

## 主な国際会議発表（抜粋）

### **Effect of Structured Surface on Pressure Measurement in Hypersonic Rarefied Wind Tunnel**

Ryunosuke Endo, Masahito Tagawa, Kumiko Yokota, Takashi Ozawa  
33rd International Symposium on Rarefied Gas Dynamics, July 15-19 (2024), Göttingen, Germany

### **DSMC Computations of Intake Performance for Air Breathing Ion Engine**

Takashi Ozawa, Shunsuke Imamura, Masahito Tagawa, Kumiko Yokota  
33rd International Symposium on Rarefied Gas Dynamics, July 15-19 (2024), Göttingen, Germany

### **Degradation of fluorinated polymers/lubricants due to hyperthermal nitrogen collision in very low earth orbit**

Kumiko Yokota, Kaichi Nakayama, Santa Nishioka, Kazuki Ueta, Masahito Tagawa  
49<sup>th</sup> Leeds-Lyon Symposium on Tribology, September 2-4 (2024), Lyon, France

### **Evaluation of atomic oxygen effects obtained onboard SLATS/MDM**

Yugo Kimoto, Aki Goto, Kazuki Yukumatsu, Eiji Miyazaki, Kumiko Yokota, Masahito Tagawa  
ISMSE16/ICPMSE14, October 7-11 (2024), Saint-Raphaël, France

### **Individual erosion yields of FEP by atomic oxygen and by argon in simulated VLEO environments**

Masahito Tagawa, Santa Nishioka, Kaichi Nakayama, Kazuki Ueta, Kumiko Yokota  
ISMSE16/ICPMSE14, October 7-11 (2024), Saint-Raphaël, France

### **Real-time Observation of Polyimide Erosion in Very Low Earth Orbit (VLEO) and Its Impact on Space Environmental Effect on Materials**

Masahito Tagawa, Kumiko Yokota, Atsushi Fujita, Wataru Ide, Towa Ushijima, Koki Yao, Sasuga Horimoto, Santa Nishioka, Kaichi Nakayama, Yuta Tsuchiya, Aki Goto, Kazuki Yukumatsu, Eiji Miyazaki, Yugo Kimoto  
2023 MRS Spring Meeting & Exhibit, San Francisco, April 10-14, 2023 (Invited)

### **Atomic-oxygen-induced Microstructures Formed on Hydrocarbon Polymer Films**

Aki Goto, Takashi Tanji, Masahito Tagawa, Koji Michishio, Toshitaka Oka, Shinichi Yamashita  
2023 MRS Spring Meeting & Exhibit, San Francisco, April 10-14, 2023

### **Ground-based simulation experiment on degradation of spacecraft polymeric materials in VLEO**

Santa Nishioka, Sasuga Horimoto, Kaichi Nakayama, Kumiko Yokota, Masahito Tagawa, Zelina Iskanderova, Jacob Kleiman  
34<sup>th</sup> International Symposium on Space Technology and Science, June 3-9, 2023, Kurume, Fukuoka

### **Ground-based experiment for simultaneous N<sub>2</sub> collisions effect on atomic oxygen-induced polyimide erosion in very-low Earth orbit.**

Kaichi Nakayama, Sasuga Horimoto, Atsushi Fujita, Shohei Urakawa, Santa Nishioka, Wataru Ide, Kumiko Yokota, and Masahito Tagawa  
34<sup>th</sup> International Symposium on Space Technology and Science, June 3-9, 2023, Kurume, Fukuoka

### **High compression intake system for air breathing ion engine using anisotropic molecular scattering property of intake surfaces**

Koki Sugimoto, Kosuke Shoda, Kazuki Itatani, Keisuke Ezaki, Yusaku Ashida, Koki Murata, Kumiko Yokota, Masahito Tagawa, Yusuke Yamashita, Kazutaka Nishiyama  
34<sup>th</sup> International Symposium on Space Technology and Science, June 3-9, 2023, Kurume, Fukuoka

### **A high compression intake system for air breathing ion engine**

Koki Murata, Keisuke Ezaki, Kosuke Shoda, Kazuki Itatani, Yusaku Ashida, Koki Sugimoto, Yusuke Yamashita, Kazutaka Nishiyama, Kumiko Yokota, Masahito Tagawa  
34<sup>th</sup> International Symposium on Space Technology and Science, June 3-9, 2023, Kurume, Fukuoka

### **Atmospheric density measurement by dynamic pressure gauge aboard S-520-32 sounding rocket**

Taiga Adachi, Shoma Taira, Rintaro Atsuta, Yusuke Yamashita, Takashi Ozawa, Yoshinori Nakayama, Nanami Tobita, Takumi Abe, Kumiko Yokota, Masahito Tagawa  
34<sup>th</sup> International Symposium on Space Technology and Science, June 3-9, 2023, Kurume, Fukuoka

### **A design of pressure gauge for sounding rocket experiment**

Rintaro Atsuta, Shoma Taira, Taiga Adachi, Yusuke Yamashita, Takashi Ozawa, Takumi Abe, Yoshinori Nakayama, Nanami Tobita, Kumiko Yokota, Masahito Tagawa  
34<sup>th</sup> International Symposium on Space Technology and Science, June 3-9, 2023, Kurume, Fukuoka

**Atomic oxygen density variation in VLEO region: SLATS/AOFS flight data analysis**

Towa Ushijima, Atsushi Fujita, Koki Yao, Yuta Tsuchiya, Aki Goto, Kazuki Yukumatsu, Eiji Miyazaki, Yugo Kimoto, Yasunobu Miyoshi, Kumiko Yokota, Masahito Tagawa  
34<sup>th</sup> International Symposium on Space Technology and Science, June 3-9, 2023, Kurume, Fukuoka

**Evaluation of the structural shielding/shadowing effect of atomic oxygen from SLATS flight data**

Koki Yao, Towa Ushijima, Atsushi Fujita, Yuta Tsuchiya, Aki Goto, Kazuki Yukumatsu, Eiji Miyazaki, Yugo Kimoto, Yusuke Yamashita, Kumiko Yokota, Masahito Tagawa  
34<sup>th</sup> International Symposium on Space Technology and Science, June 3-9, 2023, Kurume, Fukuoka

**Effect on atomic oxygen-induced surface erosion of polyimide on atmospheric drag of satellite in very low Earth orbit**

Yusaku Ashida, Kazuki Itatani, Kosuke Shoda, Keisuke Ezaki, Koki Sugimoto, Takashi Ozawa, Yusuke Yamashita, Nozomu Kogiso, Hiroaki Tanaka, Kumiko Yokota, Masahito Tagawa  
34<sup>th</sup> International Symposium on Space Technology and Science, June 3-9, 2023, Kurume, Fukuoka

**Passive compression device in molecular flow by surface scattering: A key device for spacecraft intake system**

Masahito Tagawa, Yusaku Ashida, Koki Sugimoto, Kosuke Shoda, Keisuke Ezaki, Kumiko Yokota, Takashi Ozawa, Yusuke Yamashita, Kazutaka Nishiyama  
The 5th International Workshop on Scattering of Atoms and Molecules from Surfaces, 12th - 15th September 2022, Gonville and Caius College, Cambridge, UK

**Atomic oxygen density variation measured by SLATS/AOFS: Comparison of flight data and atmospheric model predictions**

Masahito Tagawa, Kumiko Yokota, Atsushi Fujita, Wataru Ide, Yasunobu Miyoshi, Yuta Tsuchiya, Aki Goto, Kazuki Yukumatsu, Eiji Miyazaki, Yugo Kimoto  
Proceedings of the 15<sup>th</sup> International Symposium on Materials in a Space Environment / 13<sup>th</sup> International Conference on Protection of Materials and Systems from Space Environment, Leiden, Netherlands, September 18-23, 2022.

**Shielding effect of atomic oxygen by satellite structure observed on SLATS and its compensation for material exposure experiment**

Masahito Tagawa, Kumiko Yokota, Wataru Ide, Atsushi Fujita, Shohei Urakawa, Yuta Tsuchiya, Aki Goto, Kazuki Yukumatsu, Eiji Miyazaki, Yugo Kimoto  
Proceedings of the 15<sup>th</sup> International Symposium on Materials in a Space Environment / 13<sup>th</sup> International Conference on Protection of Materials and Systems from Space Environment, Leiden, Netherlands, September 18-23, 2022.

**N<sub>2</sub>-acceleration effect on atomic oxygen-induced polyimide erosion in sub-LEO observed by SLATS/AOFS**

Kumiko Yokota, Masahito Tagawa, Wataru Ide, Atsushi Fujita, Sasuga Horimoto, Santa Nishioka, Keisuke Ezaki, Yuta Tsuchiya, Aki Goto, Kazuki Yukumatsu, Eiji Miyazaki, Yugo Kimoto  
Proceedings of the 15<sup>th</sup> International Symposium on Materials in a Space Environment / 13<sup>th</sup> International Conference on Protection of Materials and Systems from Space Environment, Leiden, Netherlands, September 18-23, 2022.

**Impact of neutral atmosphere environment on SLATS**

Yugo Kimoto, Yuta Tsuchiya, Eiji Miyazaki, Aki Goto, Kazuki Yukumatsu, Shunsuke Imamura, Haruo Kawasaki, Masanori Sasaki, Kumiko Yokota, Masahito Tagawa, Wataru Ide, Atsushi Fujita, Shohei Urakawa, Sasuga Horimoto, Santa Nishioka  
Proceedings of the 15<sup>th</sup> International Symposium on Materials in a Space Environment / 13<sup>th</sup> International Conference on Protection of Materials and Systems from Space Environment, Leiden, Netherlands, September 18-23, 2022.

**Trial experiment of mass gain behavior on pristine Kapton film after heating in vacuum**

Eijo Fujiwara, Minoru Iwata, Masahito Tagawa, Sumitaka Tachikawa  
Proceedings of the 15<sup>th</sup> International Symposium on Materials in a Space Environment / 13<sup>th</sup> International Conference on Protection of Materials and Systems from Space Environment, Leiden, Netherlands, September 18-23, 2022.

**Space polymers erosion in simulated LEO and VLEO environments**

Zilina Iskanderova, Jacob Kleiman, Masahito Tagawa, Santa Nishioka, Sasuga Horimoto  
Proceedings of the 15<sup>th</sup> International Symposium on Materials in a Space Environment / 13<sup>th</sup> International Conference on Protection of Materials and Systems from Space Environment, Leiden, Netherlands, September 18-23, 2022.

**Perspective on Atomic Oxygen Reaction with Thermal Control Materials in Space**

Masahito Tagawa, Kumiko Yokota (Keynote Lecture)

The 13th Asian Thermophysical Properties Conference, September 26-30, 2022, Sendai, Japan

**Performance change of field emission cathode by atomic oxygen irradiation**

Keisuke Ezaki, Kazuki Itatani, Yuki Fukami, Yusaku Ashida, Yasushi Ohkawa, Satomi Kawamoto, Kumiko Yokota, Masahito Tagawa

The 13th Asian Thermophysical Properties Conference, September 26-30, 2022, Sendai, Japan

**A research on material degradation of spacecraft in sub-low Earth orbit environment -An estimate of the contribution of inert molecule's energy to the acceleration effect of the erosion of polyimide -**

Sasuga Horimoto, Santa Nishioka, Wataru Ide, Kumiko Yokota, Masahito Tagawa

The 13th Asian Thermophysical Properties Conference, September 26-30, 2022, Sendai, Japan

**Development of atmospheric density measurement system for the experiment by sounding rocket S-520-32**

Shoma Taira, Taishi Kato, Momoka Shimoi, Taiga Adachi, Yusuke Yamashita, Takashi Ozawa, Takumi Abe, Yoshinori Nakayama, Kumiko Yokota, Masahito Tagawa

The 13th Asian Thermophysical Properties Conference, September 26-30, 2022, Sendai, Japan

**Surface erosion of carbon-based materials in VLEO space environment: Collision-induced desorption by atmospheric N<sub>2</sub> associated with oxidation by O**

Kumiko Yokota, Sasuga Horimoto, Wataru Ide, Santa Nishioka, Masahito Tagawa

The 14th International Symposium on Atomic Level Characterization of New Materials and Devices '22  
October 16- 21, 2022, Okinawa, Japan

**Scattering behavior of atoms at polymer surface exposed to ISS space environment**

Masahito Tagawa, Keisuke Ezaki, Kosuke Shoda, Yusaku Ashida, Koki Sugimoto, Kumiko Yokota, Nozomu Kogiso, Hiroaki Tanaka

The 14th International Symposium on Atomic Level Characterization of New Materials and Devices '22  
October 16- 21, 2022, Okinawa, Japan

**Accelerated AO-induced polyimide erosion in VLEO by simultaneous collisions of hyperthermal N<sub>2</sub> molecules**

Sasuga Horimoto, Atsushi Fujita, Wataru Ide, Kumiko Yokota, Masahito Tagawa

1st International Symposium on VLEO Missions and Technologies, Manchester, UK, June 28-29, 2021

**Atmospheric density probe for VLEO applications**

Taishi Kato, Shoma Taira, Momoka Shimoi, Kumiko Yokota, Yoshinori Nakayama, Takashi Ozawa, Masahito Tagawa

1st International Symposium on VLEO Missions and Technologies, Manchester, UK, June 28-29, 2021

**Molecular scattering at microstructured surface for rarefied gas compression inside air breathing ion engine**

Kosuke Shoda, Naoki Kano, Yuki Jotaki, Keisuke Ezaki, Kazuki Itatani, Takashi Ozawa, Yusuke Yamashita, Kazutaka Nishiyama, Kumiko Yokota, Masahito Tagawa

1st International Symposium on VLEO Missions and Technologies, Manchester, UK, June 28-29, 2021

**VLEO-related research activities at Kobe University**

Masahito Tagawa, Wataru Ide, Naoki Kano, Momoka Shimoi, Yuki Fukami, Kosuke Shoda, Taishi Kato, Kazuki Itatani, Atsushi Fujita, Sasuga Horimoto, Keisuke Ezaki, Shoma Taira, Yuki Jotaki, Kumiko Yokota

1st International Symposium on VLEO Missions and Technologies, Manchester, UK, June 28-29, 2021

**AO density variations during geomagnetic anomaly observed by SLATS**

Atsushi Fujita, Kumiko Yokota, Masahito Tagawa, Wataru Ide, Sasuga Horimoto, Yugo Kimoto, Yuta Tsuchiya, Aki Goto, Kazuki Yukumatsu, Eiji Miyazaki, Yasunobu Miyoshi

2nd Applied Space Environments Conference, November 1-5, 2021, Online

**Effect of direct atomic oxygen exposures on carbon nanotube field emission cathode: comparison of flight data and *in-situ* ground-based experiment**

Kazuki Itatani, Keisuke Ezaki, Fukami Yuki, Kumiko Yokota, Masahito Tagawa, Yasushi Ohkawa, Satomi Kawamoto

2nd Applied Space Environments Conference, November 1-5, 2021, Online

**Microstructure Formation on Polymers Induced by Atomic Oxygen: Higher-order Structure Effects on Morphologies**

Aki Goto, Takashi Tanji, Masahito Tagawa, Koji Michishio, Toshitaka Oka, Shinichi Yamashita

The Miller Online Workshop on Radiation Chemistry, 10-12 February 2022, Online

**Scattering behavior of thermal molecular beams at microstructured surface for high compression intake system of air breathing ion engine**

Keisuke Ezaki, Kosuke Shoda, Kazuki Itatani, Yuki Jotaki, Yuki Jotaki, Yusaku Ashida, Koki Sugimoto, Takashi Ozawa, Yusuke Yamashita, Kazutaka Nishiyama, Kumiko Yokota, Masahito Tagawa  
Proceedings of the 33<sup>rd</sup> International Symposium on Space Technology and Science, Beppu, Oita, February 26 – March 4, 2022

**Development of atmospheric density probe aboard S-520-32 sounding rocket**

Shoma Taira, Taishi Kato, Momoka Shimoi, Taiga Adachi, Towa Ushijima, Yusuke Yamashita, Takashi Ozawa, Takumi Abe, Yoshinori Nakayama, Kumiko Yokota, Masahito Tagawa  
Proceedings of the 33<sup>rd</sup> International Symposium on Space Technology and Science, Beppu, Oita, February 26 – March 4, 2022

**Ground-based experiment for simultaneous N<sub>2</sub> collision effect on atomic oxygen-induced polyimide erosion in sub-low Earth orbit**

Sasuga Horimoto, Atsushi Fujita, Shohei Urakawa, Santa Nishioka, Wataru Ide, Kumiko Yokota, Masahito Tagawa  
Proceedings of the 33<sup>rd</sup> International Symposium on Space Technology and Science, Beppu, Oita, February 26 – March 4, 2022

**Result of Exposure Experiment of Piezoelectric Actuators Using ExHAM**

Nozomu Kogiso, Hiroaki Tanaka, Tadashige Ikeda, Kosei Ishimura, Masato Tagawa, Minoru Iwata, Motoharu Fujigaki  
Proceedings of the 33<sup>rd</sup> International Symposium on Space Technology and Science, Beppu, Oita, February 26 – March 4, 2022

**Fluence estimation of ionizing radiation in space environments for material degradation**

Minoru Iwata, Masahito Tagawa, Sumitaka Tachikawa  
Proceedings of the 33<sup>rd</sup> International Symposium on Space Technology and Science, Beppu, Oita, February 26 – March 4, 2022

**Atomic Oxygen Exposure Test Capabilities at Kobe University: Its Performance and Limitations**

Kumiko Yokota, Masahito Tagawa, Jacob I. Kleiman  
Advanced Space Environmental Conference, Universal City USA, May 13-17, 2019

**Reduced Dissociation of Molecules in Laser-Detonation-Driven Hyperthermal Beams**

Masahito Tagawa, Ryota Okura, Kumiko Yokota  
Advanced Space Environmental Conference, Universal City USA, May 13-17, 2019

**Kapton erosion yields in various flight environments**

Wataru Ide, Yusuke Fujimoto, Kim K. de Groh, Bruce A. Banks, Yuta Tsuchiya, Kazuki Yukumatsu, Aki Goto, Eiji Miyazaki Yugo Kimoto, Kumiko Yokota, Masahito Tagawa  
Joint Symposium of 32<sup>nd</sup> International Symposium on Space Technology and Science and 9<sup>th</sup> Nano-Satellites Symposium, Fukui, June 15-21, 2019

**Direct simulation Monte Carlo evaluation of hyperthermal molecular flow in air breathing ion engine**

Naoki Kano, Ryo Shirakawa, Momoka Shimoi, Takashi Ozawa, Kazutaka Nishiyama, Kumiko Yokota, Masahito Tagawa  
Joint Symposium of 32<sup>nd</sup> International Symposium on Space Technology and Science and 9<sup>th</sup> Nano-Satellites Symposium, Fukui, June 15-21, 2019

**Development of ionization gauge for in-orbit measurement of molecular density**

Momoka Shimoi, Ryota Okura, Ryo Shirakawa, Naoki kano, Shunsuke Imamura, Takashi Ozawa, Kumiko Yokota, Masahito Tagawa  
Joint Symposium of 32<sup>nd</sup> International Symposium on Space Technology and Science and 9<sup>th</sup> Nano-Satellites Symposium, Fukui, June 15-21, 2019

**Particle simulations of ECR plasma generation in air breathing ion engine**

Ryo Shirakawa, Hideyuki Usui, Yohei Miyake, Masahito Tagawa, Kazutaka Nishiyama  
Joint Symposium of 32<sup>nd</sup> International Symposium on Space Technology and Science and 9<sup>th</sup> Nano-Satellites Symposium, Fukui, June 15-21, 2019

**Study of rarefied aerodynamics for super low altitude satellites**

Takashi Ozawa, Shunsuke Imamura, Masahito Tagawa, Kazuhisa Fujita  
Joint Symposium of 32<sup>nd</sup> International Symposium on Space Technology and Science and 9<sup>th</sup> Nano-Satellites Symposium, Fukui, June 15-21, 2019

**Effect of collision energy on oxidation of Si atoms embedded in polyimide by simulated low Earth orbit space environment**

K. Yokota, R. Shirakawa, M. Shimoi, W. Ide, N. Kano, M. Tagawa  
18<sup>th</sup> European Conference on Applications of Surface and Interface Analysis, Dresden Germany, September 15-20 2019

**Collision-induced erosion on polyimide in simulated low Earth orbit space environment**

M. Tagawa, R. Shirakawa, M. Shimoi, W. Ide, N. Kano, K. Yokota  
18<sup>th</sup> European Conference on Applications of Surface and Interface Analysis, Dresden Germany, September 15-20 2019

**Importance of atom-surface scattering on the design criteria of future air breathing ion engine**

M. Tagawa, K. Yokota, R. Shirakawa, N. Kano, M. Shimoi, F. Ezuka, K. Matsuoka, S. Imamura, K. Nishiyama, T. Ozawa  
23rd International Workshop on Inelastic Ion-Surface Collisions (IISC-23), Matsue, Japan, 17 – 22 November 2019

**Hyperthermal collision-induced erosion of spacecraft polymeric materials in low Earth orbit**

Yokota, R. Shirakawa, W. Ide, Y. Fukami, M. Tagawa  
23rd International Workshop on Inelastic Ion-Surface Collisions (IISC-23), Matsue, Japan, 17 – 22 November 2019

**A consideration of degradation of polymeric materials in sub-low Earth orbits space environment**

Yusuke Fujimoto, Ryota Okura, Kazuki Kita, Minoru Iwata, Kumiko Yokota, Masahito Tagawa  
15<sup>th</sup> Spacecraft Charging Technology Conference, Kobe, Japan, May 25-29, 2018

**Development of a pulsed supersonic valve aimed for Martian atmospheric simulation**

Ryota Okura, Yusuke Fujimoto, Kazuki Kita, Minoru Iwata, Chee Sze Keat, Yugo Kimoto, Kumiko Yokota, Masahito Tagawa  
15<sup>th</sup> Spacecraft Charging Technology Conference, Kobe, Japan, May 25-29 2018

**Plasma particle simulation of ECR plasma generation in Air Breathing Ion Engine (ABIE)**

Ryo Shirakawa, Hideyuki Usui, Yohei Miyake, Masahito Tagawa, Kazutaka Nishiyama  
15<sup>th</sup> Spacecraft Charging Technology Conference, Kobe, Japan, May 25-29, 2018

**One-nozzle two-beam laser-detonation system**

Kumiko Yokota, Kazuki Kita, Ryota Okura, Teppei Shimizu, Sze Keat Chee, Minoru Iwata, Masahito Tagawa  
14th International Symposium on Materials in the Space Environment/12th International Conference on protection of Materials and Structures in a Space Environment, October 1-5 2018, Biarritz, France.

**Over-estimation of atomic oxygen fluences due to undecomposed oxygen molecules included in hyperthermal beams**

Masahito Tagawa, Kazuki Kita, Ryota Okura, Yusuke Fujimoto, Ryo Shirakawa, Teppei Shimizu, Minoru Iwata, Kumiko Yokota,  
14th International Symposium on Materials in the Space Environment/12th International Conference on protection of Materials and Structures in a Space Environment, October 1-5 2018, Biarritz, France.

**Enhancement of atomic oxygen resistance of charge dissipative ion beam treated polymers**

Z. Iskanderova, J. Kleiman, F. Bussieres, M. Tagawa, R. Ng, R. Sodhi  
14th International Symposium on Materials in the Space Environment/12th International Conference on protection of Materials and Structures in a Space Environment, October 1-5 2018, Biarritz, France.

**Cultivation of research and project-support network for degradation of space-use materials -Concept of cluster type in-situ test facilities system-**

Minoru Iwata, Masahito Tagawa, Sumitaka Tachikawa, Issei Kato, Takayuki Hirose  
14th International Symposium on Materials in the Space Environment/12th International Conference on protection of Materials and Structures in a Space Environment, October 1-5 2018, Biarritz, France.

**Evaluation of vacuum transfer vessel performance to construct cluster type in-situ test facilities network**

Alexandre Simon, Minoru Iwata, Masahito Tagawa, Sumitaka Tachikawa  
14th International Symposium on Materials in the Space Environment/12th International Conference on protection of Materials and Structures in a Space Environment, October 1-5 2018, Biarritz, France.

**A pulsed supersonic valve aimed for Martian atmospheric simulation**

Ryota Okura, Minoru Iwata, Chee Sze Keat, Kumiko Yokota, Masahito Tagawa,  
31<sup>st</sup> International Symposium on Space Technology and Science,  
June 3-9, 2017, Matsuyama, Japan

**Mass-loss of FEP/Ag films in sub-low Earth orbit space environment**

Yusuke Fujimoto, Kazuki Kita, Yasuko Koshiba, Kenji Ishida, Minoru Iwata, Kumiko Yokota,  
Masahito Tagawa,  
31<sup>st</sup> International Symposium on Space Technology and Science,  
June 3-9, 2017, Matsuyama, Japan

**Accelerating effect of atomic oxygen-induced polyimide degradation due to simultaneous collision of chemically inert molecules**

Kazuki Kita, Yusuke Fujimoto, Yuki Yamasaki, Minoru Iwata, Kumiko Yokota, Masahito Tagawa,  
31<sup>st</sup> International Symposium on Space Technology and Science,  
June 3-9, 2017, Matsuyama, Japan

**A consideration on surface corrosion mechanism of fluoroethylenepropylene (FEP) films in sub-low earth orbit (LEO) environment**

Kumiko Yokota, Yusuke Fujimoto, Ryota Okura, Kazuki Kita, Masahito Tagawa,  
33rd European Conference on Surface Science,  
August 27-September 1, 2017, Szeged, Hungary.

**Collision-induced enhancement of polyimide corrosion in sub-low Earth orbit (LEO) space environment**

Masahito Tagawa, Ryota Okura, Yusuke Fujimoto, Kazuki Kita, Kumiko Yokota,  
33rd European Conference on Surface Science,  
August 27-September 1, 2017, Szeged, Hungary.

**Molecular beam source for degradation studies of polyimide-based thermal blanket in very low altitude space environment**

Kumiko Yokota, Ryota Okura, Chee Sze Keat, Masahito Tagawa,  
21<sup>st</sup> European Thermophysical Properties Conference,  
September 3-8, 2017, Graz, Austria.

**A consideration on degradation of FEP-based radiator equipped to low altitude spacecraft**

Masahito Tagawa, Yusuke Fujimoto, Kazuki Kita, Kumiko Yokota,  
European 21<sup>st</sup> Thermophysical Properties Conference,  
September 3-8, 2017, Graz, Austria.

**A fast piezoelectric-driven pulsed supersonic valve using displacement enlargement mechanism for molecular beam applications**

Masahito Tagawa, Kumiko Yokota, Chee Sze Keat,  
16th Joint Vacuum Conference, 14th European Vacuum Conference,  
June 6-10, 2016, Portoroz, Slovenia.

**Extreme ultraviolet emission from laser-induced plasma relevance to neutral gas environment simulation in low Earth orbit**

Kumiko Yokota, Masahito Tagawa,  
16th Joint Vacuum Conference, 14th European Vacuum Conference,  
June 6-10, 2016, Portoroz, Slovenia.

**Atomic oxygen-induced erosion property of polyimide-based multilayer insulation in very low altitudes,**

Kumiko Yokota, Yuki Yamasaki, Kazuki Kita, Masahito Tagawa,  
11th Asia Thermophysical Properties Conference,  
October 2-6, 2016, Yokohama, Japan.

**A pulsed supersonic valve system for researches on collision-induced reactive thin film etching phenomena**

Masahito Tagawa, Kumiko Yokota, Tsubasa Yasukochi, Chee Sze Keat,  
Pacific Rim Symposium on Surfaces, Coatings and Interfaces,  
December 11-15, 2016, Kohala Coast, HI.

**Extreme ultraviolet emission from laser-induced O<sub>2</sub>+Ar plasmas relevance to ground-based simulation of thin film etching reactions in low Earth orbit**

Masahito Tagawa, Takashi Ohyabu, Junki Ohira, Kaoru Morimoto, Kumiko Yokota,  
Pacific Rim Symposium on Surfaces, Coatings and Interfaces,  
December 11-15, 2016, Kohala Coast, HI.

**Acceleration of Solid Particle Using GXII Laser System**

Yukihito Kitazawa, Yoichiro Hironaka, Jyunki Ohira, Takayoshi Sano, Keisuke Shigemori, Masahito Tagawa, Haruhisa Matsumoto, 1st Workshop on Laser solutions for Orbital Space Debris, April 27-28, 2015, Paris, France

**Effect of high-energy inert gas collisions on the atomic oxygen-induced polymer erosion**

Masahito Tagawa, Kenta Ide, Yuki Yamasaki, Daiki Watanabe, Kumiko Yokota, 13th International Symposium on Materials in the Space Environment, June 22-26, 2015, Pau, France.