

Sanguk Jeong

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EDUCATION

The University of Tokyo | Graduate School of Engineering, Department of Aeronautics and Astronautics **Tokyo, Japan | Apr. 2024 – Present**
Doctor Course of Graduate School of Frontier Science

- Koizumi Laboratory(2024.03-2026.04) and Komurasaki Laboratory(2026.04 - present)
- Participating in a AI and huge machine learning model application course on financial transactions led by [Matsuo Lab](#) of the University of Tokyo
- A member of the Korean Student Council in University of Tokyo (2025)

Tohoku University | Mechanical and Aerospace Engineering **Sendai, Japan | Apr. 2018 – Mar. 2024**
Bachelor of *Mechanical and Aerospace Engineering*

- Belonged to big data analysis and architectural design [laboratory](#) using quantum computing techniques, ML, AI, etc.
- The only Foreigner member of enPiT-Security program (Formation of a base for fostering IT human resources to support the growth sector by Japanese Government)
- A member of Foreigner Student Council, TUFSA (Tohoku University Foreign Students Association)

SUMMARY of RESEARCH SUBJECT (Doctor course)

Microwave rockets are a promising form of beamed-energy propulsion that can significantly reduce the cost of space transportation by transferring energy from ground-based sources instead of carrying large amounts of onboard fuel. To realize practical microwave rocket systems, it is essential to understand the complex interaction between millimeter-wave irradiation, plasma formation, ionization-front propagation, shock-wave dynamics, and internal airflow. My research focuses on numerical and experimental investigations of these phenomena, together with the optimization of the UT-94 commercial gyrotron for stable, high-power millimeter-wave transmission, aiming to improve propulsion performance, operational reliability, and the feasibility of future large-scale beamed-energy launch systems. The motivation is consistent with the long-term objective of reducing launch costs through microwave-beamed propulsion concepts.

CONFERENCES / JOURNALS

- 2024.03 SANGUK JEONG**, Komatsu Kazuhiko, Sato Masayuki, Kobayashi Hiroaki, A Study on Fault Parameter Prediction Using Machine Learning Models, The 86th National Convention of IPSJ (Information Processing Society of Japan)
- 2024.11 SANGUK JEONG**, Fujii Masaki, Han Minwoo, Koizumi Hiroyuki, Kimiya Komurasaki, Assessment of Regenerative Cooling feasibility and Combustion Chamber Design Through Thermal-Fluid Analysis of a Water-Mg Hybrid Propulsion System, The 68th Proceedings of the Space Sciences and Technology Conference of Japan(宇宙科学技術連合講演会)
- 2025.01 SANGUK JEONG**, Masaki Fujii, Minwoo Han, et al., "Designing Water Supply system for Water-Mg Hybrid Propulsion System with Feasibility Assessment of Regenerative Cooling", 2025 宇宙輸送シンポジウム
- 2025.07 SANGUK JEONG**, Masaki Fujii, Minwoo Han, et al., "Designing Water Supply system for Water-Mg Hybrid Propulsion System with Feasibility Assessment of Regenerative Cooling," ISTS, Tokushima, Japan
- 2025.10 SANGUK JEONG**, Masaki Fujii, Minwoo Han, et al., "Optimization of the oxidant supply system for a micro water magnesium hybrid thruster via thermal analysis of solid mixed combustion gas," International Astronautical Conference, Sydney, Australia

Granted

- 2017.03 – 2024.03** Joint Japan-Korea Joint Scholarship Program for Science and Engineering Students (Bachelor course)
- 2024.04 – 2026.03** The 67th Asahi-Glass foundation Scholarship Student
- 2024.09 – 2024.12** 2024 Grant for Outstanding Korean Graduate Students in Japan (Korea Education Institute in Tokyo)
- 2024.10 – 2029.03** Research Assistant of the World-leading Innovative Graduate Study, International Graduate Program for Excellence in Earth-Space Science ([WINGS-IGPEES](#))

HONORS and AWARDS / OTHER INFORMATION

- 2024.03** Student encouragement Award, 「86th National convention of IPSJ(日本情報処理学会)」
- 2024.07** The Grand Prize, 「Hanwha Aerospace 2024 Future Tech & Business Idea Contest」
- 2024.11** Award of Excellence, 「The 68th Proceedings of the Space Sciences and Technology Conference of Japan(宇宙科学技術連合講演会)」 by JSASS(日本航空宇宙学会)
- 2025.Oct** International Astronaut Conference(Space Generation Advisory Council Award):ISEB KARI Scholarship
- 2025.01 – 2026.03** JAXA-sponsored project to visualize the global structure of the Earth's magnetosphere: GEO-X, with a regenerative cooling development team

SKILLS and Other INFORMATION

- 2019.04-2020.11** Military service in ROK Army 1st Division G.O.P command
- 2025.10** Korea representative of 2025 Sydney Space Generation Advisory Council / ISEB
- Usable Program : Python, Fortran90, C, Inventor, AutoCAD
- Linguistic Ability : JLPT N1(2020), TOEFL 91 (2022), Korean(native)