

JUNHWI BAK

Texas A&M University, BLDG 1267 ALLEMO
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EDUCATION

The University of Tokyo

PH. D. IN THE FIELD OF AERONAUTICS AND ASTRONAUTICS

Tokyo, Japan
Sep. 2016 - Sep. 2019

The University of Tokyo

M. ENG. IN THE FIELD OF AERONAUTICS AND ASTRONAUTICS

Tokyo, Japan
Oct. 2014 - Sep. 2016

Seoul National University

B.S. IN MECHANICAL AND AEROSPACE ENGINEERING

Seoul, S. Korea
Mar. 2006 - Feb. 2014

WORK EXPERIENCE

Aerospace Laboratory for Lasers, ElectroMagnetics and Optics, Texas A&M University

SENIOR RESEARCH ENGINEER

College Station, TX, USA
Oct. 2022 - Current

Aerospace Laboratory for Lasers, ElectroMagnetics and Optics, Texas A&M University

POSTDOCTORAL RESEARCHER

College Station, TX, USA
Jan. 2021 - Sep. 2022

Optical Probing & Manipulation group, Texas A&M University

POSTDOCTORAL RESEARCHER

College Station, TX, USA
Jan. 2020 - Dec. 2020

Komurasaki Laboratory, The University of Tokyo

POSTDOCTORAL RESEARCHER

Tokyo, Japan
Sep. 2019 - Dec. 2019

Laboratory for Plasma Nanosynthesis, Princeton Plasma Physics Laboratory

VISITING STUDENT RESEARCH COLLABORATOR

Princeton, NJ, USA
Sep. 2016 - Oct. 2016

RESEARCH EXPERIENCE

Investigation of Supersonic Electrons in Rotating Plasma by Laser Thomson Scattering

SENIOR RESEARCH ENGINEER

College Station, TX, USA
Jul. 2023 - Current

- experimental research on the role of rotating electrons in $E \times B$ plasmas using one-dimensional laser Thomson scattering, achieving a density detection limit on the order of 10^{10} cm^{-3} .

Experimental Study of Laser Energy Deposition by Dual Pulse Approach

SENIOR RESEARCH ENGINEER

College Station, TX, USA
Apr. 2022 - Current

- Conducted experimental research on the impact of spatial and temporal laser beam shaping, as well as pulse separation timing, on plasma-laser interaction. Investigated resulting plasma dynamics, including control of gas, electron, and vibrational temperatures, as well as the generation of vorticity, density gradients, and pressure gradients.
- Selected publication: [doi:10.1038/s41598-024-52868-w](https://doi.org/10.1038/s41598-024-52868-w)

Development and Application of Forward Low-Angle Thomson Scattering (FLATS)

SENIOR RESEARCH ENGINEER

College Station, TX, USA
Jan. 2022 - Current

- Researched and developed FLATS, a technique designed to mitigate background interference from Rayleigh/Raman scattering and plasma radiation. FLATS extends the low electron density limit of Thomson scattering significantly.
- Selected publication: [doi:10.2514/6.2023-1859](https://doi.org/10.2514/6.2023-1859) [doi:10.1063/5.0121436](https://doi.org/10.1063/5.0121436)

Experimental Study of Electron Transpiration Cooling

POSTDOCTORAL RESEARCHER

College Station, TX, USA
Jan. 2021 - Current

- Achieved the first direct time-resolved observation of metal surface cooling by thermionic electron emission. Characterized plasma-ignited mode, electron, and metal transpiration cooling using laser and optical diagnostics.
- Selected publication: [doi:10.1088/1361-6595/ad2b7c](https://doi.org/10.1088/1361-6595/ad2b7c) [doi:10.2514/6.2022-0983](https://doi.org/10.2514/6.2022-0983) (*Selected as "Best Paper"*)

Development and Applications of Single Shot Coherent Rayleigh-Brillouin Scattering *College Station, TX, USA*
POSTDOCTORAL RESEARCHER *Jan. 2020 - Dec.2020*

- Developed a custom dual-color frequency-agile laser system capable of tuning pulse energy, duration, and shape. Utilized the system for coherent Rayleigh-Brillouin scattering (CRBS) to conduct neutral gas particle diagnostics, including temperature, density, and velocity measurements. First demonstration of gas velocimetry using CRBS for various gas types.
- Selected publication: [doi:10.1364/OE.470764](https://doi.org/10.1364/OE.470764) [doi:10.1088/1361-6463/acb275](https://doi.org/10.1088/1361-6463/acb275)

Electron Transport with Azimuthally Inhomogeneous Plasma in $E \times B$ plasmas *Tokyo, Japan*
PRINCIPAL RESEARCHER *Nov. 2016 - Dec. 2019*

- Study on plasma structure formation and electron cross-field transport induced by azimuthal non-uniform plasma parameters in Hall thrusters $E \times B$ plasma. Conducted plasma diagnostics and hybrid-PIC numerical simulation.
- Selected publication: [doi:10.1063/1.5144851](https://doi.org/10.1063/1.5144851) [doi:10.1063/1.5090931](https://doi.org/10.1063/1.5090931) [doi:10.1063/5.0067310](https://doi.org/10.1063/5.0067310) [doi:10.1063/5.0060377](https://doi.org/10.1063/5.0060377)

Laser Induced Incandescence Signal Modeling to Carbon Arc Discharge Environment *Princeton, NJ, USA*
VISITING STUDENT RESEARCH COLLABORATOR *Sep. 2016 - Oct. 2016*

- Application of Laser Induced Incandescence (LII) signal modeling to carbon arc discharge environment. Simulation of LII signal depending on nanoparticles' temperature and size taking into account the Mie-regime.
- Selected publication: [doi:10.1016/j.carbon.2017.02.055](https://doi.org/10.1016/j.carbon.2017.02.055)

Magnetic Plasma Deorbit System for Nano- and Micro-satellites *Tokyo, Japan*
RESEARCH ASSISTANT *Dec. 2015 - Sep. 2017*

- Research on developing magnetic plasma deorbit system using magnetic torque interference with space plasma. Worked on adjusting a pre-developed in-house electromagnetic particle-in-cell code to simulate the interference between satellite body and space plasma.
- Selected publication: [doi:10.2514/1.A34040](https://doi.org/10.2514/1.A34040)

Discharge Oscillation Characteristic of an Anode Layer Hall Thruster *Tokyo, Japan*
RESEARCH ASSISTANT *Jul. 2015 - Jul. 2016*

- Built characteristic maps of discharge oscillation amplitude and anode efficiency of anode layer thruster. Observed the relation between magnetic topology and thruster performance.
- Selected publication: [doi:10.2322/jjsass.65.82](https://doi.org/10.2322/jjsass.65.82)

Location Determination of a Deployable Part of Satellites by Using a Magnetic Sensor *Tokyo, Japan*
RESEARCH ASSISTANT *Apr. 2015 - Dec. 2015*

- Worked on developing a location determination program with MATLAB, which utilizes the magnetic field generated by magnetic coils on the satellites and estimates of the location of a magnetic sensor on a deployable part on the satellites.


Interplanetary Attitude Control System Using IMF in Small Sized Spacecraft *Tokyo, Japan*
RESEARCH ASSISTANT *Mar. 2015 - Apr. 2015*


- Research on an attitude control system for nano-spacecraft using a magnetic torque generated by an electromagnetic coil under an interplanetary magnetic field.
- Worked on analysing solar wind magnetic field from OMNI data by using MATLAB.

Experiment of an Iodine-fed Hall Thruster with Anode Layer *Tokyo, Japan*
RESEARCH ASSISTANT *Oct. 2014 - Aug. 2015*

- Built an iodine feed system being automatically controlled by LabVIEW, tested its validity, and carried out the thruster operation with the system.

RESEARCH GRANTS

Investigation of Supersonic Electrons in Rotating Plasma by Laser Thomson Scattering *Department of Energy*
GRANT NUMBER: DE-SC0024470  *Aug. 2023 - Jul. 2024*

Establishment of versatile discharge oscillation suppression method in Hall thrusters *JSPS*
GRANT NUMBER: 18J14592  *Apr. 2018 - Dec. 2019*

PUBLICATIONS AND PRESENTATIONS

Journal Articles

22. R. RANDOLPH, **J. Bak**, AND A. GERAKIS, "Simultaneous neutral density and temperature measurements of single shot coherent Rayleigh-Brillouin scattering in a plasma environment," (in preparation)
21. A. ABBASSZADEHRAD, **J. Bak**, J. CREEL AND R. B. MILES, "Solid angle effects of an arbitrarily oriented circular aperture on Thomson scattering," (under review)
20. A. GERAKIS, **J. Bak**, R. RANDOLPH AND M. N. SHNEIDER, "Seedless, non-resonant gas flow velocimetry with single shot coherent

Rayleigh-Brillouin scattering,” (under review)

19. **J. Bak**, G. A. URDANETA RINCON, S. POKHAREL, R. B. MILES, AND A. TROPINA, ”Two-dimensional high resolution electron properties of femtosecond laser-induced plasma filament in atmospheric pressure argon,” *Scientific Reports* **14** 3703 (2024) [doi](#)
18. J. L. SUAZO BETANCOURT, N. BUTLER-GRAIG, J. LOPEZ-URICOECHEA, **J. Bak**, D. LEE, A. M. STEINBERG, AND M. L. R. WALKER, ”Thomson scattering measurements in the krypton plume of a lanthanum hexaboride hollow cathode in a large vacuum test facility,” *Journal of Applied Physics* **135** 083302 (2024) [doi](#)
17. J. L. SUAZO BETANCOURT, S. J. GRAUER, **J. Bak**, A. M. STEINBERG, AND M. L. R. WALKER, ”Bayesian plasma model selection for Thomson scattering,” (under review)
16. **J. Bak**, A. TROPINA, J. CREEL, AND R. B. MILES, ”Quantification of plasma enabled surface cooling by electron emission from high temperature materials,” *Plasma Sources Science and Technology* **33** 034001 (2024) [doi](#)
15. **J. Bak**, J. L. SUAZO BETANCOURT, A. REKHY, A. ABBASSZADEHRAD, R. B. MILES, C. M. LIMBACH, AND M. L. R. WALKER, ”High resolution spatially extended 1D laser scattering diagnostics using volume Bragg grating notch filters,” *Review of Scientific Instruments* **94** 023003 (2023) [doi](#)
14. **J. Bak**, R. RANDOLPH, AND A. GERAKIS, ”Torr-level, seedless, non-resonant velocity distribution function measurement with a dual-color, single-shot coherent Rayleigh-Brillouin scattering scheme ,” *Journal of Physics D: Applied Physics* **56** 074001 (2023) [doi](#)
13. **J. Bak**, R. RANDOLPH, AND A. GERAKIS, ”A dual color, frequency and pulse duration agile laser system for particle spectroscopy and manipulation,” *Optics Express* **30** 41709 (2022) [doi](#)
12. **J. Bak**, R. KAWASHIMA, G. ROMANELLI, AND K. KOMURASAKI, ”Plasma structure and electron cross-field transport induced by azimuthal manipulation of the radial magnetic field in a Hall thruster E×B discharge,” *Journal of Applied Physics* **131** 053302 (2022) [doi](#)
11. **J. Bak**, R. KAWASHIMA, J. SIMMONDS, AND K. KOMURASAKI, ”Evolution of electron cross-field transport induced by an equilibrium azimuthal electric field in an E×B Hall thruster discharge under an azimuthally inhomogeneous neutral supply,” *Physics of Plasmas* **28** 102510 (2021) [doi](#)
10. Y. HAMADA, R. KAWASHIMA, **J. Bak**, K. KOMURASAKI AND H. KOIZUMI, ”Characterization of acceleration zone shifting in an anode-layer-type Hall thruster RAIJIN66,” *Vacuum* **186** 110040 (2021) [doi](#)
9. **J. Bak**, B. VAN LOO, R. KAWASHIMA AND K. KOMURASAKI, ”Discharge characteristics and increased electron current during azimuthally nonuniform propellant supply in an anode layer Hall thruster,” *Journal of Applied Physics* **128** 023302 (2020) [doi](#) **Selected as ”Editor’s Pick”**
8. **J. Bak**, R. KAWASHIMA, K. KOMURASAKI AND H. KOIZUMI, ”Plasma formation and cross-field electron transport induced by azimuthal neutral inhomogeneity in an anode layer Hall thruster,” *Physics of Plasmas* **26** 073505 (2019) [doi](#)
7. R. KAWASHIMA, **J. Bak**, S. MATSUZAWA AND T. INAMORI, ”Particle simulation of plasma drag force generation in the magnetic plasma deorbit,” *Journal of Spacecraft and Rockets* **55** pp. 1074-1082 (2018) [doi](#)
6. R. KAWASHIMA, **J. Bak**, K. KOMURASAKI AND H. KOIZUMI, ”Two-dimensional modeling of the Hall thruster discharge with nonuniform propellant supply in azimuth,” *Front. Appl. Plasma Technol.* **11** pp. 7-12 (2018)
5. Y. HAMADA, **J. Bak**, R. KAWASHIMA, H. KOIZUMI, K. KOMURASAKI, N. YAMAMOTO, Y. EGAWA, I. FUNAKI, S. IIHARA, S. CHO, K. KUBOTA, H. WATANABE, K. FUCHIGAMI, Y. TASHIRO, Y. TAKAHATA, T. KAKUMA, Y. FURUKUBO AND H. TAHARA, ”Hall thruster development for Japanese space propulsion programs,” *Trans. Japan Soc. Aero. Space Sci.* **60** p. 320-326 (2017) [doi](#)
4. S. YATOM, **J. Bak**, A. KHRABRY AND Y. RAITSES, ”Detection of nanoparticles in carbon arc discharge with laser-induced incandescence,” *Carbon* **117** pp. 154-162 (2017) [doi](#)
3. **J. Bak**, R. KAWASHIMA, M. MIZUKAWA, K. KOMURASAKI AND H. KOIZUMI, ”Plasma properties in a Hall thruster with azimuthal non-uniform propellant supply (in Japanese),” *Applied Plasma Science* **25** pp. 9-14 (2017) [doi](#)
2. Y. HAMADA, **J. Bak**, K. KOMURASAKI, Y. EGAWA, N. YAMAMOTO, Y. TAKAHATA, T. KAKUMA, Y. FURUKUBO AND H. TAHARA, ”Operation characteristics of 5-kW class RAIJIN Hall thruster,” *J. of Japan Soc. Aero. Space Sci.* **65** pp. 82-86 (2017) [doi](#)
1. M. MIZUKAWA, **J. Bak**, Y. HAMADA, K. KOMURASAKI, R. KAWASHIMA AND H. KOIZUMI, ”Suppression of plume divergence in anode layer type Hall thruster with magnetic shielding by improvement of magnetic field topology in channel,” *Applied Plasma Science* **24** pp. 3-8 (2016)

Conferences

AIAA SciTech Forum 2024

Orlando, FL, USA

J. Bak, S. POKHAREL, H. HADDEN, A. NAIDU, K. RUGGLES, A. TROPINA, AND R. MILES

8th – 12th Jan. 2024

- Laser intensity shaping: hydrodynamic effects and energy coupling in dual pulse laser energy deposition [doi](#)

G. URDANETA, **J. Bak**, A. TROPINA, R. MILES, AND A. DOGARIU

- Implementation of Laser Thomson Scattering for Femtosecond Laser-Generated Plasma Channel Characterization [doi](#)

A. ABBASSZADEHRAD, J. MEYERS, K. BROWN, **J. Bak**, A. DOGARIU, AND R. MILES

- Spectrally Isolating Rotational Raman Lines of CO₂: An Experimental Demonstration of the High Resolution of Slow Light Imaging Spectroscopy [doi](#)

A. ABBASSZADEHRAD, J. MEYERS, K. BROWN, **J. Bak**, A. DOGARIU, AND R. MILES

- Slow Light Imaging Spectroscopy: Sensitivity of the Instrument Function to Optical Thickness and Gate Delay [doi](#)

76th Annual Gaseous Electronics Conference (GEC)

Ann Arbor, Michigan

J. Bak, B. LEONOV, A. ABBASSZADEHRAD, AND R. MILES

9th - 13th Oct. 2023


- Forward Low Angle Thomson Scattering for measurements of femtosecond generated plasma filament in air 

AIAA SciTech Forum 2023

National Harbor, MD, USA

J. Bak, A. ABBASSZADEHRAD, A. REKHY, C. LIMBACH, AND R. MILES


23rd - 27th Jan. 2023

- Demonstration of low angle Thomson scattering for background interference suppression 


A. ABBASSZADEHRAD, **J. Bak**, J. CREEL, AND R. MILES

- Mapping of an arbitrarily oriented circular aperture to determine solid angle broadening effects on Thomson scattering 

S. POKHAREL, **J. Bak**, A. TROPINA, AND R. MILES

- Beam shaping for the laser energy deposition in air 

B. LEONOV, R. RANDOLPH, A. REKHY, **J. Bak**, A. ABBASSZADEHRAD, A. DOGARIU, R. MILES, AND C. LIMBACH


- Seeded Optical Parametric Oscillator as a Light Source for Slow-Light Imaging Spectroscopy 

75th Annual Gaseous Electronics Conference (GEC)


Sendai, Japan

J. Bak, J. L. SUAZO BETANCOURT, A. REKHY, A. ABBASSZADEHRAD, R. MILES, C. LIMBACH, AND M. WALKER

3rd - 7th Oct. 2022

- Spatially extended high-resolution Thomson scattering diagnostics with volume Bragg grating filters 

R. KAWASHIMA, **J. Bak**, AND K. KOMURASAKI


- Anatomy of cross-field electron transport by steady and unsteady plasma structures in Hall thrusters 

AIAA Aviation Forum 2022


Chicago, IL, USA

J. Bak, A. TROPINA, C. LIMBACH, R. MILES, AND J. CREEL

27th Jun. - 1st Jul. 2022

- Study of electron transpiration cooling under rapid laser heat flux modulation 

A. REKHY, B. LEONOV, A. ABBASSZADEHRAD, **J. Bak**, J. CREEL, C. LIMBACH, AND R. MILES

- Experimental demonstration of dispersion of Rayleigh Brillouin scattering from air with an atomic cesium vapor prism cell 

37th International Electric Propulsion Conference (IEPC)

Boston, MA, USA

J. Bak, R. KAWASHIMA, AND K. KOMURASAKI

19th - 23rd Jun. 2022


- Plasma formation and electron cross-field transport in the axial-azimuthal plane of a Hall thruster 

AIAA SciTech Forum 2022


San Diego, CA, USA

J. Bak, A. REKHY, C. LIMBACH, J. CREEL, AND R. MILES

3rd - 7th Jan. 2022

- Experimental study of electron transpiration cooling with a 2-kW laser heating system  **Selected as "Best Paper"**

R. RANDOLPH, **J. Bak**, AND A. GERAKIS

- Measurement of translational temperature of neutral species in low temperature plasmas 

74th Annual Gaseous Electronics Conference (GEC)

Virtual Conference

J. Bak, R. KAWASHIMA, G. ROMANELLI AND K. KOMURASAKI

4th - 8th Oct. 2021

- Electron cross-field transport from sub plasma structures in an E×B Hall thruster discharge under the azimuthally modulated neutrals and magnetic field

R. RANDOLPH, **J. Bak**, AND A. GERAKIS

- Diagnostics of neutral particles in a low pressure DC glow discharge using single shot coherent Rayleigh-Brillouin scattering

10th Asian Joint Conference on Propulsion and Power (AJCPP)

Virtual conference

R. KAWASHIMA, Y. HAMADA, **J. Bak**, K. KOMURASAKI AND H. KOIZUMI

3rd - 5th Mar. 2021


- Measured Ionization and Acceleration Zones in an Anode Layer Type Hall Thruster RAIJIN66

AIAA SciTech Forum 2021


Virtual event

J. Bak, R. RANDOLPH, A. GERAKIS AND M. N. SHNEIDER

11th - 15th & 19th-21st Jan. 2021

- Achieving the optimum velocity resolution of coherent Rayleigh-Brillouin scattering 

A. GERAKIS, **J. Bak**, R. RANDOLPH AND M. N. SHNEIDER

- Demonstration of single shot laser velocimetry with coherent Rayleigh-Brillouin scattering 

4th Asia-Pacific Conference on Plasma Physics (AAPPS-DPP)

Remote e-conference

J. Bak, R. KAWASHIMA, G. ROMANELLI AND K. KOMURASAKI

26th - 31st Oct. 2020

- Influence of manipulation of electron streamlines on plasma formation and electron cross-field transport in $\mathbf{E} \times \mathbf{B}$ plasma

73rd Annual Gaseous Electronics Conference (GEC)

Virtual Conference

J. Bak, R. RANDOLPH AND A. GERAKIS

5th - 9th Oct. 2020

- A dual-color, frequency-agile, single-shot CRBS laser system for the measurement of neutral species velocity distribution function in weakly ionized plasmas

J. Bak, R. KAWASHIMA AND K. KOMURASAKI

- Spatiotemporal characteristics of plasma structure induced by manipulation of electron cross-field transport in a Hall thruster

The 12th International Symposium on Applied Plasma Science (ISAPS)

Yamanashi, Japan

R. KAWASHIMA, Y. HAMADA, **J. Bak** AND K. KOMURASAKI

24th - 28th Sep. 2019

- Hybrid PIC simulation of a thruster with anode layer with self-consistent electron transport model

Y. HAMADA, **J. Bak**, R. KAWASHIMA, K. KOMURASAKI AND H. KOIZUMI

- Ionization zone shifting downstream at high propellant flow density in RAIJIN66

36th International Electric Propulsion Conference (IEPC)

Vienna, Austria

J. Bak, B. VAN LOO, R. KAWASHIMA, K. KOMURASAKI AND H. KOIZUMI

15th - 20th Sep. 2019

- Electron cross-field transport mechanisms observed under the azimuthally inhomogeneous neutral supply in a Hall thruster

J. Bak, R. KAWASHIMA, K. KOMURASAKI AND H. KOIZUMI

- Low frequency ionization oscillation model with azimuthal dimension in a Hall thruster 📄

R. KAWASHIMA, **J. Bak**, Y. HAMADA, B. VAN LOO, H. KOIZUMI AND K. KOMURASAKI

- Coupled simulation of two-dimensional hybrid Hall thruster models 📄

34th International Conference on Phenomena in Ionized Gases (ICPIG)

Sapporo, Japan

J. Bak, R. KAWASHIMA, K. KOMURASAKI AND H. KOIZUMI

14th - 19th Jul. 2019

- Study on electron cross-field drift by an azimuthal electric-field in Hall thrusters: from plasma density and potential structures

32nd International Symposium on Space Technology and Science (ISTS)

Fukui, Japan

Y. HAMADA, **J. Bak**, R. KAWASHIMA, K. KOMURASAKI AND H. KOIZUMI

15th - 21st Jun. 2019

- Probe diagnosis of RAIJIN66 thruster

R. KAWASHIMA, Y. HAMADA, **J. Bak**, B. VAN LOO, K. KOMURASAKI AND H. KOIZUMI

- Two-dimensional hybrid models of the plasma discharge in an anode-layer Hall thruster

2nd Asia-Pacific Conference on Plasma Physics (AAPPS-DPP)

Kanazawa, Japan

J. Bak, R. KAWASHIMA, B. VAN LOO, K. KOMURASAKI AND H. KOIZUMI

12th - 17th Nov. 2018

- Investigation of electron cross-field transport in Hall thrusters with inhomogeneity of plasma density and potential in azimuth 📄

71st Annual Gaseous Electronics Conference

Portland, OR, USA

S. YATOM, A. GERAKIS, A. KHRABRY, **J. Bak**, H. BELANGER, M. SHNEIDER, J. MITRANI, I. KAGANOVICH, A. KHODAK, B. STRATTON, V. VEKSELMAN AND Y. RAITSSES

5th - 9th Nov. 2018

- In situ approaches for diagnostics of nanoparticles in plasmas

54th AIAA/SAE/ASEE Joint Propulsion Conference (JPC)

Cincinnati, OH, USA

J. Bak, R. KAWASHIMA, K. KOMURASAKI AND H. KOIZUMI

9th - 11th Jul. 2018

- Effect of density inhomogeneity in azimuth on discharge oscillation suppression and electron diffusion in Hall thrusters 📄

35th International Electric Propulsion Conference (IEPC)

Atlanta, GA, USA

R. KAWASHIMA, **J. Bak**, K. KOMURASAKI, H. KOIZUMI AND K. HARA

8th - 12th Oct. 2017

- Effect of azimuthal non-uniformity on the Hall thruster discharge 📄

69th Annual Gaseous Electronics Conference

Bochum, Germany

S. YATOM, **J. Bak**, J.M. MITRANI, M.N. SHNEIDER, B.C. STRATTON AND Y. RAITSSES

10th - 14th Oct. 2016

- Investigation of nanoparticles formation in carbon arc with Laser Induced Incandescence (LII)

52nd AIAA/SAE/ASEE Joint Propulsion Conference (JPC)

Salt Lake City, UT, USA

J. Bak, Y. HAMADA, Y. HIRANO, K. KOMURASAKI, T. SCHÖNHERR AND H. KOIZUMI

25th - 27th Jul. 2016

- Operational properties of UT-58 anode layer Hall thruster with modified magnetic field and guard-ring material 📄

Space Propulsion 2016

Rome, Italy

T. SCHÖNHERR, Y. HIRANO, J. SUZUKI, S. AKAGI, **J. Bak**, R. KAWASHIMA AND K. KOMURASAKI

2nd - 6th May 2016

- Erosion reduction measures in anode layer type Hall thruster

8th Asian Joint Conference on Propulsion and Power (AJCPP)

Kagawa, Japan

Y. HAMADA, Y. HIRANO, **J. Bak**, R. KAWASHIMA, T. SCHÖNHERR, K. KOMURASAKI AND H. KOIZUMI

16th -19th Mar. 2016

- Thrust performance measurement of high-power RAIJIN Hall thruster using improved dual pendulum thrust stand

37th IEEE Aerospace Conference

Big Sky, MT, USA

T. INAMORI, K. IWANAGA, **J. Bak** AND P. SAISUTJARIT

5th -12th Mar. 2016

- Interplanetary attitude control system using IMF in a small sized spacecraft 📄

PATENTS

Systems and Methods for Measuring Light Beam Scattering

U.S. Application No. 18/233,242 (Pending)

J. Bak, Y. WU, R. MILES, AND C. LIMBACH

File Date: 11th Aug. 2022

WORKSHOPS AND SEMINARS

Feb. 16-18, 2022 **ExB Plasmas Workshop 2022**

Online

Jul. 29-Aug. 2, 2019 **9th East-Asia School and Workshop on Laboratory, Space and Astrophys. Plas.**

Nagoya, Japan

Mar. 9, 2017 **Small Satellite Int'l Cooperation Seminar** held by Nagoya University

Nagoya, Japan

Apr.2015-Mar.2016 **Monthly research exchange workshop** held by EACAT

Kanagawa, Japan

AWARDS AND HONORS

Apr. 2022	2022 AIAA Plasmadynamics and Lasers Best Paper Award by AIAA	<i>Recipient</i>
Dec. 2021	Postdoctoral Scholar Travel Award by Texas A&M University	<i>Recipient</i>
Oct. 2019-Dec. 2019	Research Fellowship for Young Scientists PD by JSPS	<i>Recipient</i>
Nov. 2018	AAPPS-DPP Poster Prize (AAPPS-DPP 2018) by AAPPS	<i>Recipient</i>
Apr. 2018-Sep. 2020	Research Fellowship for Young Scientists DC2 by JSPS	<i>Recipient</i>
Apr. 2014-Mar. 2018	Postgraduate Scholarship by Japanese Government (Monbukagakusho:MEXT)	<i>Recipient</i>
2013 Fall	Undergraduate Scholarship by Dongbu Cultural Foundation	<i>Recipient</i>
2008 Spring	Alumni Overseas Activity Scholarship by College of Engineering, Seoul National University	<i>Recipient</i>
2006-2009	National Science and Engineering Scholarship by Korea Student Aid Foundation	<i>Recipient</i>

OTHER ACTIVITIES

Affiliation

American Institute of Aeronautics and Astronautics (AIAA)	<i>Member</i>
American Physical Society (APS)	<i>Member</i>
Electric Rocket Propulsion Society (ERPS)	<i>Member</i>
Association of Asia Pacific Physical Societies - Division of Plasma Physics (AAPPS-DPP)	<i>Member</i>

Services

Journals (Reviewer) Journal of Physics D: Applied Physics; Physica Scripta; Journal of Applied Physics; Physics of Plasmas; AIP Advances; Journal of Evolving Space Activities; Review of Scientific Instruments; Transactions of the Japan Society for Aeronautical and Space Sciences;
Agencies (Proposal Reviewer) Princeton Collaborative Low Temperature Plasma Research Facility

Else

Feb. 2023	Active Listener - 2023 Undergraduate Research Scholars Symposium at Texas A&M University	<i>TX, USA</i>
Aug. 2022 - Current	Mentor - First Generation Engineering Student Mentoring Program at Texas A&M University	<i>TX, USA</i>
Sep. 2013	Winner in the men's 50m butterfly at Seoul National University swimming competition	<i>Seoul, S. Korea</i>
Sep. 2013-Feb. 2014	Teaching volunteer for low-income group students, Bundo Gongbubang	<i>Seoul, S. Korea</i>
May 2012-Jan. 2013	Language training Cambridge ESOL Certificate in Advanced English Level C1	<i>London, UK</i>
Dec. 2009-Oct. 2011	Military service in 2nd Armored Brigade, R.O.K. Army	<i>Paju, S. Korea</i>
Apr. 2008-Mar. 2009	Exchange student at Arakawa & Komurasaki Laboratory, The University of Tokyo	<i>Tokyo, Japan</i>