



ICOPS & APCOPTS Highlights

Tao Shao

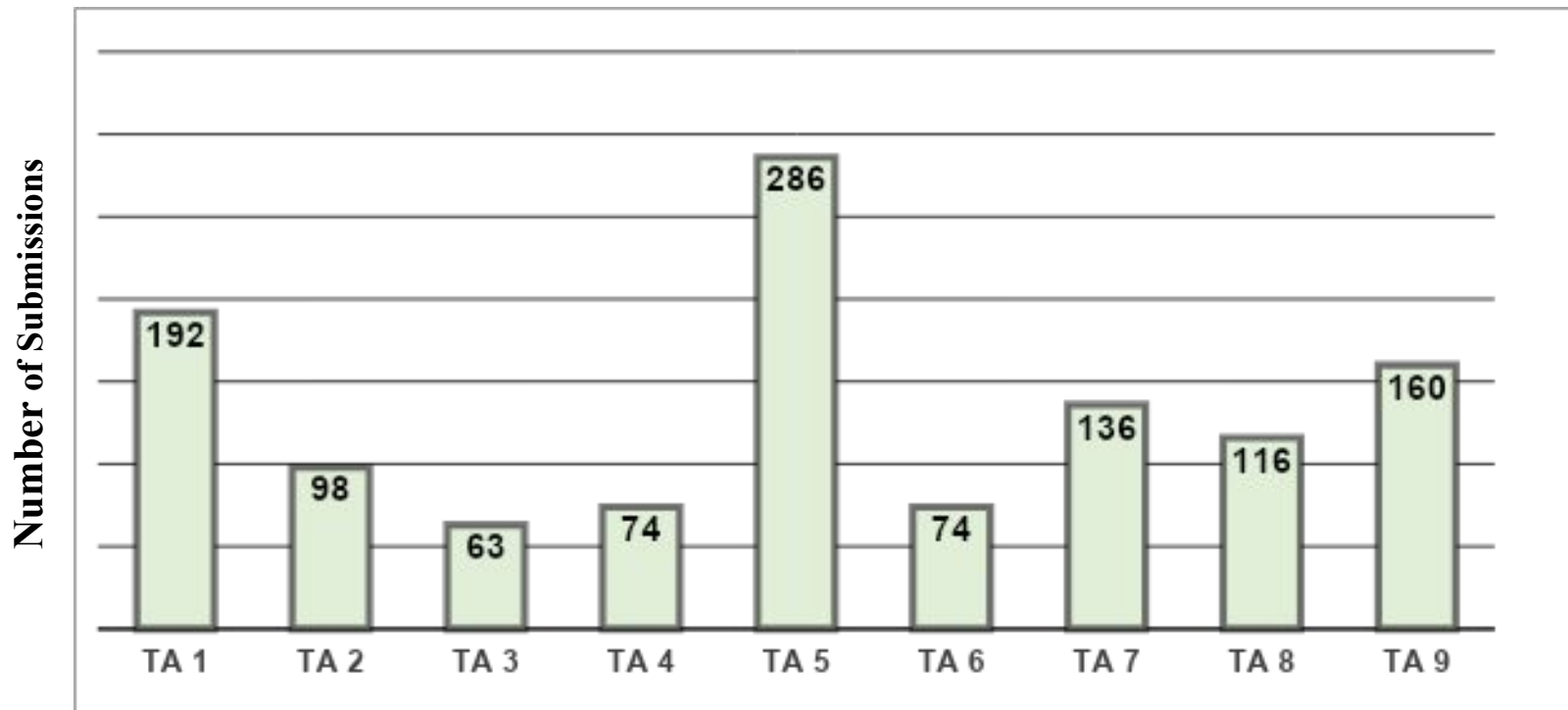
st@mail.iee.ac.cn; shaotao.iee@gmail.com

Beijing International S&T Cooperation Base for Plasma Science and Energy Conversion
Institute of Electrical Engineering, Chinese Academy of Sciences

**September 29,
2024**



- Total submissions reached 1211 including 9 sessions (TA1-TA9)



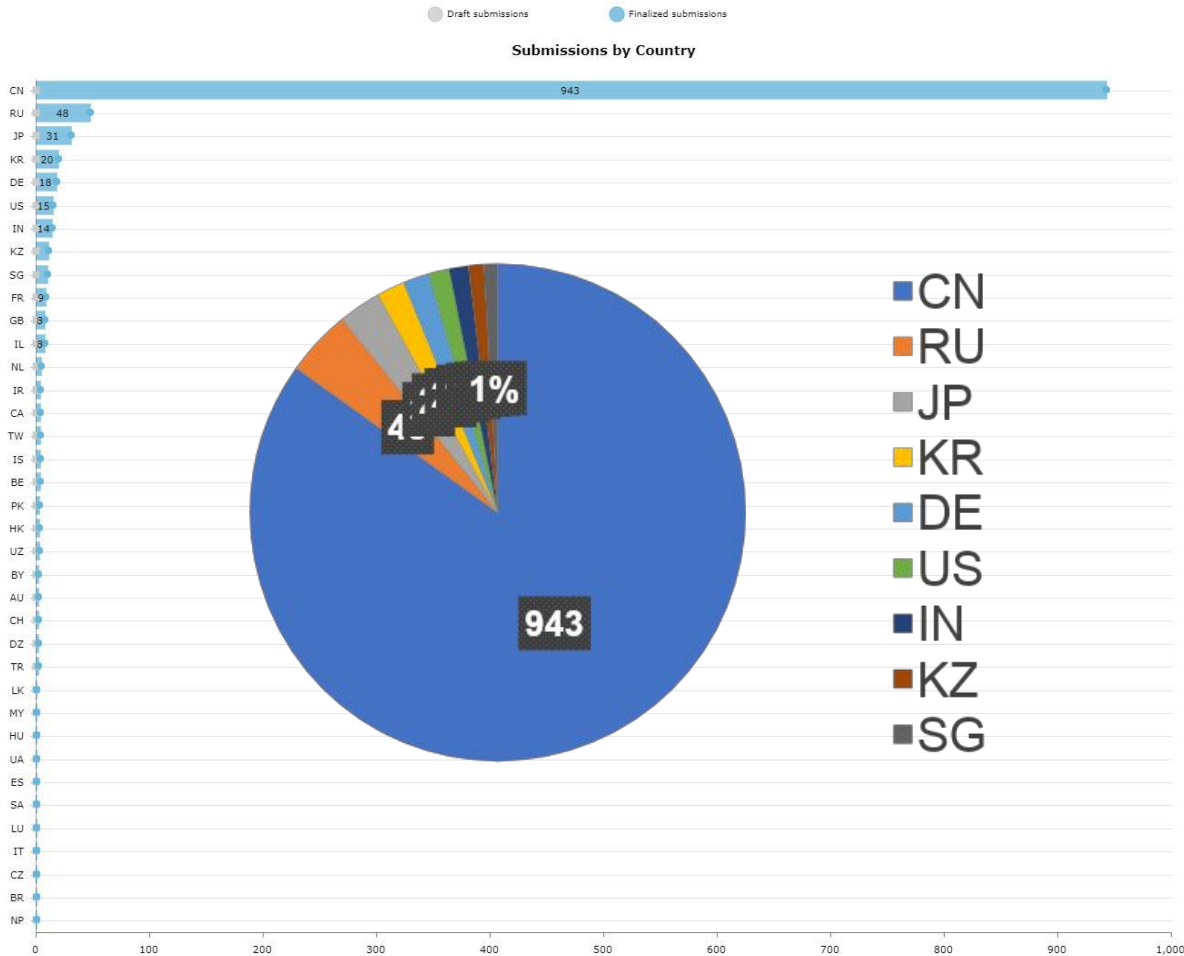
TA1 Basic Processes in Fully and Partially Ionized Plasmas
TA2 Microwave Generation and Plasma Interactions
TA3 Charged Particle Beams and Sources
TA4 High Energy Density Plasmas and Applications
TA5 Industrial, Commercial & Medical Plasma Applications

TA6 Plasma Diagnostics
TA7 Pulsed Power and Other Plasma Applications
TA8 Terahertz Sources, Radiation and Applications
TA9 Special Sessions



Abstract submission

- Submissions came from 37 countries and districts



Country	Number
China	943
Russian Federation	48
Japan	31
Republic of Korea	20
Germany	19
United States of America	15
India	14
Kazakhstan	11
Singapore	10
France	9
Israel	8
United Kingdom	8
Netherlands	5

Note: Following the IEEE legal guidelines, none of the Russian affiliated abstracts were published in leexlore, nor in the printout of the conference abstracts.



- For the hotspot research in China, we set 10 special sessions
- Total submissions are 160, with 86 oral presentations and 74 posters

9.1 Sustainable Plasma Chemistry for a Net-zero Economy

9.2 EMP and EMC in Controlled Nuclear Fusion

9.3 Pulsed Power Accelerators and Beams

9.4 Application of Plasma in the Preparation of Advanced Materials

9.5 Electrical Breakdown and Discharge Plasma in Vacuum

9.6 Eco-friendly Gas Discharge and its Applications

9.7 Innovative Fusion Approaches

9.8 Extreme Electromagnetic Engineering and its Biomedical Applications

9.9 Scientific Machine Learning and its Applications to Plasma Science

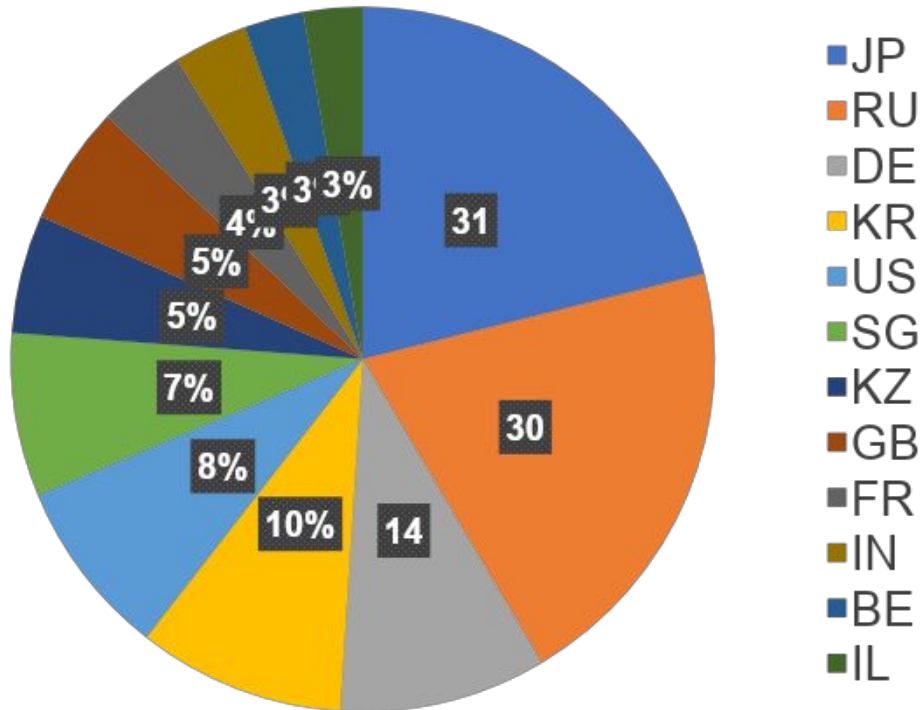
9.10 Fundamental Process in Lightning Discharge, Long Air-gap Discharge

- Total registrants over 1000, 830 were from China, accounting for 82%, and 177 were international, accounting for 18%.

Country	Number	Country	Number	Country	Number
China	830	Netherlands	3	Malaysia	1
Japan	31	Iceland	3	Nepal	1
Russian Federation	30	Australia	3	Spain	1
Republic of Korea	14	Uzbekistan	3	Sri Lanka	1
Germany	14	Canada	2		
United States of America	12	Switzerland	2		
Singapore	11	Czech Republic	1		
Kazakhstan	8	Hungary	1		
United Kingdom	8	Iran	1		
France	6	Ukraine	1		
India	5	Belarus	1		
Israel	4	Italy	1		
Belgium	4	Luxembourg	1		

Note: Following the IEEE legal guidelines, IEEE did not receive any registration from Russian affiliates.

- 177 international registrants came from 31 countries and districts



Country	Number
Japan	31
Russian Federation	30
Germany	14
Republic of Korea	14
United States of America	12
Singapore	11
Kazakhstan	8
United Kingdom	8
France	6
India	5
Belgium	4
Israel	4

Note: Following the IEEE legal guidelines, IEEE did not receive any registration from Russian affiliates.



Conference registration





Reception

- On June 16, we prepared a welcome reception with over 600 people in attendance





Schedule overview



16 June (SUN)	17 June (MON)	18 June (TUE)	19 June (WED)	20 June (THU)	21 June (FRI)	
	0900-0920 Opening ceremony & Speech	0830-0930 Morning Plenary Sessions (PL)			0830-1220 Minicourse (Tsinghua University)	
	0920-1020 Plenary Session (PL)	0930-0945 Coffee Break				
	1020-1030 Photograph & Coffee Break	0945-1205 Oral Sessions		0945-1205 Oral Session		
	1030-1130 Plenary Session (PL)			Closing ceremony		
	1130-1200 NPSS Chapters in China					
	1200-1330 Lunch Break					
	1330-1430 Afternoon Plenary Sessions (PL)					
16 June, 9:00-20:00 Registration (17-19 June, 9:00-18:00)	1430-1650 Oral Sessions Coffee Break	1430-1530 Plenary Sessions (PL)	1430-1650 Oral Sessions Coffee Break			1400-1840 Minicourse (Tsinghua University)
		1530 -1650 Oral Sessions Coffee Break				
	1700-1830 Poster Sessions					
1800-2030 Welcome Reception	1900-2030 WIE Reception	1900-2030 NPSS YPS	1800-2030 Awards & Banquet			



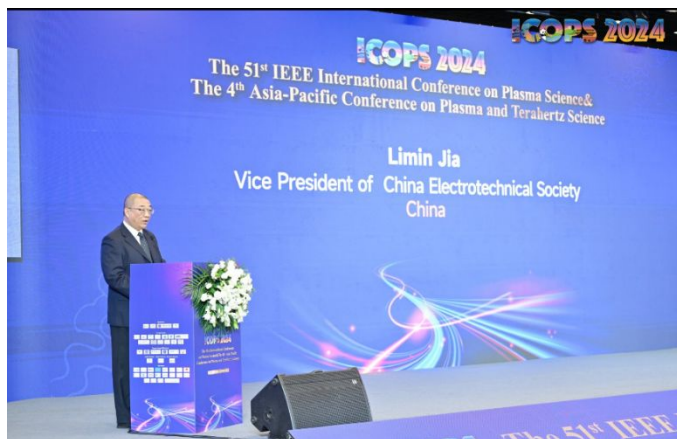
Opening Ceremony



Host: Tao Shao



IEEE NPSS address



CES address



IEE CAS address



Group photograph





ICOPS & APCOPTS 2024 NPSS Chapters in China Event Successfully Held

On the morning of June 17th, 2024, the ICOPS & APCOPTS 2024 NPSS Chapters in China event was successfully held at the Beijing International Convention Center. The IEEE International Conference on Plasma Science (ICOPS) is an annual conference coordinated by the Plasma Science and Applications Committee (PSAC) of the IEEE Nuclear & Plasma Sciences Society (NPSS) — the largest and most academically influential international conference in the field of plasma science.

ICOPS 2024, held in Asia for the third time, is the first pioneering conference to be hosted in China. The Asia-Pacific Conference on Plasma and Terahertz Science (APCOPTS) is supported by NPSS and represents an international meeting point for the integration of plasma science and terahertz fields. It also serves as the Asian version of the ICOPS conference, occurring biennially. The conference was organized by NPSS, China Electrotechnical Society, and Institute of Electrical Engineering, Chinese Academy of Sciences, with Professor Tao Shao serving as the



Time: 11:30-12:00, June 17

The NPSS Chapters in Xi'an, Nanjing, Beijing, and Chengdu were awarded plaques



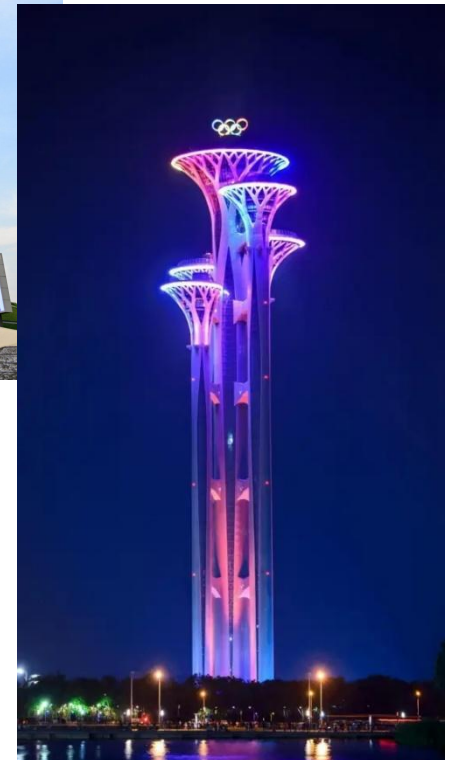
Special Banquet






19:00-21:00, June 17

Banquet at Beijing
Olympic Tower

About 80 scholars
and experts attended
the special banquet





June 17, MON 9:20-10:20 am		Megawatt-Class Gyrotron Developments for Today's Plasma Fusion Experiments and Future DEMO at Europe John Jelonnek Karlsruhe Institute of Technology
June 17, MON 10:30-11:30 am		Knowledge based Plasma Process Development in Technological Low Temperature Plasmas Julian Schulze Ruhr-University Bochum
June 17, MON 1:30-2:30 pm		THz Sensoring and Influence on Bio-matter Chao Chang Xi'an Jiaotong University & Peking University



Plenary Speakers



John Jelonnek






Julian Schulze



Chao Chang





<p>June 18, TUE 8:30-9:30 am</p>		<p>Recent Progress of Double Cone Ignition Scheme of Inertial Confinement Fusion Jie Zhang Chinese Academy of Sciences/ Shanghai Jiao Tong University</p>
<p>June 18, TUE 1:30-2:30 pm</p>		<p>Multiphase AC Arc System for Nanomaterials Processing Takayuki Watanabe Kyushu University</p>
<p>June 18, TUE 2:30-3:30 pm</p>		<p>Pulsed Nanosecond Plasma on the Service of Advanced Laser Diagnostics Svetlana Starikovskaia Laboratory for Plasma Physics, LPP (CNRS, Ecole Polytechnique)</p>



Plenary Speakers



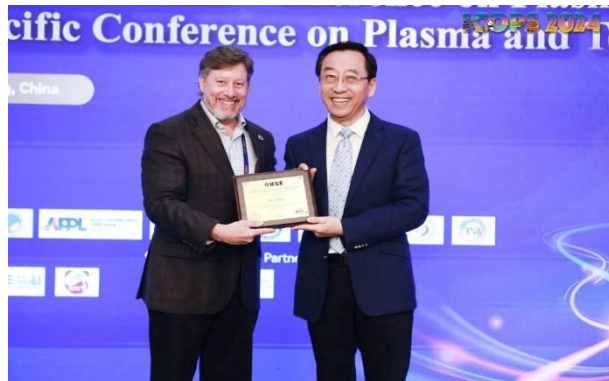
Jie Zhang






Takayuki Watanabe



Svetlana Starikovskaia





<p>June 19, WED 8:30-9:30 am</p>		<p>Low Temperature Plasma Science to Advance Human Health and Enable a Sustainable Future Peter Bruggeman University of Minnesota</p>
<p>June 19, WED 1:30-2:30 pm</p>		<p>Review of Electron Emission from Metals to 2D Materials Ricky Lay Kee ANG Singapore University of Technology and Design</p>
<p>June 20, THU 8:30-9:30 am</p>		<p>Pulsed Power Source Technology for Plasma Applications Weihua Jiang Nagaoka University of Technology</p>



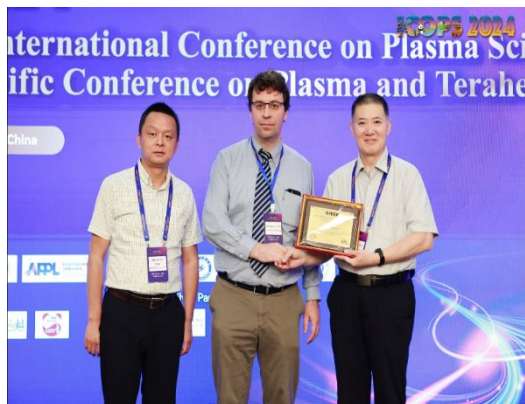
Plenary Speakers



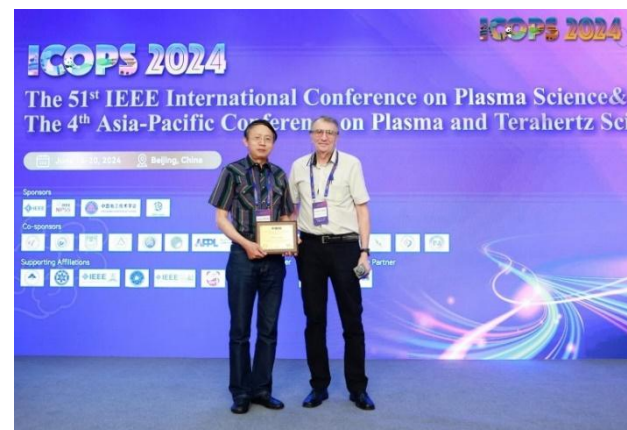
Peter Bruggeman



Ricky Lay Kee ANG



Weihua Jiang





- Total oral presentations reached 577, 13 rooms for parallel sessions.

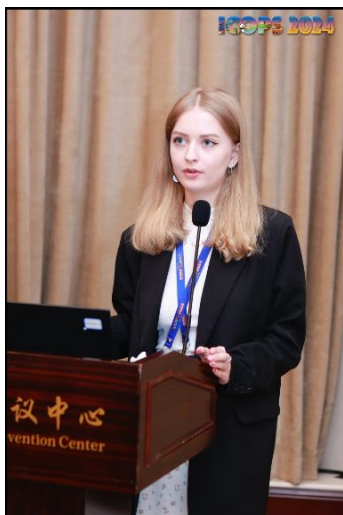
Schedule	305A	305B	303	305C	305D	307	305E	311A	311B	311C	308	302	310
June 17 MON 14:30-16:50	TA1	TA1	TA2	TA3	TA4	TA5	TA5	TA6	TA7	TA7	TA8	TA9	TA9
June 18 TUE 9:45-12:05	TA1	TA1	TA2	TA3	TA4	TA5	TA5	TA6	TA7	TA7	TA8	TA9	TA9
June 18 TUE 15:30-16:50	TA1	TA1	TA2	TA3	TA4	TA5	TA5	TA6	TA7	TA7	TA8	TA9	
June 19 WED 9:45-12:05	TA1	TA1	TA2	TA3/5	TA4	TA5	TA5	TA6	TA7	TA5	TA8	TA9	
June 19 WED 14:30-16:50	TA1	TA1	TA2	TA1	TA4/5	TA5	TA5	TA5/6	TA7	TA5	TA8	TA9	
June 20 THU 9:45-12:05	TA1	TA1	TA2	TA1/2	TA9	TA5	TA5	TA5	TA7	TA9	TA8	TA9	

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Parallel sessions





Parallel sessions





Poster sessions





Time: 19:00-20:30, June 17

Over 50 female scientists, engineers or postgraduate students from different countries have gathered for the WIE Event

We prepared unique Chinese gifts for every WIE participants.





Young Professionals (YP)



- **Time:** 19:00-21:00, June 18, TUE

Career Kick-start for Young Professionals in Plasma Science



**Prof. Svetlana
Starikovskaia**

France

**RUHR
UNIVERSITÄT
BOCHUM**



**Prof. Julian
Schulze**

Germany



**西安交通大学
XI'AN JIAOTONG UNIVERSITY**

**Prof. Anbang
Sun**

China



**Prof. Tatloon
Chng**

Singapore



**Dr. Xianjie
Wang**

China

Academia Panelists

Industry Panelist



Young Professionals (YP)



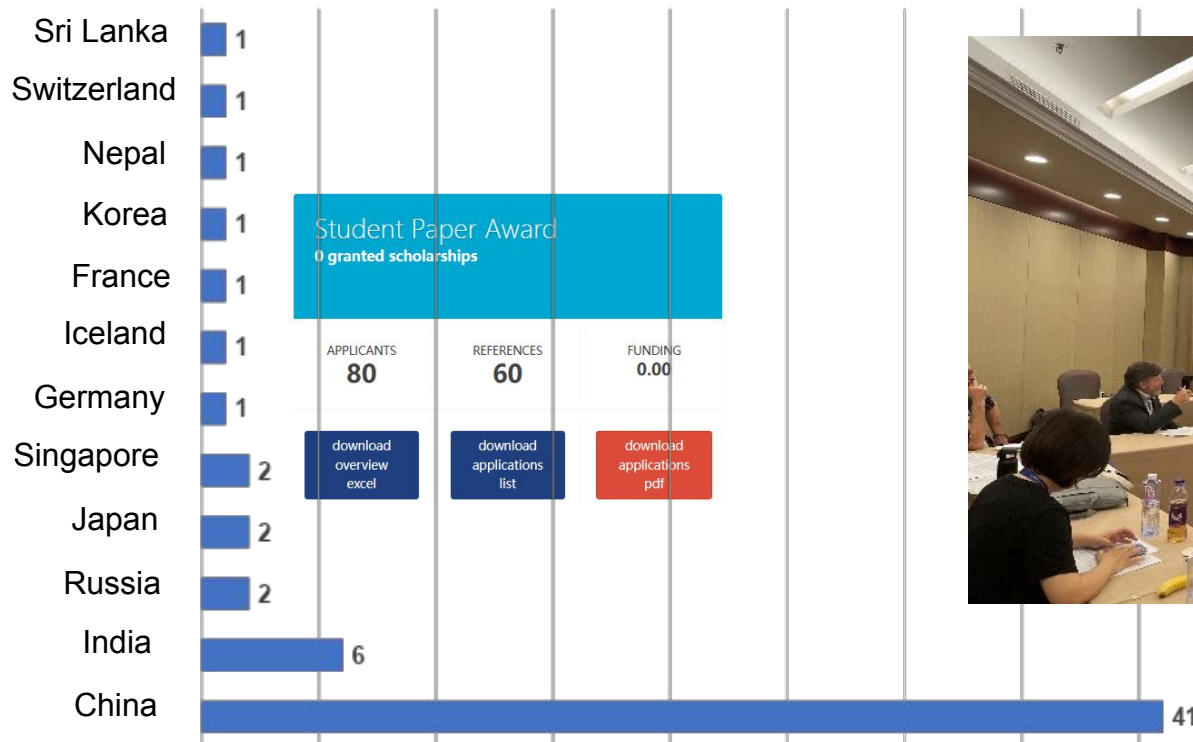
More than 60 young scholars attended the YP Event, discussed and shared their experiences and ideas on research direction, work unit, challenges encountered in scientific research and life

Unique exquisite gifts were prepared for invited guests and all the attendees





- We have revived more than 80 applications, among which 60 applications are valid. Half of the applicants from TA1 and TA5
- After the peer-review, 12 students entered to final competition



Final competition



Student Paper Award

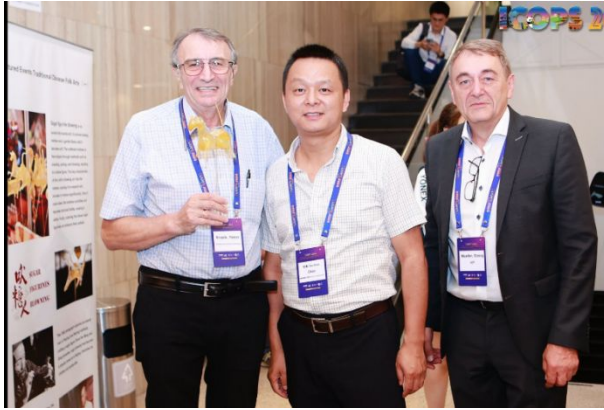


4 students won Student Paper Award
4 students won Student Paper Awards
Honorable Mention



Banquet- Experience of Traditional Skills

- We have prepared Beijing traditional craftsmen to interact with participants, so that foreigners can better understand China





Banquet– Award plaque

- Prof. Chunqi Jiang presented award plaques to Steven Gold, Tao Shao and Yangyang Fu





Banquet– Show

- During the banquet, we prepared a cultural performance and enjoyed delicious food and performances

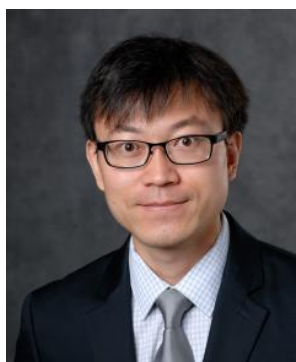




- **Time:** June 20-21, 2024
- **Location:** Tsinghua University (on campus)



Dr. Yangyang Fu
Tsinghua University



Dr. Peng Zhang
Michigan State University

Plasma science and Technology: Basic Fundamentals and Modern Applications

Mark D. Johnston

Sandia National Laboratories, USA

Low Temperature Plasma Science and Technology **(on line)**

Yakov Krasik

Technion-Israel Institute of Technology,
Israel

Nanosecond Timescale Discharge in Pressurized Gas – Physics and Applications

Jón Tómas Guðmundsson

University of Iceland, Iceland

Physics and Technology of Magnetron Sputtering Discharges

Xinpei Lu

Huazhong University of Science and
Technology, CN

Atmospheric Pressure Plasmas and Their Applications in Biomedical and Nitrogen Fixation

Anthony B. Murphy

CSIRO, AU

Fundamentals and Applications of Thermal Plasmas

Chunqi Jiang

Old Dominion University, USA

Frontier Applications of Non-equilibrium Atmospheric Pressure Plasma Sources

Xiaogang Wang

Harbin University of Technology, CN

Recent Progresses in Experimental Space Plasma Physics



Minicourses



June 20-21, Tsinghua University

7 invited professors made the lectures





Minicourses



ICOPS & APCOPTS 2024 Minicourse

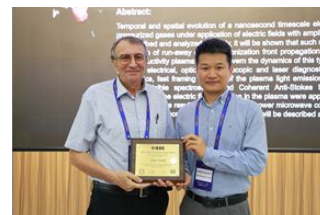
清华大学电机工程与应用电子技术系
Department of Electrical Engineering, Tsinghua University

ICOPS 2024
The 51st IEEE International Conference on Plasma Science &
The 4th Asia-Pacific Conference on Plasma and Terahertz Science

Minicourse

More than 80 young scholars
attended the minicourses

The minicourse chair Prof. Yangyang Fu
awarded certificates to the lecturers





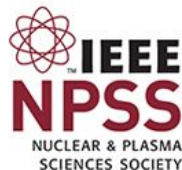
- Young Professional Travel Grants:
11 NPSS young professionals from 10 different countries received travel support.
- Student Travel Grant Award:
10 students from 9 different countries received the award.



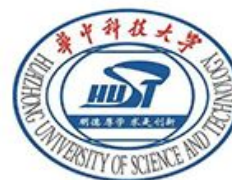
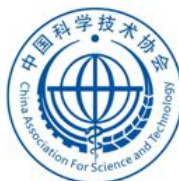
Co-sponsors



- Sponsors (Free exhibition location for **IEEE, IOP and AIP**)



- Supporting Affiliations



• Partners

There are 22 exhibitors



Exhibitors-IEEE NPSS Member Table

- We arranged a table for IEEE NPSS membership for free, where Prof. Martin and his two volunteers promoted IEEE NPSS





Exhibitors





Exhibitors



- There are 30 volunteers from the universities and institutes in Beijing





- The abstract proceeding of ICOPS 2024 has been on line
- Post-ICOPS publication is a special issue in IEEE Trans. Plasma Sci. for plenary, invited, and selected mini-course talks
- We also encourage the participants submit their papers to Plasma Sci. Technol. and other journals

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16-20 June 2024

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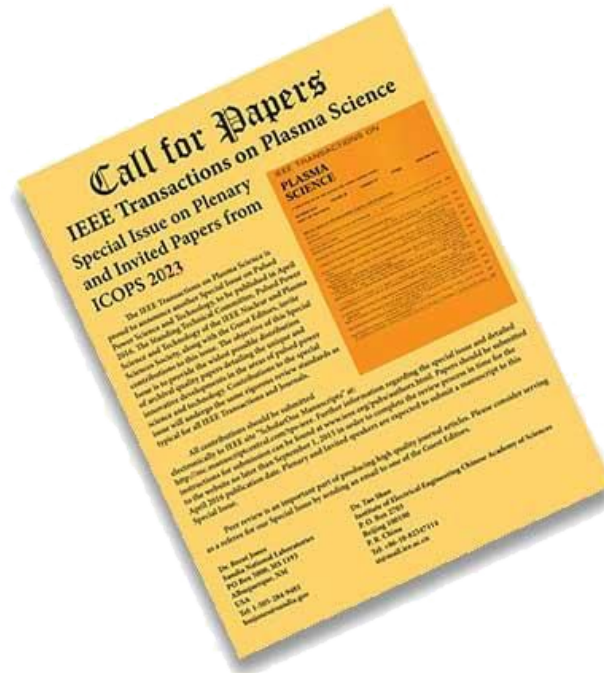
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ICOPS 2024 Program
Publication Year: 2024 , Page(s): 1 - 169

ICOPS 2024 Cover Page
Publication Year: 2024 , Page(s): c1 - c1

Effect of Gas Switch Prefire in Multistage Linear
Z. Wan; W. Ding
Publication Year: 2024 , Page(s): 1 - 1



Post-ICOPS publication



We sincerely thank all for the successful
ICOPS & APCOPTS 2024!