student assistants: Francesco Botta, Jesse Delbressine, Wouter Holman and Marcel Mińkowski.

1.7 International Scientific Committee

Masaharu Shiratani (Chair) Japan

Igor Adamovich USA

N. Yu. Babaeva Russia

Christine Charles Australia

Gilles Cartry France

Uwe Czarnetzki Germany

Giorgio Dilecce Italy

Francisco J. Gordillo Vázquez Spain

Jon Tomas Guðmundsson Iceland

Sander Nijdam The Netherlands

Deborah O'Connell Ireland

Joanna Pawlat Poland

Marija Radmilovic Radjenovic Serbia

Tlekkabul Ramazanov Kazakhstan

1.8 Sponsors

ICPIG XXXV is sponsored by:



2 Practical information

2.1 Venue



The conference will take place at Hotel Zuiderduin (www.zuiderduin.nl) in Egmond aan Zee, 100 meter from the sand beach along the coast of Holland. Egmond is an old fishermen's village with many restaurants, pubs and hotels, and is well visited in the summer.

Free WIFI is available throughout the hotel using the ZDuinWIFI network. No password is required.

2.2 International travel and local transport

Air and land travel would approach Amsterdam airport or Amsterdam station. From there it is about an hour by public transport to the venue. The closest railway station is **Heiloo**, from which we will provide transportation by shuttle bus and coach, see below. However, the Alkmaar railway station is larger and has more taxis, which may be beneficial for participants arriving at other times.

We will provide:

- On Sunday July 9th, we will be driving our own van regularly to and from Heiloo station between 11:00 and 22:00 at least every half hour and no reservation is necessary.
- On other days our shuttle service is available between 8:00 and 22:00 (Friday only until 14:00), but a reservation is required.
For reservations for pick-up, please send an email to icpig.shuttlereservation@gmail.com including your expected date and time of arrival at Heiloo station and your mobile phone number. Return transfers can be arranged in the same way, or by directly contacting Jesse or Wouter during the conference.
- On Friday July 14th, immediately after the end of the program, (12:30) we will provide coaches towards Heiloo station. There is no need for a reservation.

The pick-up location at Heiloo railway station is on the West side near the large bicycle parking. Google maps link: goo.gl/maps/rHu2hR6g36hhTySG9. Coordinates: 52.60038N, 4.70107E. Approximate address: Stationsweg 96, Heiloo, NL.

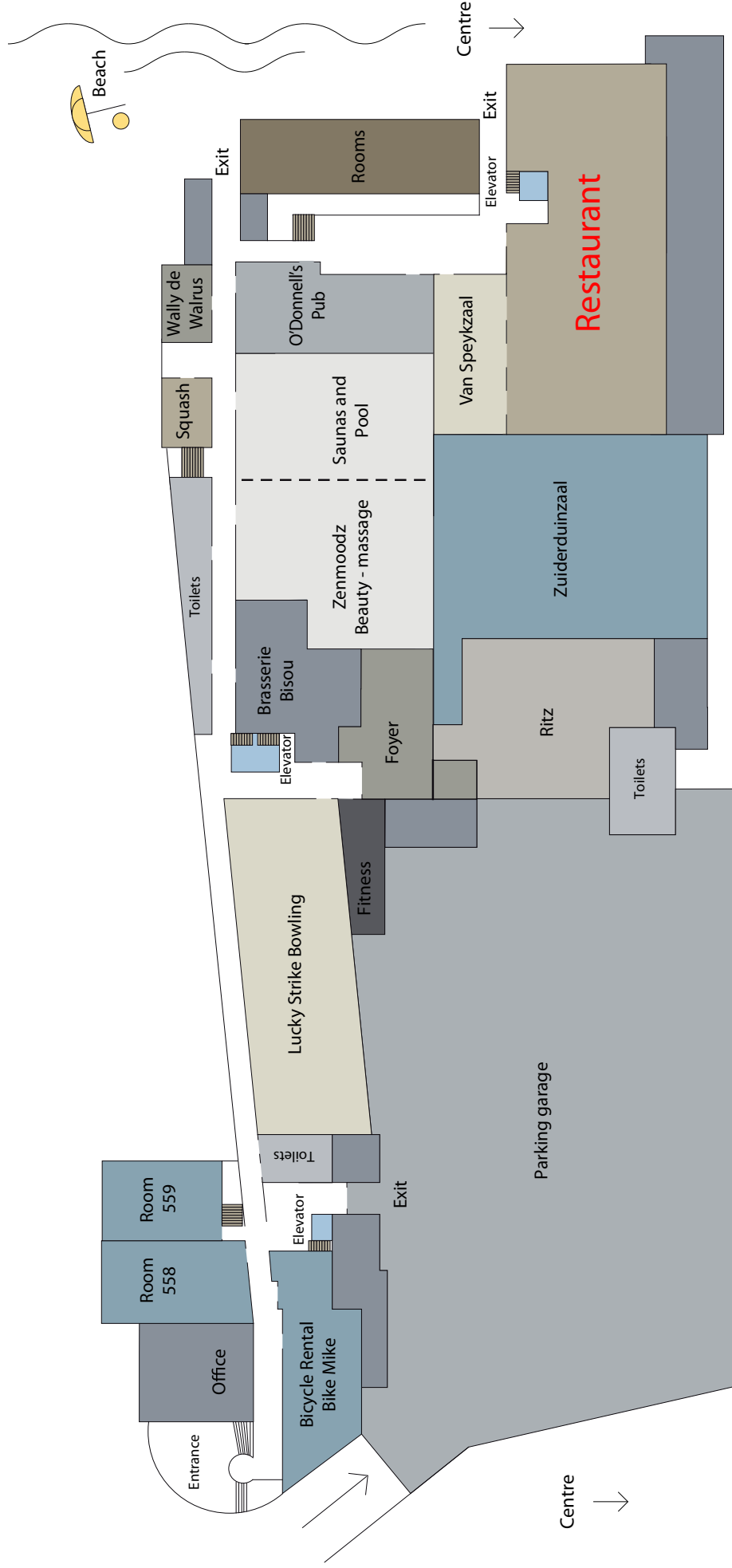
2.2.1 Venue maps



Floor 1



Floor 0



3 Program

3.1 Program table

Mon, Jul 10		Tue, Jul 11		Wed, Jul 12		Thu, Jul 13		Fri, Jul 14				
09:00	Registration	09:00	Tue1-1 Kenji Ishikawa	09:00	Wed1A-1 Chng	Wed1B-1 Benilov	09:00	Thu1-1 Zdenko Machala		09:00	Fri1A-1 González-	Fri1B-1 Gómez-
09:20	Opening			09:30	Wed1A-2 Limburg	Wed1B-2 Gonçalves				09:30	Fri1A-2 Ramazanov	Fri1B-2 Reuter
09:45	Mon1-1 Annemie Bogaerts	09:45	Tue1-2 Achim von Keudell	09:50	Wed1A-3 Leduc	Wed1B-3 Wang	10:30	Thu1-2 Pascal Chabert		09:50	Fri1A-3 Adamovich	Fri1B-3 Miyazaki
10:30	Coffee break			10:10	Wed1A-4 Herrmann	Wed1B-4 Dias				10:10	Fri1A-4 Gablier	Fri1B-4 Meyer
11:00	Mon2A-1 Stamate	Mon2B-1 Choe	11:00	Tue2A-1 Takashima	Tue2B-1 Laurita	11:00	Wed2A-1 Skocić	Wed2B-1 Brault	11:00	von Engel and Franklin prize lecture: Jean-Pierre Boeuf		
11:30	Mon2A-2 Violetto	Mon2B-2 Chiu	11:30	Tue2A-2 Martini	Tue2B-2 Orel	11:30	Wed2A-2 Khan	Wed2B-2 Poli				11:30
11:50	Mon2A-3 Guerra	Mon2B-3 Kutasi	11:50	Tue2A-3 Saito	Tue2B-3 Wagenaars	11:50	Wed2A-3 Wubs	Wed2B-3 Litch	11:50	Thu2A-3 Pajdarová	Thu2B-3 Peláez	
12:10	Mon2A-4 Shen	Mon2B-4 Walker	12:10	Tue2A-4 Toyoda	Tue2B-4 Agus	12:10	Wed2A-4 Lepikhin	Wed2B-4 Li	12:10	Thu2A-4 Kumagai	Thu2B-4 Bruggeman	
12:30			12:30	COST PIAgri		12:45 - 18:00	Excursion		12:30	Lunch	12:00 - 12:30	Poster Prizes + Closing ceremony
13:15	Diversity session	Lunch	13:15	Data Session	Lunch			12:30 - 13:00	Bus transport to railway			
14:00	Poster session P1		14:00	Poster session P2				13:45	Poster session P3			
16:00	Short coffee break		16:00	Short coffee break				15:45	Short coffee break			
16:15	Mon3A-1 Bhattacharjee	Mon3B-1 Sobota	16:15	Tue3-1 Atsushi Komuro				16:00	Thu3A-1 Takahashi	Thu3B-1 Ussenov		
16:45	Mon3A-2 Shinoda	Mon3B-2 Robert	16:45	Tue3-2 Anne Bourdon				16:30	Thu3A-2 Cvelbar	Thu3B-2 Lazzaroni		
17:15	Mon3A-3 Taccogna	Mon3B-3 Jinno	17:15	Tue3-3 Mark van de Kerkhof				17:00 - 19:00	Poster session P4			
17:45	Mon3A-4 Ritchie	Mon3B-4 Garrigues	17:45 - 18:15	Tue3-4 Carmen Guerra-Garcia								
18:15 - 18:45	Mon3A-5 Engeln	Mon3B-5 Luque						19:30 - 00:00	Conference dinner			
19:00 - 21:30	Welcome reception											

General Invited

Topical Invited

Selected

Special Session

3.2 Detailed program including social program

Sun, July 9

15:00 - 18:00 **Registration.** Location: Lounge 1.

Mon, July 10

09:00 - 09:20 **Registration.** Location: Lounge 1.

Session: Mon1 Chair: **Leanne Pitchford.** Location: Lamoraalzaal.

09:20 - 09:45 **Opening.**

09:45 - 10:30 **Mon1-1 General Invited: Annemie Bogaerts (T17)**

University of Antwerp, Belgium.

CO₂ conversion and N₂ fixation into value-added chemicals and fuels

10:30 - 11:00 **Coffee break.** Location: Lounge 1.

Session: Mon2A Chair: **Eric Robert .** Location: Lamoraalzaal.

11:00 - 11:30 **Mon2A-1 Topical Invited: Eugen Stamate (T3)**

Technical University of Denmark, Denmark.

Three-dimensional plasma sheath lenses: concept and applications

11:30 - 11:50 **Mon2A-2 Selected: Luca Vialetto (T3)**

University of Kiel, Germany.

Multiscale plasma-surface model applied to reactive magnetron sputtering

11:50 - 12:10 **Mon2A-3 Selected: Vasco Guerra (T3)**

IPFN, IST, Universidade de Lisboa, Portugal.

Atomic wall recombination in oxygen-containing plasmas

12:10 - 12:30 **Mon2A-4 Selected: Qinghao Shen (T5)**

Dutch Institute for Fundamental Energy Research, Netherlands.

Non-thermal chemical dissociation of CO₂: a modelling approach

Session: Mon2B Chair: **Masaharu Shiratani.** Location: Abdijzaal.

11:00 - 11:30 **Mon2B-1 Topical Invited: Wonho Choe (T11)**

Korea Advanced Institute of Science and Technology (KAIST), Korea, Republic Of.

Electric wind and water surface stabilization under impingement of an atmospheric pressure plasma jet

11:30 - 11:50 **Mon2B-2 Selected: Pohsien Chiu (T11)**

Department of Mechanical Engineering, National Yang Ming Chiao Tung University, Hsinchu, Taiwan.

DBD-Streamer Mode Transition of Atmospheric-Pressure Plasma Jet Applied on Water with Changed Distance and AC Power

11:50 - 12:10 **Mon2B-3 Selected: Kinga Kutasi (T11)**

Wigner Research Centre for Physics, Hungary.

Surface-wave microwave discharge in contact with liquids

12:10 - 12:30 **Mon2B-4 Selected: Roxanne Walker (T11)**

University of Michigan, United States of America.

Plasma Discharge Modifications Over a Rough Dielectric Liquid Surface

12:30 - 14:00 Lunch. Location: Restaurant.

13:15 - 14:00 Diversity session. Gerrit Kroesen and Cyndi Long Location: Lamoraalzaal.

In 2018, TU/e and its physics department set out on a long-term program to improve the diversity balance among students and staff. The main aspects of this program were based on examples from other universities, like the University of Michigan and Groningen university. It has proven to be successful. During the session, material will be presented that illustrates the effectiveness of various approaches and ingredients, and the audience will be engaged in a discussion of future options that could further improve inclusiveness and diversity in all its dimensions.

14:00 - 16:00 Poster session P1 Location: Lounge 1.

Poster titles and abstracts on page 20.

16:00 - 16:15 Short coffee break. Location: Lounge 1.

Session: Mon3A Chair: **Emile Carbone.** Location: Lamoraalzaal.

16:15 - 16:45 Mon3A-1 Topical Invited: Sudeep Bhattacharjee (T10)

Indian Institute of Technology (IIT) - Kanpur, India.

Potential fluctuation dynamics in cold atmospheric pressure microplasmas

16:45 - 17:15 Mon3A-2 Topical Invited: Kazunori Shinoda (T15)

Hitachi, Ltd., Japan.

Selective atomic layer etching of thin films using cyclic plasma exposure and infrared irradiation

17:15 - 17:45 Mon3A-3 Topical Invited: Francesco Taccogna (T3)

CNR, Italy.

Role of electron-induced secondary electron emission from the walls in RF breakdown

17:45 - 18:15 Mon3A-4 Topical Invited: Grant Ritchie (T8)

University of Oxford, United Kingdom.

High resolution spectroscopy of simple molecular plasmas

18:15 - 18:45 Mon3A-5 Topical Invited: Richard Engeln (T6)

Tech RES SCAN Plasma Physics, ASML Netherlands B.V., The Netherlands.

A diagnostic study of the CO₂ vibrational kinetics in a glow discharge

Session: Mon3B Chair: **Wonho Choe.** Location: Abdijzaal.

16:15 - 16:45 Mon3B-1 Topical Invited: Ana Sobota (T10)

Eindhoven University of Technology, Netherlands.

The interaction of non-thermal atmospheric pressure plasmas with substrates

16:45 - 17:15 Mon3B-2 Topical Invited: Eric Robert (T17)

GREMI, CNRS/Université d'Orléans, France.

Plasma electrode DBD for low power, large surface applications

17:15 - 17:45 Mon3B-3 Topical Invited: Masafumi Jinno (T17)

Ehime University, Japan.

Spontaneous external molecular/gene introduction with random genome integration free by complex stimuli generated by plasma and its applications

17:45 - 18:15 Mon3B-4 Topical Invited: Laurent Garrigues (T5)

Laplace/CNRS-Universite de Toulouse, France.

Low temperature plasmas modeling using the Sparse-PIC algorithm

18:15 - 18:45 Mon3B-5 Topical Invited: Alejandro Luque (T5)

Instituto de Astrofísica de Andalucía (IAA-CSIC), Spain.

Towards coarse-grained models for extensive streamer coronas in thunderclouds

19:00 - 21:30 Welcome reception. Location: Lounge 1.

Here we will also offer a variety of street food from all over the world (dinner replacing).

Tue, July 11

Session: Tue1 Chair: **Jon Tomas Gudmundsson**. Location: Lamoraalzaal.

09:00 - 09:45 Tue1-1 General Invited: Kenji Ishikawa (T15)

Nagoya University, Japan.

Frontiers of Plasma Etching Technology for Advanced Semiconductor Devices

09:45 - 10:30 Tue1-2 General Invited: Achim von Keudell (T8)

Ruhr University Bochum, Germany.

Transport from target to substrate in High Power Impulse Magnetron Sputtering Plasmas

10:30 - 11:00 Coffee break. Location: Lounge 1.

Session: Tue2A Chair: **Luca Vialetto**. Location: Lamoraalzaal.

11:00 - 11:30 Tue2A-1 Topical Invited: Keisuke Takashima (T9)

Tohoku University, Japan.

Generation of Vibrationally Excited Nitrogen in a DC-Superimposed Repetitive Nanosecond Pulse Discharge

11:30 - 11:50 Tue2A-2 Selected: Luca Matteo Martini (T9)

University of Trento, Italy.

Spectroscopic investigation of the time evolution of CO₂ dissociation in a nanosecond plasma-discharge.

11:50 - 12:10 Tue2A-3 Selected: Atsushi Saito (T15)

AGC Inc., Japan.

Propagation of radicals and carbon particles in CH₄ plasma at atmospheric pressure

12:10 - 12:30 Tue2A-4 Selected: Hirotaka Toyoda (T9)

Nagoya University, Japan.

Time-dependent measurement of ion composition in a capacitively-coupled Ar/C₄F₈/O₂ power-modulated VHF plasma

Session: Tue2B Chair: **Joanna Pawlat**. Location: Abdijzaal.

11:00 - 11:30 Tue2B-1 Topical Invited: Romolo Laurita (T19)

Alma Mater Studiorum - University of Bologna, Italy.

On the potential use of plasma for food processing

11:30 - 11:50 Tue2B-2 Selected: Inna Orel (T17)

GREMI, Université d'Orléans, France.

Synergetic effect of carbon monoxide (CO) and cold atmospheric Helium/CO₂ MHz and kHz plasmas on bacterial disinfection for biomedical applications

11:50 - 12:10 Tue2B-3 Selected: Erik Wagenaars (T9)

York Plasma Institute, University of York, United Kingdom.

Formation of O and H radicals in an atmospheric-pressure nanosecond pulsed discharge in helium with admixtures of water vapour

12:10 - 12:30 Tue2B-4 Selected: Rita Agus (T17)

EPFL (Swiss Plasma Center), École polytechnique fédérale de Lausanne, Switzerland.

Plasma-treated water inactivation mechanisms of Escherichia coli

12:30 - 14:00 Lunch. Location: Restaurant.

12:30 - 12:45 COST PI Agri. Location: Abdijzaal.

COST Action: CA19110 - Plasma applications for smart and sustainable agriculture

13:15 - 14:00 Workshop on Input data for Low-Temperature Plasma Science. Location: Lamoraalzaal.

This lunch event aims to bring together ICPIG participants with an interest in input data creation and dissemination. It will feature a demonstration of the new version of the LXCat database and a discussion on the path towards full-chemistry databases. Organized by Jan van Dijk and Emile Carbone.

14:00 - 16:00 Poster session P2 Location: Lounge 1.

Poster titles and abstracts on page 24.

16:00 - 16:15 Short coffee break. Location: Lounge 1.

Session: Tue3 Chair: **Luis Alves**. Location: Lamoraalzaal.

16:15 - 16:45 Tue3-1 Special Session Invited: Atsushi Komuro (T5)

The University of Tokyo, Japan.

Simulation of the chemical reaction induced by a streamer discharge and its validation study

16:45 - 17:15 Tue3-2 Special Session Invited: Anne Bourdon (T10)

LPP, France.

Why are 2D axisymmetric ionization waves generated in a simple point-to-plane geometry in atmospheric pressure air still studied?

17:15 - 17:45 Tue3-3 Special Session Invited: Mark van de Kerkhof (T14)

ASML, Netherlands.

EUV-induced Hydrogen Plasma: Pulsed Mode Generation and Consequences in Lithographic Scanner

17:45 - 18:15 Tue3-4 Special Session Invited: Carmen Guerra-Garcia (T10)

Massachusetts Institute of Technology, United States of America.

Two-Way Coupling of Plasma-Assisted Combustion

Wed, July 12

Session: Wed1A Chair: **Sander Nijdam**. Location: Lamoraalzaal.

09:00 - 09:30 **Wed1A-1 Topical Invited: Tat Loon Chng (T6)**

National University of Singapore, Singapore.

Recent Developments in the Electric Field-Induced Second Harmonic Generation (EFISH) Method for Non-Equilibrium Plasmas

09:30 - 09:50 **Wed1A-2 Selected: Anne Limburg (T6)**

Eindhoven University of Technology, Netherlands.

E-FISH data analysis for electric field measurements on single channel streamers

09:50 - 10:10 **Wed1A-3 Selected: Alexandre Leduc (T6)**

LPP, France.

Collisional Radiative Model as plasma diagnostic for Hall-effect thrusters

10:10 - 10:30 **Wed1A-4 Selected: Anja Herrmann (T6)**

DIFFER, Netherlands.

Determining the dependency of radical density on position by dual thermocouple radical probe

Session: Wed1B Chair: **Alejandro Luque**. Location: Abdijzaal.

09:00 - 09:30 **Wed1B-1 Topical Invited: Mikhail Benilov (T5)**

Universidade da Madeira, Portugal.

Is there a place for good math in gas discharge science? A personal view

09:30 - 09:50 **Wed1B-2 Selected: Duarte Gonçalves (T5)**

LPGP, University Paris-Saclay & IPFN, Instituto Superior Técnico, France.

Coupled reactive-flow simulation of plasma jets

09:50 - 10:10 **Wed1B-3 Selected: Zhen Wang (T5)**

Centrum Wiskunde & Informatica (CWI), Amsterdam, The Netherlands, Netherlands.

Quantitative modeling of streamer discharge branching in air and experimental validation

10:10 - 10:30 **Wed1B-4 Selected: Tiago Cunha Dias (T5)**

Instituto de Plasmas e Fusão Nuclear, Instituto Superior Técnico, Lisboa, Portugal.

Assessment of time-locality assumptions on the modelling of nanosecond-pulsed discharges

10:30 - 11:00 **Coffee break**. Location: Lounge 1.

Session: Wed2A Chair: **Richard Engeln**. Location: Lamoraalzaal.

11:00 - 11:30 **Wed2A-1 Topical Invited: Miloš Skočić (T6)**

Faculty of Physics University of Belgrade, Serbia.

Measurement of plasma parameters at the very beginning of the laser induced breakdown

11:30 - 11:50 **Wed2A-2 Selected: Waseem Khan (T6)**

Masaryk University, Czech Republic.

Fluorescence (TALIF) Measurement of Ground State Atomic Nitrogen Concentration in an Argon RF Plasma Pencil measured using a Picosecond Laser.

11:50 - 12:10 **Wed2A-3 Selected: Jente Wubs (T6)**

Leibniz Institute for Plasma Science and Technology (INP), Germany.

Comparison between THz absorption spectroscopy and ps-TALIF measurements of atomic oxygen densities

12:10 - 12:30 Wed2A-4 Selected: **Nikita Lepikhin (T6)**

Ruhr University Bochum, Germany.

Anomalous N_2^+ ($B^2\Sigma_u^+$) population in APPJ in nitrogen

Session: Wed2B Chair: **Atsushi Komuro**. Location: Abdijzaal.

11:00 - 11:30 Wed2B-1 Topical Invited: **Pascal Brault (T5)**

GREMI CNRS - University of Orleans, France.

Molecular dynamics simulations: A virtual microscope for studying plasma processes

11:30 - 11:50 Wed2B-2 Selected: **Davide Poli (T5)**

Universidad Carlos III de Madrid, Spain.

Fluid vs kinetic simulation of the Penning discharge

11:50 - 12:10 Wed2B-3 Selected: **Evan Litch (T15)**

University of Michigan, United States of America.

Redeposition in High Aspect Ratio Plasma Etching

12:10 - 12:30 Wed2B-4 Selected: **Xiaoran Li (T5)**

Xi'an Jiaotong University, China.

Particle-in-cell modelling of positive streamers in CO_2 : the role of photoionization

12:35 - 12:45 Group photo. Location: TBD.

12:45 - 18:00 Excursion to **De Zaanse Schans**.

The busses will leave at 13:00 from the hotel, and lunch packages will be provided for the bus ride. The excursion will take you to Zaanse Schans, a water-rich landscape below sea level, where daily life and crafts of the 18th and 19th centuries are brought to life, with windmills, workshops, wooden houses and barns. In the different workshops you can see how wooden shoes are made, or barrels, cloth, cheese and alike, or you can go for a hike through the historic settlement or through nature.

Zaanse Schans was the first industrial area of Europe. It was processing the goods that Dutch ships brought from overseas; it was conveniently located for transport over water and fully based on wind power for transport (sailing) and production (windmills).

You will get a booklet with a map and a voucher for various entries: windmills (choose 2 from paint mill De Kat, wood sawing mill 't Jonge Schaap or oil mill De Bonte Hen), a barrel maker, a weaver's house, Zaans Museum (processing of overseas products, living and clothing at about 1850, and a cookie factory from about 1930), clock museum "Zaanse Tijd" (strongly recommended!), and the windmill museum. Many other attractions are free to visit.

Nature: a round trip hike along the dyke and through the "polder" is about 3 km. There is a nature viewing tower behind the Zaans Museum, and a painting of the landscape by Claude Monet in the museum. Observe that the water behind the dyke is higher than the "land" in the polder. Windmills would maintain the height difference.

The windmills and the musea close at 17:00. Workshops, souvenir shops, Zaans Museum with Cafe and restaurant De Kraai will stay open until the busses leave at 17:30, bringing you back to the hotel at about 18:00.

Thu, July 13

Session: Thu1 Chair: **Anne Bourdon**. Location: Lamoraalzaal.

09:00 - 09:45 Thu1-1 General Invited: Zdenko Machala (T11)

Comenius University in Bratislava, Slovakia.

Transport of Reactive Species from Plasma Discharges into Water Determines the Plasma-Activated Water Properties and Applications

09:45 - 10:30 Thu1-2 General Invited: Pascal Chabert (T8)

LPP, CNRS, Ecole Polytechnique, France.

Recent challenges in electric (plasma) propulsion

10:30 - 11:00 Coffee break. Location: Lounge 1.

Session: Thu2A Chair: **Ana Sobota**. Location: Lamoraalzaal.

11:00 - 11:30 Thu2A-1 Topical Invited: Keigo Takeda (T6)

Meijo University, Japan.

Spectroscopic diagnostics of surface reactions of atomic species in non-thermal plasma

11:30 - 11:50 Thu2A-2 Selected: Alexandros Gerakis (T6)

Luxembourg Institute of Science & Technology, Luxembourg.

Single shot, non-resonant, four-wave mixing laser diagnostics of heavy species in low temperature plasmas.

11:50 - 12:10 Thu2A-3 Selected: Andrea Dagmar Pajdarová (T6)

University of West Bohemia, Czech Republic.

Cavity ring-down spectroscopy in HiPIMS discharge during the sputtering of the titanium target

12:10 - 12:30 Thu2A-4 Selected: Shinya Kumagai (T17)

Meijo University, Japan.

Plasma-on-Chip: A Microdevice for Direct Plasma Exposure of Cultured Cells

Session: Thu2B Chair: **Job Beckers**. Location: Abdijzaal.

11:00 - 11:30 Thu2B-1 Topical Invited: Armelle Michau (T13)

LSPM CNRS, France.

Particle formation and dusty plasma effect in non-equilibrium discharges

11:30 - 11:50 Thu2B-2 Selected: Tim Donders (T13)

Eindhoven University of Technology, Netherlands.

Decay of additional electron density released by laser-induced photodetachment as a diagnostic tool for dust particle size in a low-pressure nanodusty plasma

11:50 - 12:10 Thu2B-3 Selected: Ramón Peláez (T13)

CSIC, Spain.

Monitoring the carbonaceous interstellar dust analogues growth in cold plasmas by light scattering

12:10 - 12:30 Thu2B-4 Selected: Peter Bruggeman (T11)

University of Minnesota, United States of America.

A Model of Plasma-Enabled Gold Nanoparticle Synthesis in Microdroplets

12:30 - 13:45 Lunch. Location: Restaurant.

13:45 - 15:45 Poster session P3 Location: Lounge 1.

Poster titles and abstracts on page 29.

15:45 - 16:00 Short coffee break. Location: Lounge 1.

Session: Thu3A Chair: **Giorgio Dilecce**. Location: Lamoraalzaal.

16:00 - 16:30 Thu3A-1 Topical Invited: Kazunori Takahashi (T8)

Tohoku University, Japan.

Fundamental studies and applications of magnetic nozzle plasma

16:30 - 17:00 Thu3A-2 Topical Invited: Uros Cvelbar (T8)

Jozef Stefan Institute, Slovenia.

Plasmas for nano and facilitating next generation energy storage

Session: Thu3B Chair: **Igor Adamovich**. Location: Abdijzaal.

16:00 - 16:30 Thu3B-1 Topical Invited: Yerbolat Usenov (T10)

Princeton University, United States of America.

Dynamics of microdischarges in a volume DBD under airflow

16:30 - 17:00 Thu3B-2 Topical Invited: Claudia Lazzaroni (T15)

USPN - LSPM CNRS UPR3407, France.

Micro Hollow Cathode Discharges in Ar/N₂ for boron nitride PECVD

17:00 - 19:00 Poster session P4 Location: Lounge 1.

Poster titles and abstracts on page 33.

19:30 - 00:00 Conference dinner.

Location: restaurant Nautilus aan Zee, on the beach about 100 meters from the conference hotel.

BBQ, free drinks, and disco with a DJ in the later evening.

Fri, July 14

Session: Fri1A Chair: **Laurent Garrigues**. Location: Lamoraalzaal.

09:00 - 09:30 Fri1A-1 Topical Invited: Olmo González-Magaña (T1)

UNAM, Mexico.

Photodetachment of negative ions drifting in the Townsend Avalanche: Experimental and numerical study in O₂ and N₂O.

09:30 - 09:50 Fri1A-2 Selected: Tlekkabul Ramazanov (T1)

Al-Farabi Kazakh National University, IASIT, Kazakhstan.

Scattering and transport properties of dense plasmas

09:50 - 10:10 Fri1A-3 Selected: Igor Adamovich (T1)

Ohio State University, United States of America.

Semiclassical Analytic Model of Nonadiabatic Energy Transfer in Atomic Collisions

10:10 - 10:30 Fri1A-4 Selected: Renaud Gablier (T10)

Laboratoire EM2C, CentraleSupélec - CNRS, Université Paris-Saclay, France.

Effect of hydrodynamic regimes on the cumulative heating induced by NRP discharges in plasma-assisted combustion

Session: Fri1B Chair: **Inna Orel**. Location: Abdijzaal.

09:00 - 09:30 Fri1B-1 Topical Invited: Ana Gómez-Ramírez (T17)

Universidad de Sevilla, Spain.

On the role of reaction mechanisms and metal catalysts during the plasma-assisted ammonia synthesis

09:30 - 09:50 Fri1B-2 Selected: Stephan Reuter (T11)

Polytechnique Montreal, Canada.

Coupling of a microfluidic device with a reference cold plasma jet

09:50 - 10:10 Fri1B-3 Selected: Toshiaki Miyazaki (T11)

Hokkaido University, Japan.

Control of self-organized luminous pattern formation in atmospheric-pressure dc glow discharge

10:10 - 10:30 Fri1B-4 Selected: Mackenzie Meyer (T11)

University of Michigan, United States of America.

Modelling of PFAS Removal From Water by Plasma Treatment: C3F8 as a Surrogate

10:30 - 11:00 Coffee break. Location: Lounge 1.

Session: Fri2 Chair: **Gilles Cartry/Khaled Hassouni**. Location: Lamoraalzaal.

11:00 - 12:00 Fri2-1 von Engel and Franklin prize lecture: Jean-Pierre Boeuf (T1)

CNRS, University of Toulouse, France.

Nonlinearity and complexity of low-temperature plasmas. Self-organized filaments, striations, and spokes

12:00 - 12:30 Poster Prizes + Closing ceremony.

Poster prize award ceremony and closing session of the conference.

3.3 Posters

3.3.1 Poster session P1, Mon, Jul 10, 14:00 - 16:00

P1-1 - **Jaime de Urquijo** (T1)

Universidad Nacional Autónoma de México, Mexico.

Effective ionisation and three-body attachment swarm coefficients in H₂O-dry air gas mixtures

P1-2 - **Rui Manuel Santos Almeida** (T1)

Universidade da Madeira, Portugal.

Validating Townsend criterion for the ignition of volume electrical discharges

P1-3 - **Roman W. Schrittwieser** (T4)

University of Innsbruck, Austria.

Space charge structures on gridded coaxial cylinders

P1-4 - **Harry Philpott** (T4)

Eindhoven University of Technology, Netherlands.

Hysteresis Effects in Shielded kHz Atmospheric Pressure Plasma Jet

P1-5 - **YaZhen Wang** (T10)

Xi'an Jiaotong University, China.

Modelling the role of the leftover charged species on the subsequent discharges

P1-6 - **Bahram Mahdavi** (T5)

University of Iceland, Iceland.

The influence of secondary electron emission on a capacitive chlorine discharge

P1-7 - **Baohong Guo** (T5)

Centrum Wiskunde & Informatica (CWI), Netherlands.

Modeling energy efficiency of plasma chemistry by streamers in air

P1-8 - **Swati Swagatika Mishra** (T5)

Indian Institute of Technology Kanpur, India.

Molecular dynamics simulations of confined microplasmas at cryogenic temperatures

P1-9 - **Hemaditya Malla** (T5)

Centrum Wiskunde & Informatica, Netherlands.

Double-pulse streamer simulations for varying interpulse times in air

P1-10 - **Borja Bayón Buján** (T5)

Universidad Carlos III de Madrid, Spain.

Data-driven Identification of the Breathing Mode governing equations

P1-11 - **Jannis Teunissen** (T5)

Centrum Wiskunde & Informatica (CWI), Netherlands.

Overview of the afivo-streamer and afivo-pic simulation codes

P1-12 - **Felix Smits** (T5)

Leiden University, Netherlands.

Flow and microwave design of the Topological Reactor

P1-13 - **Diego García-Lahuerta** (T5)

UC3M, Spain.

Modeling the effect of background pressure on magnetic nozzle performances

P1-14 - **Rutger Bell** (T6)

Eindhoven University of Technology, Netherlands.

Surface charge deposition on dielectric surfaces using an X-ray ionizer

- P1-15 - **Mina Farahani** (T6)
 University of West Bohemia, Czech Republic.
Ion and atom fluxes during HiPIMS deposition of NbC from a compound target
- P1-16 - **Anne Limburg** (T6)
 Eindhoven University of Technology, Netherlands.
Invasiveness of picosecond and nanosecond laser diagnostics on plasma bullets in nitrogen
- P1-17 - **Dae-Woong Kim** (T6)
 Korea Institute of Machinery & Materials, Korea, Republic Of.
Patch-type microwave resonance sensor for obtaining plasma electron density in low-pressure plasmas
- P1-18 - **Paolo Francesco Ambrico** (T6)
 CNR ISTP, Italy.
The Breakdown Development of a Plane-to-Plane Nanosecond Pulsed Discharge in Humid Air
- P1-19 - **Francisco J Gordillo-Vázquez** (T6)
 IAA-CSIC, Spain.
Corona discharges in thunderclouds as detected from space by ASIM: Types, properties, and worldwide geographical distributions
- P1-20 - **Lex Kuijpers** (T6)
 Eindhoven University of Technology, Netherlands.
Determination of atomic oxygen density and reduced electric field in oxygen-containing plasmas through OES methods
- P1-21 - **Volker Schulz-von der Gathen** (T6)
 Experimental Physics II, Ruhr-Universität Bochum, Germany.
Evolution of mean electron energy and dissociation over the initial pulses in a micro cavity plasma array
- P1-22 - **Xingyu Chen** (T8)
 DIFFER, Netherlands.
Experimental Study of the Plasma Enhanced Oxygen Reduction and Permeation of LSM|YSZ|LSM Solid Oxide Electrolyte Cell
- P1-23 - **Jion Ogaki** (T10)
 Tokyo Metropolitan University, Japan.
Density measurement of atomic oxygen in pulsed discharges formed under sub-atmospheric pressure pure oxygen
- P1-24 - **Deepika Behmani** (T10)
 Indian Institute of Technology Kanpur, India.
Electric field fluctuations in a cold micro-plasma jet under different flow modes
- P1-25 - **Ivan Tsonev** (T10)
 University of Antwerp, Belgium.
Glow and arc discharges in atmospheric pressure nitrogen
- P1-26 - **Ryo Ono** (T10)
 The University of Tokyo, Japan.
Quantitative measurements of the effects of OH, O, and O₃ on surface treatments of polymers using VUV photodissociation method
- P1-27 - **Sebastian Wilczek** (T10)
 Ruhr University Bochum, Germany.
Simulation of surface dielectric barrier discharges: Streamer and gas dynamics

- P1-28 - **Duarte Gonçalves** (T10)
 LPGP, University Paris-Saclay & IPFN, Instituto Superior Técnico, France.
Ar(1s5) density modulation by N₂-O₂ shielding of an atmospheric pressure argon plasma jet
- P1-29 - **Yihao Guo** (T10)
 Eindhoven University of Technology, Netherlands.
Stereophotography of streamer discharges in N₂/O₂/CO₂ mixtures
- P1-30 - **David Prokop** (T10)
 Masaryk University, Czech Republic.
Spatio-temporal spectroscopic investigation of a nanosecond-pulsed barrier discharge in argon
- P1-31 - **Piotr Jamroz** (T11)
 Wrocław University of Science and Technology, Poland.
The spectroscopic characteristics of pulse-modulated radio-frequency atmospheric pressure glow microdischarge generated in contact with liquid
- P1-32 - **Hiroshi Akatsuka** (T11)
 Tokyo Institute of Technology, Japan.
Velocity change of non-transferred arc jet released into water
- P1-33 - **Roberto Montalbetti** (T11)
 Alma Mater Studiorum - University of Bologna, Italy.
A study on plasma active water from a new hybrid source for tomato growth in hydroponic conditions
- P1-34 - **Oleksandr Galmiz** (T11)
 Comenius University Bratislava, Slovakia.
Quantification of chemical species produced by the Surface Dielectric Barrier Discharge with liquid electrodes
- P1-35 - **Giulia Laghi** (T15)
 Alma Mater Studiorum - University of Bologna, Italy.
Control strategies for polymerization processes assisted by atmospheric pressure plasma jets
- P1-36 - **Alice Remigy** (T15)
 LSPM, France.
Investigation of gas flow pattern in a Micro-Hollow Cathode Discharge-based deposition reactor using planar Laser Induced Fluorescence.
- P1-37 - **Yutaro Nakano** (T15)
 Kyushu University, Japan.
Sputter epitaxy of atomically flat (ZnO)_x(InN)_{1-x} films on sapphire substrates using ZnO(N) buffer layers fabricated by Ar/N₂ discharges
- P1-38 - **Ondrej Jasek** (T15)
 Masaryk University, Czech Republic.
Influence of plasma instability on gas-phase synthesis of N-graphene in dual-channel microwave plasma torch at atmospheric pressure
- P1-39 - **Tomoyuki Nonaka** (T15)
 Samco Inc, Japan.
Chemical composition and surface morphology of films polymerized by C₄F₈ plasmas in Bosch process
- P1-40 - **Jong Keun Yang** (T15)
 Korea Institute of Fusion Energy, Korea, Republic Of.
Plasma-based Lithium recovery process

- P1-41 - **Michihiro Otaka** (T15)
Kyushu University, Japan.
Effects of tailored voltage waveform discharges on deposition of hydrogenated amorphous carbon films by CH₄/Ar capacitively coupled plasma
- P1-42 - **Ji Hun Kim** (T15)
Korea Institute of Fusion Energy, Korea, Republic Of.
Production of micro-sized metal powder using plasma-gas hybrid atomization system
- P1-43 - **Manon Soulier** (T17)
Sorbonne Université, Laboratoire de Physique des Plasmas, France.
Investigating the performances of cold plasma endoscopy for cholangiocarcinoma local treatment
- P1-44 - **Anna Dzimitrowicz** (T17)
Wroclaw University of Science and Technology, Poland.
Application of non-thermal plasma for production of anti-phytopathogenic plasma-activated liquid
- P1-45 - **Ravi Patel** (T17)
Eindhoven University of Technology, Netherlands.
Optimizing nanosecond repetitively pulsed discharges for ignition stabilized combustion
- P1-46 - **Tetsuji Shimizu** (T17)
National Institute of Advanced Industrial Science and Technology, Japan.
Albumin aggregation by cold atmospheric plasma between needle electrode and surface of albumin solution
- P1-47 - **Shinya Kumagai** (T17)
Meijo University, Japan.
A plasma-assisted microperfusion culture system for promoted cell growth
- P1-48 - **Kiran Ahlawat** (T17)
Indian Institute of Technology, Jodhpur, Rajasthan, India.
An efficient Far UV-C (222 nm) krypton chlorine excimer lamp
- P1-49 - **Borui Zheng** (T17)
Xi'an University of Technology, China.
Turbulent skin-friction drag reduction by annular DBD plasma synthetic jet actuator
- P1-50 - **In Je Kang** (T6)
Korea Institute of Fusion Energy, Korea, Republic Of.
Measurement of enthalpy probe on plasma temperature in atmospheric pressure microwave plasma jet for CO₂ reforming system
- P1-51 - **InSun Park** (T3)
Korea Institute of Fusion Energy, Korea, Republic Of.
Development of Simulator for Interaction of Materials and PLasma (SIMPL) in Korea Institute of Fusion Energy
- P1-52 - **Chang Hyun Cho** (T16)
Korea Institute of Fusion Energy, Korea, Republic Of.
Development of atmospheric pressure microwave plasma generator with gas preheating structure for dry reforming system.
- P1-53 - **František Krčma** (T17)
Brno University of Technology, Czech Republic.
COST Action: CA19110 - Plasma applications for smart and sustainable agriculture
- P1-54 - **Shin-ichi Aoqui** (T17)
Sojo University, Japan.
Characteristic Changes in Pumpkin Seeds by Atmospheric Pressure Gliding Arc Plasma Irradiation

3.3.2 Poster session P2, Tue, Jul 11, 14:00 - 16:00

P2-1 - **Daan Boer** (T1)

Eindhoven University of Technology, Netherlands.

LXCat 3: A novel data platform for low-temperature plasma physics

P2-2 - **Andrei Smolyakov** (T1)

University of Saskatchewan, Canada.

ExB heating and transport in magnetized plasmas with ionization and charge-exchange effects

P2-3 - **Thierry Dufour** (T1)

Sorbonne Université, France.

Triggering self-organization of guided streamers in a cold plasma jet

P2-4 - **Jaime de Urquijo** (T2)

Universidad Nacional Autónoma de México, Mexico.

Measurement of the flux drift velocity of electrons in THF-H₂O mixtures

P2-5 - **Karima Bendib-Kalache** (T2)

University of Sciences and Technology HB, Algeria.

Semicollisional transport coefficients for relativistic plasmas

P2-6 - **Gilles Cartry** (T3)

Aix-Marseille Université, France.

Correlation between the negative ion surface production efficiency and the surface work function in low pressure hydrogen plasmas

P2-7 - **Shu Zhang** (T5)

Laboratoire de Physique des Plasmas (LPP), CNRS, École polytechnique, Institut Polytechnique de Paris, France.

Drift-Diffusion models for RF-CCPs at intermediate pressure: estimating transport coefficients

P2-8 - **Aleksandr Pikalev** (T5)

Dutch Institute for Fundamental Energy Research (DIFFER), Netherlands.

Collisional-radiative model of low-pressure He-O₂ plasma

P2-9 - **Jan Tungli** (T5)

Masaryk University, Czech Republic.

Modelling of magnetron plasma using fluid dynamics

P2-10 - **Jesper Janssen** (T5)

Plasma Matters B.V., Netherlands.

Modelling radiation using PLASIMO

P2-11 - **Anatole Berger** (T5)

CNRS, Ecole Polytechnique, France.

Multi-fluid modeling of a weakly-ionized confined plasma: ion-neutral collision term

P2-12 - **Karim Saber** (T5)

Materials and Renewable Energies Laboratory, Physics Department, Ibn Zohr University, Morocco.

Effect of multi-tip reactor parameters on energy efficiency using the electrical model equivalent to corona discharge

P2-13 - **Laurent Garrigues** (T5)

Laplace/CNRS-Universite de Toulouse, France.

Benchmark of particle-in-cell simulations of a Penning-type discharge: Preliminary results

- P2-14 - **Rick Budé** (T5)
Eindhoven University of Technology, Netherlands.
ECR simulations on unstructured meshes
- P2-15 - **Mate Vass** (T5)
Ruhr University Bochum / Wigner Research Centre for Physics, Germany.
Determination of the atomic oxygen density distribution in an RF-driven He/O₂ microplasma jet at atmospheric pressure using an efficient 2D hybrid simulation method
- P2-16 - **Tarek Ben Ben Slimane** (T5)
Laboratoire de Physique des Plasmas (LPP), CNRS, Sorbonne Université, Ecole polytechnique, Institut Polytechnique de Paris, France.
Insights on Hall effect thruster using Xe Collisional Radiative Model
- P2-17 - **Gregory Daly** (T5)
University of Exeter, United Kingdom.
Surrogate collisional radiative models for fluorocarbon plasmas from optical diagnostics data using deep autoencoders
- P2-19 - **Maria Mitrou** (T6)
Laboratory of Subatomic Physics and Cosmology, University Grenoble Alpes, France.
Laser-induced photo-detachment diagnostic for interrogating pulsed ECR-driven plasmas: Application to H- and D- negative ions
- P2-20 - **Tomas Hoder** (T6)
Masaryk University, Czech Republic.
Theoretical and experimental analysis of 2p states kinetics in barrier discharge in argon
- P2-21 - **Benjamin Esteves** (T6)
CNRS, Sorbonne Université, Université Paris-Saclay, Observatoire de Paris, ?Ecole polytechnique, Institut polytechnique de Paris, France.
Development of optical diagnostics to study neutral species in low-pressure iodine plasmas: application within a gridded thruster.
- P2-22 - **Horacio Fernandes** (T6)
Instituto de Plasmas e Fusao Nuclear, Portugal.
RF Plasma source characterization for an EM cavity
- P2-23 - **Toma Sato** (T6)
Kyushu university, Japan.
Optical tweezers technique for electric field strength and fluctuation measurements in plasma using a fine particle
- P2-24 - **Lukáš Kusýn** (T6)
Masaryk University, Czech Republic.
Spatiotemporally resolved electric field and temperatures in positive streamers
- P2-25 - **Arne Meindl** (T6)
Max Planck Institute for Plasma Physics, Germany.
1D TALIF of atomic oxygen in the effluent of a CO₂ microwave discharge
- P2-26 - **Koichi Sasaki** (T6)
Hokkaido University, Japan.
Estimation of vibrational temperatures of CO₂ in dielectric barrier discharges by deep ultraviolet absorption spectroscopy

- P2-27 - **Gabi Daniel Stancu** (T6)
 Laboratoire EM2C, CentraleSupélec, France.
Microwave discharges under thermal control for generation of nitric oxide
- P2-28 - **Gwenael Fubiani** (T8)
 CNRS, France.
3D Particle-in-Cell simulation of the $E \times B$ electron drift instability in Hall thrusters
- P2-29 - **Quentin Delavrière-Delion** (T8)
 Laplace - Université de Toulouse Paul Sabatier - CNRS - INPT, France.
Experimental observation of the coupling of low frequency instabilities at different scales in a Hall thruster
- P2-30 - **Thomas Maho** (T8)
 INU Champollion - DPHE, France.
Characterization of a low-pressure microwave plasma in multisource configuration for surface decontamination applications
- P2-31 - **Guangyu Sun** (T8)
 Swiss Plasma Center, EPFL, Switzerland.
Improved negative ion source extraction efficiency using highly emissive inverse sheath for NBI heating in fusion
- P2-32 - **Charlie Kniebe-Evans** (T8)
 University of Oxford, United Kingdom.
Investigating the spatial distribution of nitrogen plasma species using saturated cavity ring-down spectroscopy
- P2-33 - **Davide Maddaloni** (T8)
 Universidad Carlos III de Madrid - EP2 research group, Spain.
Experimental investigation of oscillations in a magnetic nozzle
- P2-34 - **Scott Doyle** (T8)
 University of Michigan, United States of America.
Simulating Transformer Coupling and kHz Pulsing in a Toroidal Wave Heated Remote Plasma Source
- P2-35 - **Lucas Fuster** (T9)
 Laplace / CEA Gramat / Isae-Supaero, France.
Leaky wave discharges in a printed transmission line
- P2-36 - **Erik Wagenaars** (T9)
 York Plasma Institute, University of York, United Kingdom.
Effect of pulse repetition frequency on reactive oxygen species production in a pulsed He + H₂O plasma
- P2-37 - **Maria Mitrou** (T10)
 Laboratory of Subatomic Physics and Cosmology, University Grenoble Alpes, France.
Cylindrical SDBD of well-defined expansion area for standardized studies
- P2-38 - **Alexandra Brisset** (T10)
 CNRS, France.
Electron density and temperature in a diffuse nanosecond pulse discharge in air at atmospheric pressure
- P2-39 - **Tatsuru Shirafuji** (T10)
 Osaka Metropolitan University, Japan.
Shape Control of Surface-Launched Plasma Bullets

- P2-40 - **Olivera Jovanović** (T11)
 Institute of Physics Belgrade, Serbia.
The influence of non-thermal Ar plasma jet on physicochemical properties of treated liquid
- P2-41 - **Zimu Yang** (T11)
 University of Michigan, United States of America.
Spatially resolved spectra in an atmospheric pressure DC glow plasma emission with liquid anode
- P2-42 - **Cas van Deursen** (T12)
 DIFFER, Netherlands.
Effluent nozzles in Reverse-vortex-stabilized microwave plasmas for performance enhancement
- P2-43 - **Volodymyr Nosenko** (T13)
 DLR Institute of Materials Physics in Space, Germany.
Two-dimensional complex plasma with active Janus particles
- P2-44 - **Kunihiko Kamataki** (T13)
 Kyushu University, Japan.
Investigation of particle charge and interparticle interaction in a plasma
- P2-45 - **Yerbolat Ussenov** (T13)
 Princeton University, United States of America.
Optimization of nanoparticle growth in RF discharge plasma
- P2-46 - **Hisato Yabuta** (T15)
 Kyushu university, Japan.
Non-equilibrium nitrogen incorporation into ZnO films by rf-magnetron sputtering: stabilization of amorphous phase and noteworthy local structure in crystalline phase by solid phase crystallization
- P2-47 - **Iori Nagao** (T15)
 Kyushu University, Japan.
Control of ion trajectory in high aspect ratio trenches by using amplitude modulated rf discharges
- P2-48 - **Jayashree Majumdar** (T15)
 Indian Institute of Technology, Kanpur, India.
Studies on changes in surface morphology of materials under plasma environment and their potential applications in field emission
- P2-49 - **Kazunori Koga** (T15)
 Kyushu University, Japan.
Coverage control of carbon nanoparticles on substrate using capacitively coupled plasma chemical vapor deposition
- P2-50 - **Didar Batryshev** (T15)
 Kazakh-British Technical University, Kazakhstan.
Chondro-like particles in the plasma environment: formation mechanisms and properties
- P2-51 - **Sushanta Barman** (T15)
 Indian Institute of Technology Kanpur, India.
Controlled guiding and focusing of intense plasma ion beams by micro-glass capillaries beyond the self-focusing limit
- P2-52 - **Sagi Orazbayev** (T15)
 Al-Farabi Kazakh National University, Kazakhstan.
Superhydrophobic surfaces production by PECVD method

P2-53 - **Lucie Janů** (T15)

CEITEC, Brno University of Technology, Czech Republic.

Improve adhesion of electrospun nanofibers to plasma-treated polypropylene textile

P2-54 - **Hiroimi Alwi Yamamoto** (T17)

Meijo University, Japan.

Bactericidal species in electrically-neutral oxygen radical irradiated solution

P2-55 - **Inna Orel** (T17)

GREMI, Université d'Orléans, France.

Carboxyhemoglobin creation in hemoglobin solution following treatment by pulsed DBD kHz plasma jet in Ar-CO₂ for plasma medicine applications

P2-56 - **Borui Zheng** (T17)

Xi'an University of Technology, China.

Paper sheet disinfection and sterilization by non-thermal atmospheric-pressure plasma

P2-57 - **Thomas Vazquez** (T17)

Comenius University in Bratislava, Slovakia.

Combined effects of cold atmospheric plasma and photocatalysis for indoor air decontamination

3.3.3 Poster session P3, Thu, Jul 13, 13:45 - 15:45

P3-1 - **Wouter Graef** (T1)

Plasma Matters, Netherlands.

The 2023 status report on the LXCat project

P3-2 - **Octavio Emmanuel Hernández Alvarez** (T1)

Charles University, Czech Republic.

Nuclear-Spin-Changing Collisions Between H_3^+ and H_2 in an Ion Trap Experiment

P3-3 - **Jean-Paul Booth** (T1)

CNRS, France.

Oxygen atom and ozone kinetics in the afterglow of a pulse-modulated DC discharge in pure O_2 : an experimental and modelling study

P3-4 - **Miroslava Kassayová** (T1)

Charles University, Czech Republic.

Spectroscopy and recombination of H_2D^+ and HD_2^+ ions

P3-5 - **Juan Miguel Gil** (T1)

Universidad de Las Palmas de Gran Canaria (ULPGC), Spain.

Simulation and characterization of the interaction of fast quasi-monoenergetic ion beams and deuterium-tritium plasma

P3-6 - **Ayesha Nanda** (T2)

Indian Institute of Technology Kanpur, India.

Power balance in an anisotropic dipole plasma: thermodynamical insights

P3-7 - **Stephen Muhl** (T3)

Instituto de Investigaciones en Materiales, UNAM, Mexico.

Photothermic Infrared Emission of Sputtering Targets

P3-9 - **Jiansyun Lai** (T3)

Kyushu university, Japan.

Effects of lower discharge frequency on ion energy distribution function in dual frequency plasma studied by particle-in-cell/Monte Carlo method

P3-10 - **Codrina Ionita-Schrittwieser** (T3)

University of Innsbruck, Austria.

Diamond-coated probes for diagnostics in hot and hazardous plasmas

P3-11 - **Jon Tomas Gudmundsson** (T5)

University of Iceland, Iceland.

On surface effects in a capacitive argon discharges

P3-12 - **Kevin Michael Rettig** (T5)

scia Systems GmbH, Germany.

Modeling the extraction of a focused broad ion beam from an inductively coupled plasma source.

P3-13 - **Hans Höft** (T5)

INP Greifswald, Germany.

Investigation of self-pulsing discharges in argon at atmospheric pressure

P3-14 - **Kevin van 't Veer** (T5)

Plasma Matters B.V., Netherlands.

Atmospheric pressure high current diffuse glow-like dielectric barrier discharges in argon

- P3-15 - **Richard Christian Bergmayr** (T5)
 Max Planck Institute for Plasma Physics, Germany.
Corona modelling for ro-vibrationally resolved spectra analysis in low-temperature hydrogen plasmas
- P3-16 - **Ilija Simonović** (T5)
 Institute of Physics Belgrade, University of Belgrade, Serbia.
Axisymmetric streamer model in the AMReX environment
- P3-17 - **Ataollah Eivazpour Taher** (T5)
 Universidade da Madeira, Instituto de Plasmas e Fusão Nuclear, Lisboa, Portugal.
On stability of negative corona discharges
- P3-18 - **Dennis Bouwman** (T5)
 Centrum Wiskunde & Informatica (CWI), Netherlands.
Estimating the physics of single positive air streamers from measurable parameters
- P3-19 - **Laura Chauvet** (T6)
 Ruhr University Bochum, Germany.
Mass spectrometry of an atmospheric pressure plasma jet interacting with a dielectric surface
- P3-20 - **Jean-Paul Booth** (T6)
 CNRS, France.
Oxygen atom TALIF : temperature dependence of fluorescence quenching
- P3-21 - **Yuya Yamashita** (T6)
 Tokyo Institute of Technology, Japan.
Diagnosis of spatial distribution of electron temperature and electron density of argon inductively coupled plasma by tomographic optical emission spectroscopic measurement
- P3-22 - **Jesse Laarman** (T6)
 Eindhoven University of Technology, Netherlands.
Electric field analysis of single channel stable streamers using E-FISH
- P3-23 - **Marion Henkel** (T6)
 Leibniz-Institut für Plasmaforschung und Technologie e.V. (INP), Germany.
Laser-induced plasma formation in water with up to 600 bar hydrostatic pressure and up to 400 millijoule double-pulse LIBS
- P3-24 - **Vasco Guerra** (T8)
 IPFN, IST, Universidade de Lisboa, Portugal.
Development of a reaction mechanism for CO₂-N₂ plasmas
- P3-25 - **Shu Zhang** (T9)
 Laboratoire de Physique des Plasmas (LPP), CNRS, École polytechnique, Institut Polytechnique de Paris, France.
RF CCPs at intermediate pressure: Dissociation trends in O₂/Ar
- P3-26 - **Jon Tomas Gudmundsson** (T9)
 University of Iceland, Iceland.
On working gas rarefaction in high power impulse magnetron sputtering
- P3-27 - **Gita Revalde** (T9)
 University of Latvia, Latvia.
Investigation of radiation of Hg 198 isotope lamp
- P3-28 - **Yusuke Nakagawa** (T10)
 Tokyo Metropolitan University, Japan.
Behavior of atomic oxygen in pulsed barrier discharge under sub-atmospheric pressure He/O₂ mixture

- P3-29 - **Hans Höft** (T10)
 INP Greifswald, Germany.
Interaction of two single-filament, pulsed-operated dielectric barrier discharges
- P3-30 - **David Schulenberg** (T10)
 Ruhr University Bochum, Germany.
On the influence of the gas temperature on electron power absorption in atmospheric pressure micro radio frequency plasma jets
- P3-31 - **Nikola Skoro** (T11)
 Institute of Physics Belgrade, Serbia.
Characterization of a plasma system with microwave launcher used for treatment of liquids
- P3-32 - **Saeed Kooshki** (T11)
 Comenius University Bratislava, Slovakia.
Plasma-Activated Water (PAW): Sustainable Technology for Wastewater Treatment and its Reuse as a Green Fertilizer
- P3-33 - **Judith van Huijstee** (T13)
 Eindhoven University of Technology, Netherlands.
Microparticle charge in a spatio-temporal afterglow plasma: influence of an externally applied electric field
- P3-34 - **Kazuo Takahashi** (T13)
 Kyoto Institute of Technology, Japan.
Ion bombardment on microorganism in dusty plasmas
- P3-35 - **Kseniia Leonova** (T15)
 ChIPS, University of Mons, Belgium.
Influence of target heating on the growth of Nb coatings during hot magnetron sputtering
- P3-36 - **Shinjiro Ono** (T15)
 Kyushu University, Japan.
Deposition characteristics of cumene plasma CVD for high-speed deposition of high-density α -C:H films
- P3-37 - **Kizuku Ikeda** (T15)
 Kyushu University, Japan.
Effects of Ne mixing on plasma enhanced chemical vapor deposition of α -C:H films using $\text{CH}_4/\text{Ar}/\text{Ne}$ capacitively coupled discharges
- P3-38 - **Mitsuaki Maeyama** (T15)
 Saitama University, Japan.
Effects of electrode geometries and materials on a water purification using the ball lightning discharge
- P3-40 - **Emilio Martines** (T17)
 University of Milano-Bicocca, Italy.
Optical emission spectroscopy of a plasma jet for biomedical applications
- P3-41 - **Anda Abola** (T17)
 Institute of Atomic Physics and Spectroscopy, University of Latvia, Latvia.
Zeeman AAS - a means to assess mercury pollution in the environment through artefacts of wild birds
- P3-42 - **Yasumasa Mori** (T17)
 Meijo University, Japan.
Nitric oxide radicals penetrates into fibroblast cells to promote proliferation

- P3-43 - **Satoshi Uchida** (T17)
Tokyo Metropolitan University, Japan.
Permeation characteristics of hydrogen peroxide through biological membranes by applying electric field
- P3-44 - **Ryo Ono** (T17)
The University of Tokyo, Japan.
Treatments of cancer tumors in mice using streamer discharge
- P3-45 - **Ana Sainz-García** (T17)
University of La Rioja, Spain.
Bactericidal activity against Listeria spp using Plasma Activated Water
- P3-46 - **Perla Trad** (T17)
INRS/LPGP, France.
Coupling of a non-thermal plasma to a membrane process for the treatment of n-hexane
- P3-47 - **Korentin Géraud** (T17)
LPP, Sorbonne Université, France.
Cold plasma therapy applied to non-small cell lung cancer: deciphering the relevant plasma parameters to induce antitumor effects
- P3-48 - **Yoshihisa Ikeda** (T17)
Ehime University, Japan.
Mechanism of molecular introduction into plant cells using plasma treatment
- P3-49 - **Takamasa Okumura** (T17)
Kyushu University, Japan.
Measurement of electric field, UV photons, and long-lifetime reactive species generated by atmospheric pressure air plasma for plasma bio applications
- P3-50 - **Paolo Francesco Ambrico** (T17)
CNR ISTP, Italy.
The inhibitory effect of volume dielectric barrier discharge on phytopathogenic fungi.
- P3-51 - **Aysegul Uygun Oksuz** (T17)
Suleyman Demirel University, Turkey.
Determination of antibacterial effectiveness rate of plasma activated physiological saline (PAIS) solution (0.9% NaCl)
- P3-52 - **Richard Cimerman** (T17)
Comenius University in Bratislava, Faculty of mathematics, physics and informatics, Slovakia.
Nonthermal plasma regeneration and repetitive use of deactivated catalysts
- P3-53 - **Filippo Capelli** (T19)
Alma Mater Studiorum - University of Bologna, Italy.
Plasma assisted decontamination of food packaging
- P3-54 - **Kunihiko Kamataki** (T19)
Kyushu University, Japan.
Prediction of plasma process conditions via machine learning
- P3-55 - **Pohsien Chiu** (T19)
Department of Mechanical Engineering, National Yang Ming Chiao Tung University, Hsinchu, Taiwan.
Stabilize Voltage and Transmit Power by Atmospheric-Pressure Plasma Jet in Streamer Mode

3.3.4 Poster session P4, Thu, Jul 13, 17:00 - 19:00

P4-1 - **Guadalupe Espinosa Vivas** (T1)

Universidad de Las palmas de Gran Canaria, Spain.

Microscopic properties of xenon plasmas in a wide range of plasma conditions.

P4-2 - **Robert Carman** (T1)

Macquarie University, Australia.

Inelastic momentum transfer cross-sections from inelastic differential cross-sections for electron-impact excitation in Helium and in Argon

P4-3 - **Rafael Rodriguez** (T1)

Universidad de Las Palmas de Gran Canaria, Spain.

Effects of impurities on beam-plasma interaction and hot spots properties in fast ignition nuclear fusion

P4-4 - **Yui Okuyama** (T2)

National Institute of Technology, Tomakomai College, Japan.

Simulation of negative ion mobility at atmospheric pressure in O₂ by Monte Carlo method using rate coefficients of ion-molecule reactions

P4-5 - **Andrei Smolyakov** (T4)

University of Saskatchewan, Canada.

Plasma acceleration in the magnetic nozzle

P4-6 - **Luís L. Alves** (T5)

IPFN/IST, Portugal.

The LisbOn KInetics simulation tools

P4-7 - **Carlos Pintassilgo** (T5)

IPFN, Portugal.

Effect of the magnetic field on the electron kinetics under AC/DC electric fields

P4-8 - **Nicolas Lequette** (T5)

LPP, France.

Comparison of 1D particle-in-cell simulations with Langmuir probe measurements of a low-pressure inductively-coupled discharge

P4-9 - **Alejandro Malagón Romero** (T5)

Centrum Wiskunde & Informatica (CWI), Netherlands.

A physics-informed neural network to accelerate Montecarlo streamer simulations

P4-10 - **Tsanko Vaskov Tsankov** (T5)

Ruhr University Bochum, Germany.

First-principles simulation of optical emission spectra for low-pressure argon plasmas and its experimental validation

P4-11 - **Federico Petronio** (T5)

LPP Ecole Polytechnique - SAFRAN, France.

Two-dimensional electrostatic instabilities in Hall thrusters

P4-12 - **Hiroshi Akatsuka** (T6)

Tokyo Institute of Technology, Japan.

Spatial distribution of vibrational and rotational temperatures of N₂ ICP by tomographic optical emission spectroscopic measurement

- P4-13 - **Irene van de Haar** (T6)
Eindhoven University of Technology, Netherlands.
A Numerical Algorithm to Restore the Electric Field Distribution from E-FISH Signals
- P4-14 - **Laurent Invernizzi** (T6)
Laboratoire des Sciences des Procédés et des Matériaux, France.
Challenges of ps-TALIF measurements using a streak camera
- P4-15 - **Ibrahim Baraze Abdoul Razak** (T6)
DPHE / INU Champollion, France.
Experimental characterization of a Kr-Cl DBD lamp for surface irradiance distribution study including simple photon transfer simulation.
- P4-16 - **Zhan Shu** (T6)
Laboratoire de Physique des Plasmas, France.
Time-resolved absolute density of atomic oxygen in the early afterglow of a nanosecond CO₂ plasma
- P4-17 - **Waseem Khan** (T6)
Masaryk University, Czech Republic.
Fluorescence (LIF) measurement of atomic antimony concentration in a planar dielectric barrier discharge.
- P4-18 - **Dejan Dojić** (T6)
University of Belgrade, Serbia.
Absorption properties of Laser Induced Plasma
- P4-19 - **Isabel Tanarro** (T8)
CSIC -Consejo Superior de Investigaciones Científicas, Spain.
Relevance of N₂ addition in the ion composition of C₂H₂ glow discharges
- P4-20 - **Tiago Cunha Dias** (T8)
Instituto de Plasmas e Fusão Nuclear, Instituto Superior Técnico, Lisboa, Portugal.
A reaction mechanism for oxygen plasmas
- P4-21 - **Scott Doyle** (T8)
University of Michigan, United States of America.
Structural and Electrical Enhancement of Radial Homogeneity in Wide Aspect Ratio Capacitively Coupled Plasma Processing Sources
- P4-22 - **Anda Abola** (T9)
Institute of Atomic Physics and Spectroscopy, University of Latvia, Latvia.
Self-modulation in arsenic high-frequency electrodeless lamps
- P4-23 - **Swaminathan Prasanna** (T9)
Universite Paris Sorbonne Nord, France.
Evidence of a significant N-atom metastable population by ns-TALIF in pulsed N₂ microwave plasma
- P4-24 - **Zheng Zhao** (T9)
Xi'an Jiaotong University, China.
Streamer discharge instabilities under repetitive nanosecond pulses
- P4-25 - **Denis Eremin** (T9)
Ruhr University Bochum, Germany.
The electron power absorption mechanism due to the sheath motion in a microwave-driven plasmaline discharge

- P4-26 - **María C García** (T9)
 Universidad de Córdoba, Spain.
Generating non-filamented argon plasma columns at atmospheric pressure using a surfatron consuming low 2.45 GHz microwave power
- P4-27 - **Quentin Gutierrez** (T9)
 Laboratoire de Physique Subatomique et de Cosmologie (CRPMN), France.
Discharge sustained by HF cathode for fluorescent lamp applications
- P4-28 - **Victor Lafaurie** (T10)
 LPP, France.
Nanosecond Surface Dielectric Barrier Discharge: Experimental study of high-pressure streamer to filament transition with varying gas composition
- P4-29 - **Corentin Bajon** (T10)
 Laplace - Université de Toulouse Paul Sabatier, France.
Study of Townsend Dielectric Barrier Discharge in CO₂
- P4-30 - **Jun Sup Lim** (T10)
 Plasma Bioscience Research Center (PBRC), Kwangwoon Univ, Korea, Republic Of.
Effect of charge accumulation on the ionized gas propagation in atmospheric pressure plasma jet
- P4-31 - **Rui Manuel Santos Almeida** (T10)
 Universidade da Madeira, Portugal.
Breakdown characterization in device with dielectric spacer in air at 1 atm
- P4-32 - **Yoshinobu Inagaki** (T11)
 Hokkaido University, Japan.
Effects of rf power and potential of water jet on quantum yield of laser-induced desolvation in inductively coupled plasma
- P4-33 - **Takuma Uemura** (T11)
 The University of Tokyo, Japan.
Electrical potential and luminescence distribution measurements of repetitive surface dielectric barrier discharges in N₂ and O₂ mixture gases
- P4-34 - **Lara Alomari** (T11)
 PPRIME Institute, France.
Needle-to-liquid DC and AC dielectric barrier discharges in atmospheric air: electrical characteristics and chemical analysis
- P4-35 - **Ramón Peláez** (T13)
 CSIC, Spain.
Behaviour of interstellar dust analogues under interstellar conditions.
- P4-36 - **Guido Klaassen** (T13)
 Eindhoven University of Technology, Netherlands.
Photodetachment experiments on Plasma Confined Micro-Particles
- P4-37 - **Corné Rijnsent** (T15)
 TNO, Netherlands.
First Mirror cleaning in ITER Edge Thomson Scattering diagnostic system using 40.68-MHz discharge in hydrogen
- P4-38 - **Yoshiharu Wada** (T15)
 Kyushu University, Japan.
Sputter deposition of low resistive 30-nm-thick ZnO:Al films using ZnO seed layers grown via solid-phase crystallization

- P4-39 - **Ryota Narishige** (T15)
Kyushu University, Japan.
Pseudomorphic growth of (ZnO)_x(InN)_{1-x} films on ZnO substrates by magnetron sputtering using Ar/N₂/O₂ discharges
- P4-40 - **Takafumi Yunoue** (T15)
Kyushu University, Japan.
Sputter epitaxy of Zn_{1-x}Mg_xO films on lattice-mismatched sapphire substrates utilizing ZnO(N)/MgO buffer layers fabricated by Ar/N₂ and Ar/O₂ discharges
- P4-41 - **Shih-Nan Hsiao** (T15)
Nagoya University, Japan.
Atomic layer etching of SiN films with CF₄/H₂ surface modification and H₂/N₂ plasma exposure
- P4-42 - **Jianyu Feng** (T15)
Masaryk University, Czech Republic.
Temperature-friendly remote atmospheric pressure plasma source for plasma activation of materials
- P4-43 - **Joanna Pawlat** (T15)
Lublin University of Technology, Poland.
Nonthermal plasma impact on NaCMC/glaucanite suspension properties
- P4-44 - **Yuma Yamamoto** (T15)
Kyushu University, Japan.
Relation between Spatial Distribution of Optical Emission Intensity and SiO₂ Film Property in TEOS-PECVD
- P4-45 - **Muruges Munaswamy** (T15)
Hokkaido University, Japan, Japan.
Challenges in obtaining uniform distribution of core shell Tin nano-particles using dc magnetron sputtering plasma
- P4-46 - **Tamiko Ohshima** (T15)
National Institute of Technology, Sasebo College, Japan.
Plasma processing of Al-doped zinc oxide thin films using powder targets
- P4-47 - **Pasquale Isabelli** (T17)
Alma Mater Studiorum, Italy.
Cold plasma systems for bioaerosol decontamination: comparison between a Rotating Dielectric Barrier Discharge plasma source and a commercial device
- P4-48 - **Ana Gómez-Ramírez** (T17)
Universidad de Sevilla, Spain.
Unraveling surface effects for improving the germination of barley seeds: from drying to air plasma treatments
- P4-49 - **Etienne Michaux** (T17)
ICARE CNRS, France.
Fractal Dimension of cathode spots in a Vacuum Arc Thruster
- P4-50 - **Cristina Muja** (T17)
I.N.U. J.F. Champollion, University of Toulouse, France.
Sensitivity of Deinococcus radiophilus and Escherichia coli to UVC radiation generated by a plasma lamp combined with phosphors

P4-51 - **Yoshihito Yagyū** (T17)

National Institute of Technology, Sasebo College, Japan.

Development of a novel plasma device for cancer treatment and irradiation effects on the hepatoblastoma-derived cell, Hep G2

P4-52 - **Ramavtar Jangra** (T17)

Indian Institute of Technology Jodhpur, India.

Deactivation efficiency analysis of airborne microorganisms using a Dielectric Barrier Discharge (DBD) based plasma system

P4-53 - **Roxanne Walker** (T17)

University of Michigan, United States of America.

Nonthermal Plasma Interactions with Microplastics in a Polymer-Water Matrix

P4-54 - **Leonardo Zampieri** (T17)

Università degli Studi di Milano-Bicocca, Italy.

Combining diagnostics for characterizing antibacterial effect of a cold atmospheric plasma source

P4-55 - **Shin-ichi Aoqui** (T10)

Sojo University, Japan.

Discharge space expansion in single-phase atmospheric pressure gliding arc discharge