Press Release

Sept. 15, 2023
Association of Asia-Pacific Physical Societies (AAPPS)
Division of Plasma Physics (AAPPS-DPP)

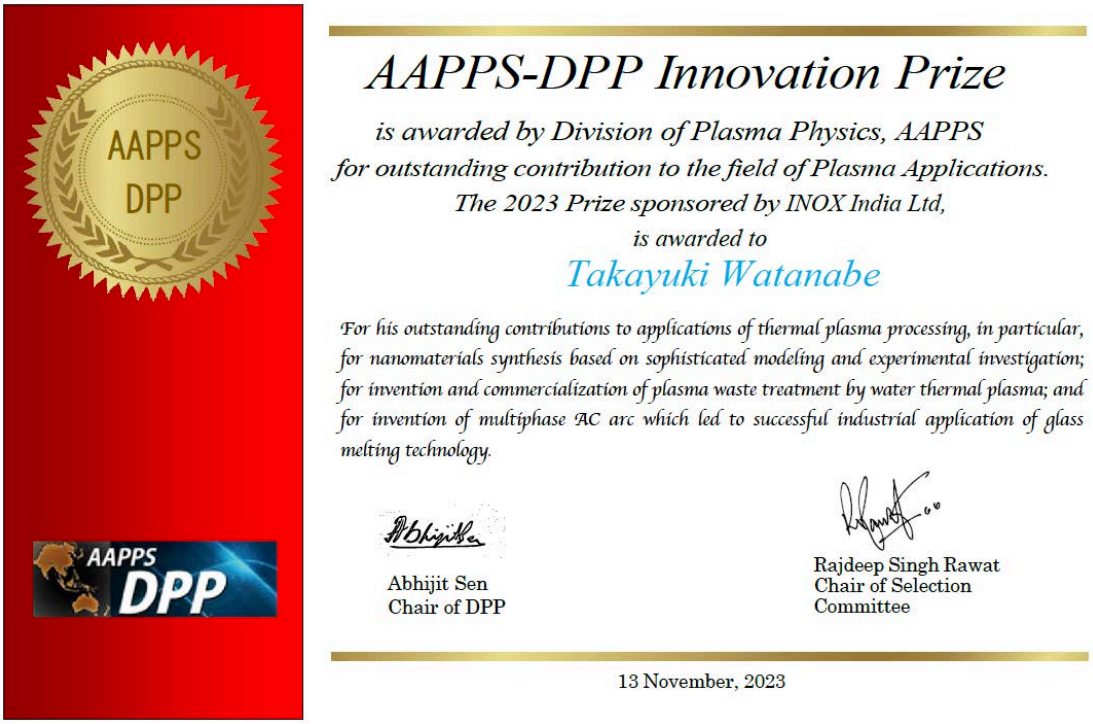
AAPPS-DPP Plasma Innovation Prize

– Professor Takayuki Watanabe is selected as Fifth Laureate (2023) –

The Division of Plasma Physics (CEO: Mitsuru Kikuchi, Chair: Abhijit Sen) under the Association of Asia Pacific Physical Societies (President: Hyoung Joon Choi) selected Professor Takayuki Watanabe of Kyushu University as the 5th Laureate of AAPPS-DPP Plasma Innovation Prize, which is awarded to scientists who have made seminal / pioneering contributions in the field of plasma applications, focusing on impacts on industry.

Citations:

Takayuki Watanabe: *For his outstanding contributions to applications of thermal plasma processing, in particular, for nanomaterials synthesis based on sophisticated modeling and experimental investigation; for invention and commercialization of plasma waste treatment by water thermal plasma; and for invention of multiphase AC arc which led to successful industrial application of glass melting technology.*



Certificates of 2023 Plasma Innovation Prize

Certificate, medal and cash prize will be given at the 7th Asia-Pacific Conference on Plasma Physics (AAPPS-DPP2023) Nov. 12-17, 2023 at Port Messe Nagoya.

Contact points：

AAPPS-DPP Association Inc. : Representative Director and CEO, Mitsuru Kikuchi, TEL: +81-80-1115-3482

AAPPS-DPP Homepage Address：http://aappsdpp.org/AAPPSDPPF/index.html

Press Release

On the achievements of Professor Takayuki Watanabe

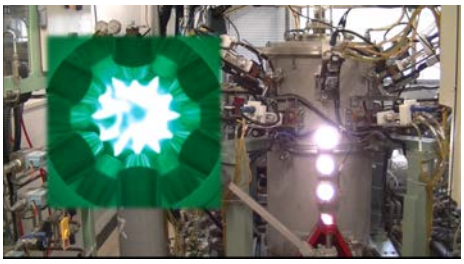
Prof. Takayuki Watanabe

Prof. Takayuki Watanabe was born in Yokohama, Japan, in 1961, received his Ph. D at Tokyo Institute of Technology in 1991. Since 2013, he has been Professor of the Kyushu University. Prof. Takayuki Watanabe has accomplished three great inventions for plasma process development.

The fist scientific significance is nanoparticle synthesis by thermal plasmas. He invented functional nanoparticle synthesis by thermal plasmas, based on the numerical modeling. Functional nanoparticles of silicide and boride prepared by thermal plasmas has been applied for electromagnetic shielding and neutron shielding. Recently, He developed nanoparticle synthesis for cathode, anode, and electrolyte of lithium-ion secondary battery. These nanoparticles leads to the development of all solid-state lithium-ion battery improvement with high energy density.

The second scientific significance is waste treatment by thermal for efficient destruction of hazardous and waste materials. Prof. Watanabe developed an innovative water plasma system for the treatment of greenhouse gases, pharmaceuticals and personal care products, and hazardous organic wastes.

The third scientific significance is the development of multi-phase AC arc. Prof. Watanabe developed innovative in-flight glass melting technology. Compared with the traditional glass production, the total vitrification time is evaluated only 2-3 h. This system provides significant energy savings with energy requirements reduced by half.



Multi-Phase AC Arc

All of inventions above towards the plasma process innovations were developed by Prof. Watanabe's great scientific results and supported by his patents of 15 Registered Patents and 230 scientific papers. Prof. Watanabe is extremely active in international conferences with 394 presentations including 75 keynote and invited talks, and published 145 papers as the conference proceedings. Over 30 years, he has been an outstanding plasma scientist putting his heart into the progress of thermal plasma region from both viewpoints of sciences and industries. From 2020 to 2023, he led the field of plasma chemistry in industry and academia in Japan as chairman of the JSPS 153 Committee on Plasma Science for Materials. He is the Board of Directors of International Plasma Chemistry Society, and he organized 25th International Symposium on Plasma Chemistry as the Chair in 2023. Professor Watanabe has carried out original research in both science and innovation, resulting in innovative inventions and outstanding achievements, which are worthy of the AAPPS-DPP Plasma Innovation Prize 2023.

Press Release
Appendix: 2023 AAPPS-DPP Plasma Innovation Prize

AAPPS-DPP Plasma Innovation Prize was founded by the AAPPS-DPP in 2019. This prize is given to a plasma physicist/engineer annually to recognize outstanding contributions to experimental and/or theoretical research in all fields of plasma applications, focusing on impacts on industry. The prize recipients were Professor Roderick Boswell (2019), Masaru Hori (2020), Dr. Anthony B Murphy (2021), no winner (2022). The 2023 Selection Committee composed of leading physicists of plasma application in Asia-Pacific region.

Selection committee:
Chairman: Prof. Rajdeep S. Rawat (Nanyang Technological University)
Members: Prof Paul K Chu (City University of Hong Kong)
Prof Paul Lee Choon Keat (Nanyang Technological University)
Prof Wonho Choe (Korea Advanced Institute of Science and Technology)
Prof Hae June Lee (Pusan National University)
Prof XinPei Lu (HuaZhong University of Science and Technology)
Prof Zhang Guixin (Tsinghua University)
Prof Masafumi Ito (Meijo University)
Dr Masaru Izawa (Hitachi Hightech Co Ltd)
Prof Sudeep Bhattacharjee (IIT-Kampur)
Prof Heremba Bailung (Institute of Advanced Study in Science and Technology (*IASST*))
Prof Katia Bazaka (Australian National University)
Prof Patrick J Cullen (University of Sydney)

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5 September 2023

Professor Mitsuru Kikuchi
CEO, AAPPS-DPP

Prof Abhijit Sen
Chair, AAPPS-DPP

AAPPS-DPP Plasma Innovation Prize 2023

Dear Professor Kikuchi and Professor Sen,

I have great pleasure in conveying to you both the decision of the Selection Committee regarding the AAPPS-DPP Plasma Innovation Prize 2023.

The Selection Committee recommends that the **AAPPS-DPP Plasma Innovation Prize for the year 2023 be awarded to Professor Takayuki Watanabe** from Kyushu University, Japan.

The proposed award citation for the awardee is as follows:

Takayuki Watanabe: "For his outstanding contributions to applications of thermal plasma processing, in particular, for nanomaterials synthesis based on sophisticated modeling and experimental investigation; for invention and commercialization of plasma waste treatment by water thermal plasma; and for invention of multiphase AC arc which led to successful industrial application of glass melting technology."

Committee members for Plasma Innovation Prize 2023 are as follows:
Prof Rajdeep Singh Rawat (Chair)
Prof Paul K Chu
Prof Paul Lee Choon Keat
Prof Wonho Choe
Prof Hae June Lee
Prof XinPei Lu
Prof Zhang Guixin
Prof Masafumi Ito
Dr Masaru Izawa
Prof Sudeep Bhattacharjee
Prof Heremba Bailung
Prof Katia Bazaka
Prof Patrick J Cullen

Yours sincerely

Professor Rajdeep Singh Rawat
Chair, Selection Committee of AAPPS-DPP Plasma Innovation Prize 2023
Head, Natural Sciences and Science Education Academic Group
NSSE, NIE, Nanyang Technological University
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Chair Elect AAPPS-DPP - https://www.aappsdpp.org/AAPPSDPPF/committees.html
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