Ayako Torisaka
Associate Professor of Aeronautics and Astronautics
Tokyo Metropolitan University
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RESEARCH INTERESTS:

Construction Technologies of Large Flexible Space Structures

Backgrounds:

Optimal designing, Structural Vibration, Attitude Control, Microwave Antenna

EDUCATION:

- B.S., Mechanical Engineering, Waseda University, March 2004
- M.S., Mechanical Engineering, Waseda University, March 2006
- Ph.D., Mechanical Engineering, Waseda University, Feb 2010
  Title: Vibration Reduction on Small Satellites

APPOINTMENTS:

- Associate Professor in Aeronautics and Astronautics, Tokyo Metropolitan University, April 2021-present
- Part-time lecturer in Mechanical Engineering, Kogakuin University, April 2025 - March -present
- Part-time lecturer in Modern Mechanical Engineering, Waseda University, April 2022 - March -present
- Visiting scholar, Aerospace Engineering, Pennsylvania State University, Oct 2021 - March 2022
- Part-time lecturer in Modern Mechanical Engineering, Waseda University, April 2019 - March 2020
- Part-time lecturer in Mechanical Engineering Informatics, Modern Mechanical Engineering, Meiji University, April 2018 - Sept 2018
- Assistant Professor in Aeronautics and Astronautics, Tokyo Metropolitan University, April 2014 - March 2021
- Assistant Professor in Mechanical Engineering, Aoyama Gakuin University, April 2013 - March 2014
- Research Associate in Mechanical Engineering, Aoyama Gakuin University, Sept 2011 - March 2013

- Visiting Research Associate, Aerospace Engineering, California Institute of Technology, Aug 2010 - Jul 2011
- Research Associate, GCOE Global robot academia, Waseda University, April 2010-Aug 2011
- Research Associate, Mechanical Engineering, Waseda University, April 2009 - March 2010

GRANTS and AWARDS:

- **Awards and Scholarship**

1. Amelia Earhart Fellowships, The Zonta International (2008)
2. Repayment Exemption for Doctor Course Students with Excellent Grades -FY2006-2009, Japan Student Services Organization (JASSO) Type I (interest-free) scholarship (Exemption of half loan).
3. Repayment Exemption for Master Course Students with Excellent Grades -FY2004-2006, Japan Student Services Organization (JASSO) Type I (interest-free) scholarship (Exemption of full refund).
4. Scholarship for mechanical engineering from Waseda University, (2006)
5. Scholarship for Doctoral students from Waseda University, (2006)
6. Azusa Ono Scholarship from Waseda University, (2005)
7. Azusa Ono Scholarship from Waseda University, (2004)

- **Grants**

*Grants below are from societies in Japan and some names are translated.

*Each budget amount is for direct use of research (Not including hiring fee.).

1. HITACHI Corporation, “Research on the radiation characteristics of deployable antennas” (Single PI, April 2025-March 2026)
2. Support Program for Researchers at TMU, “Development of ultra-lightweight, high-performance adaptive antennas using the Bias Tee effect and investigation in deployment” (Single PI, April 2024-March 2025)
3. Support Program for Researchers at TMU, “Effect of shape recovery iteration using CF-CNT-SMP on antenna characteristics of patch antennas” (Single PI, April 2023-March 2024)
4. JAXA Advisory Committee for Space Engineering, Strategic development research funding, “Research on comprehensive mechanical characteristics in device interfaces” (Co-PI) Collaboration with Prof. Kosei Ishimura (April 2023- March 2026)
5. The Precise Measurement Technology Promotion Foundation, “Structure-electrical properties of carbon nanotube composite with shape recovery function and research on 30 GHz patch antenna”, (Single PI, Oct 2022-March 2024)
6. Japan Society for the Promotion of Science(JSPS), Grant-in-Aid for Scientific Research

(C), ”Study on adaptive structuring of large lightweight space antennas simultaneously considering radio wave characteristics” (PI, April 2022-March 2025)

7. JKA Ring!Ring!Project, “Proposal of autonomous deployment method for adaptive space large reflector and research on high-precision shape maining design” (Single PI, April 2022-March 2023)
8. Support Program for Researchers at TMU, “A Study on Double-Sided Flexible Antennas with Shape Recovery Function” (Single PI, April 2022-March 2023)
9. Support Program for Researchers at TMU, “Simultaneous design on radio waves and structure of flexible radio wave radiators with shape recovery function” (Single PI, April 2021-March 2022)
10. Excellent Young Researcher Overseas Visit Program at TMU, “Study on construction method and systematization of flexible adaptive structure on orbit” (Single PI, April 2021-March 2022)
11. Support Program for Researchers at TMU, President selected, ” Research on radio wave and structural simultaneous optimum design of C-band radiator with shape recovery function and fusion with 4D printing ” (Single PI, April 2021-March 2022)
12. Support Program for Researchers at TMU, “Study on Radio-Structure Simultaneous Optimization of Flexible Radiator with Shape Recovery Function” (Single PI, April 2020-March 2021)
13. Excellent Young Researcher Overseas Visit Program at TMU, “Study on construction method and systematization of flexible adaptive structure on orbit” (Single PI, April 2020-March 2021), Cancelled due to COVID-19
14. JAXA Advisory Committee for Space Engineering, Strategic development research funding, “High-precision structure/material system integration for advanced optical observation” (Co-PI) Collaboration with Prof. Nozomu Kogiso (April 2020- March 2023) etc..
15. JAXA Advisory Committee for Space Engineering, Strategic development research funding, “Research on practical application technology of ultra-large lightweight membrane deployable structure” (Co-PI) Collaboration with Prof. Nobukatsu Okuizumi (April 2020- March 2023) etc..
16. JAXA Advisory Committee for Space Engineering, Strategic development research funding, “Study on realization of transformer spacecraft and its application” (Co-PI, joined April 2019) Collaboration with Prof. Yoshika Sugawara (April 2018- March 2023) etc..
17. Japan Society for the Promotion of Science(JSPS), Grant-in-Aid for Scientific Research (C), ” Research on simultaneous optimization method of radio wave and large membrane space structure to construct communication system” (PI, April 2018-March 2021), Collaboration with Prof. Hiroshi Yamakawa, Prof. Tomoyuki Miyashita
18. Support Program for Young Researchers at TMU, “Study on the feasibility of high quality multiple communication system of shape transition satellite by simultaneous design of structure

and microwave" (Single PI, April 2019-March 2020)

19. The Precise Measurement Technology Promotion Foundation (PMTP-F), International exchange promotion project on precision measurement technology research, "8th International Conference on Mechanics of Biomaterials and Tissues: "Study on detection of material difference deeply buried in a soft tissue using impact oscillation under forced displacement" (Single PI, April 2019-March 2020)
20. Support Program for Young Researchers at TMU, "Study on Simultaneous Design of 3D Structure and Microwaves for Inter-panel Wireless Communication of Transformable Satellite" (Single PI, April 2018-March 2019)
21. Japan Society for the Promotion of Science(JSPS), Challenging Research (Exploratory), "Development of Additive manufacturing for large space structure" (Co-PI), Collaboration with Prof. Hiroshi Yamakawa (PI, April 2017- March 2019)
22. JAXA Advisory Committee for Space Engineering, Strategic development research funding, "Research and development of high-precision structures and materials for high-performance scientific observations" (Co-PI) Collaboration with Prof. Kosei Ishimura (April 2017- March 2020) etc..
23. JAXA Advisory Committee for Space Engineering, Strategic development research funding, "Study on deployment structure consisted of boom-deployable ultralight thin-film solar cell" (Co-PI) Collaboration with Prof. Nobukatsu Okuizumi (PI- April 2014- March 2017) etc..
24. Support Program for Young Researchers at TMU, "Demonstration of on-membrane health monitoring technology using radio wave characteristics for advanced functions of space membrane structures and evaluation of the effects of structural functional materials" (Single PI, April 2017- March 2018)
25. Japan Society for the Promotion of Science(JSPS), Grant-in-Aid for Challenging Exploratory Research, "Novel Stowed Strategy by Spiral Folding Lines for Curved Membrane and its Deployment Properties" (Co-PI), Collaboration with Prof. Tomoyuki Miyashita (PI, April 2016-March 2018)
26. JGC-S Scholarship Foundation, Research grant for young researchers, "Research on organic system construction technology by modularization of large ultra-light space thin film structure" (Single PI, April 2016-March 2017)
27. JAXA Advisory Committee for Space Engineering, Strategic development research funding, "Research on large high-precision optical frame" (Co-PI) Collaboration with Prof. Ken Goto (PI- April 2014- March 2017) etc..
28. Japan Society for the Promotion of Science(JSPS), Grant-in-Aid for Scientific Research (B) "Development of Boom-Membrane Integrated Deployable Space Structures" (Co-PI), Collaboration with Prof. Hiroshi Furuya (PI, April 2013- March 2017)

29. JKA Ring!Ring!Project "Study on simultaneous control of position and attitude using multiple pairs of electromagnets" (Single PI, April 2015-March2016)
30. Japan Society for the Promotion of Science(JSPS), Grant-in-Aid for Young Scientists (B) , "Formulation of general-purpose structural analysis for initial to detail design on deep space exploration sail" (Single PI, April 2013 – March 2016)
31. Support Program for Young Researchers at TMU, "Study on simultaneous control of position and attitude using multiple pairs of electromagnets" (Single PI, April 2014- March 2015)
32. Japan Society for the Promotion of Science(JSPS), Grant-in-Aid for Scientific Research (C) "Reduction of degree of freedom in flexible multibody system" (Co-PI, joined Sept 2011), Collaboration with Prof. Nobuyuki Kobayashi (PI, April 2011-March 2014)
33. JAXA Advisory Committee for Space Engineering, Strategic development research funding, "Research and development of high precision large space structure system" (Co-PI) Collaboration with Prof. Kosei Ishimura (PI- April 2011- March 2014) etc..

THESIS ADVISEES:

Graduated (7): Yoshitaka Sato (MS, March 2014), Kento Kameyama (MS, March 2016), Taku Watanabe (MS, March 2017), Kohei Ogawa (MS, March 2018), Yuta Shintaku (MS, March 2019), Kohei Eguchi (MS, March 2019), Shoichi Hasegawa (MS, March 2019), Hisaki Ogatsu (MS, March 2025), Tomoyo Shibata (MS, March 2026)

Under Graduate(14): Taiki Mouri (BS, March 2012), Takuya Masamura (BS, March 2013), Sho Masuda (BS, March 2014), Gaku Watanabe (BS, March 2014), Ryoichiro Aoki (BS, March 2015), Taku Watanabe (BS, March 2015), Naoki Nishii (BS, March 2018), Syunta Inatsugu (BS, March 2022), Riku Tanaka (BS, March 2022), Tokiharu Sugino (BS, March 2023), Hisaki Ogatsu (BS, March 2023), Kota Kawasaki (BS, March 2023), Hidetoshi Taira (BS, March 2023), Tomoyo Shibara (BS, March 2024), Hikari Kono (BS, March 2024), Shunki Nakayama (BS, March 2025), Rinka Ueda (BS, March 2025), Kazuki Miyahara (BS, March 2025), Shoichi Enomoto (BS, March 2025), Mana Omori (BS, March 2025), Neo Kawamura (BS, March 2025)

REFFEREED JOURNAL PUBLICATIONS:

1. Tomoyo Shibata, Ahmed Kiyoshi Sugihara, **Ayako Torisaka**, Osamu Mori,Time-of-Flight-based relative displacement measurement on ultra-small space structure for deep space exploration, Acta Astronautica, Volume 245,2026,Pages 194-201, 2026, https://doi.org/10.1016/j.actaastro.2026.02.043

2. K.Ishimura, Shuntaro Kazama, Nobuyasu Eguma, Ran Sadamura, Nobuatsu Aoki, Shunsaku Onodera, Ryo Nakagawa, Akihiro Niwa, Hiroyui Suga, Toma Kikutani, Taro Kono, **Ayako Torisaka**, Tomoyuki Miyashita, Hiroaki Tanaka, Akihiro Doi, Tatsuro Nakao, Hiroyuki Fuke, Yoshitaka Mizumura, Nobuyuki Oyama, Demonstration report on high-precision equipment interface : DREAM3, JAXA Research and Development Report, JAXA-RR-24-005 , pp.35-45, doi:10.20637/0002001701
3. **A. Torisaka**, Patch Antenna Dielectrics Reduction by Topology Optimization and Radio Wave Characteristics, Journal of Spacecraft and Rockets, Vol. 61, No. 2 (2024), pp. 448-457 doi: 10.2514/1.A35601
4. K.Ishimura, T.Kawano, **A.Torisaka**, T.Miyashita, A.Doi, M.Yamazaki, Y.Yasuda, H.Tanaka, N.Kogiso, T.Nakano, M.Tamura, Y.Mizumura, H.Fuke, S.Obata, K.Yamamoto, Demonstration Experiment of Alignment Monitor (DREAM) FY2021,,JAXA Research and Development Report,JAXA-RR-21-003,pp.35-49,18 Feb 2022 doi:10.20637/00048394
5. S. Miura, K. Saito, **A. Torisaka**, Victor Parque, Tomoyuki Miyashita, Shape Optimization of a Three-dimensional Membrane-structured Solar Sail Using an Angular Momentum Unloading Strategy, Advances in Space Research, (2021), Dec 2020 doi: 10.1016/j.asr.2020.12.036
6. **A. Torisaka**, S. Hasegawa, S. Miura, V. Parque, T. Miyashita, H. Yamakawa, M.C. Natori, "Electromagnet-Based Three-Dimensional Self-Assembly System for Hierarchical Modular Space Structures, " Journal of Spacecraft and Rockets, Vol. 58, No. 2 (2021), pp. 472-485 doi: 10.2514/1.A34884
7. V. Parque, W. Suzaki, S. Miura, **A. Torisaka**, T. Miyashita, M. Natori, Packaging of Thick Membranes using a Multi-Spiral Folding Approach: Flat and Curved Surfaces, Advances in Space Research, Vol.67, Issue9, pp.2589-2612, Oct 2020 doi: 10.1016/j.asr.2020.09.040
8. **A.Torisaka**, K. Eguchi, S. Miura, V. Parque, T. Miyashita, Leg-circle transformable wheel for improved runnability of a lunar rover, Journal of Intelligent Material Systems and Structures, Volume 32, Issue 9, Sept 2020 doi: 10.1177/1045389X20952545
9. K. Ikeya, H. Sakamoto, H. Nakanishi, H. Furuya, T. Tomura, R. Ide, R. Iijima, Y. Iwasaki, K. Ohno, K. Omoto, T. Furuya, T. Hayashi, M. Kato, S. Koide, M. Kurosaki, Y. Nakatsuka, S. Okuyama, R. Kashiyama, J. Nakamura, W. Nio, T. Tsunemitsu, Y. Yamazaki, K. Taga, B. Hohmann, T. Amamoto, T. Chubachi, S. Tamura, H. Okada, A. Watanabe, N. Kawabata, T. Hori, H. Ito, T. Kuratomi, Y. Shimoda, N. Hidaka, K. Watanabe, **A. Torisaka**, M. Yamazaki, Significance of 3U CubeSat OrigamiSat-1 for space demonstration of multifunctional deployable membrane, Acta Astronautica, 173 (2020) 363-377 doi:10.1016/j.actaastro.2020.04.016
10. S. Miura, H. Ishiuchi, Y. Shintaku, V. Parque, **A. Torisaka**, Tomoyuki Miyashita, Enhanced frequency analysis on a vibrated tumor with a compression cylinder, ROBOMECH Journal, August 2019 doi:10.1186/s40648-019-0138-x
11. **A. Torisaka**, D. Hayashi, S. Kawasaki, N. Nishii, Y. Terada, S. Yokoyama, H. Sakamoto, Development of shape monitoring system using SMA dipole antenna on a deployable membrane

structure, Acta Astronautica, 160 (2019) 147-154
doi:10.1016/j.actaastro.2019.04.007

12. S. Nakano, S. Miura, V. Parque, **A. Torisaka**, Tomoyuki Miyashita, "Data Assimilation Using the Particle Filter for Online Identification of Organ Properties", IET The Journal of Engineering (JOE), Volume2019, Issue14,pp. 517-521, Feb 2019
doi: 10.1049/joe.2018.9410
13. **A. Torisaka**, S. Masuda, S. Ozawa, N. Kobayashi, H. Yamakawa, Experimental verification of a control law for the position and attitude of two objects using multiple coils, Journal of Intelligent Material Systems and Structures, Volume 28, Issue 17, Feb 2017
doi: 10.1177/1045389X17692046, 2017
14. Y. Okazawa, N. Kobayashi, **A. Torisaka**, Reduction of system matrices of plate in absolute nodal coordinate formulation by component mode synthesis method, Transactions of JSME 80(813) DR0129 5 (2014)
doi: 10.1299/transjsme.2014dr0129
15. **A. Torisaka**, S. Ozawa, H. Yamakawa, N. Kobayashi, “Control of Electromagnetic Current at Final Docking Phase of Small Satellites”, Journal of Space Engineering,Vol.6, No.1(2013),pp44-55
doi: 10.1299/spacee.6.44
16. **A. Torisaka**, S. Ozawa, H. Yamakawa, N. Kobayashi, Control of Electromagnetic Current at Final Docking Phase of Small Satellites, Transactions of the JSME Ser.C 79(801) 1540 - 1549 5 (2013)
doi: 10.1299/kikaic.79.1540
17. Y. Nagai, K. Muramatsu, N. Kobayashi, **A. Torisaka**, Investigation of Natural Modes with Changes in Harmonic Numbers along Axis of Thin Cylindrical Liquid Vessels, Transactions of the JSME Ser.C 79(801) 1647 - 1656 5 (2013)
doi: 10.1299/kikaic.79.1647
18. **A. Torisaka**, H.Yamakawa, Optimum Vibration Control Design of a Light Weight Structure in Wide Frequency Domain (Passive Vibration Control Design by Simultaneous Optimization of Constrained Viscoelastic Material and Light Reinforced Structural Member), Journal of Environmental and Engineering, Vol. 6, No. 2,JSME pp. 328-339,2011
doi: 10.1299/jee.6.328
19. **A. Torisaka**, H. Yamakawa, Optimum vibration control design of light weight structure in wide frequency domain(Passive vibration control design by optimization of both constrained viscoelastic material and light reinforced structural member simultaneously), Transactions of the JSME Ser.C 75(752) 1171 - 1178 4 2009Transactions of the JSME Ser.C 75(752) 1171 - 1178 4 (2009)
doi: 10.1299/kikaic.75.1171

CONFERENCE PRESENTAIONS (international):

1. **Ayako Torisaka**, Hisaki Ogatsu, Rinka Ueda, Improvement of Shape Recovery Rate of CF-CNT-SMP and Consideration for Antennaization, Proceedings of AIAA SCITECH 2026 Forum, AIAA 2026-0179,12-16 Jan, Orlando FL, 2026,

   https://doi.org/10.2514/6.2026-0179
2. A. K. Sugihara, T. Shibata, W. Torii, A. Tomiki, H. Takeuchi, A. Torisaka, and O. Mori, Radio-

Frequency Relative Navigation for Multi-Spacecraft Deep-Space Exploration, 76th International Astronautical Congress (IAC), 29 Sep-03 Oct, Sydney,IAC-25,B4,8,10,x100622, Oct. 2025,

https://doi.org/10.52202/083084-0088

3. H.Kono, T. Shibata, **A. Torisaka**, Space Deployable Dual-Sided Patch Antenna with Switchable Observation Direction Using Different Resonant Frequencies, Proceedings of The AIAA Science and Technology Forum and Exposition (Scitech2025), AIAA 2025-1404, Jan 2025, Orlando

   https://doi.org/10.2514/6.2025-1404

4. T. Shibata, A.K. Sugihara, **A. Torisaka**, O. Mori, Time-of-flight-based relative displacement measurement on ultra-smallspace structures for deep space exploration, Proceedings of 75th International Astronautical Congress (IAC2024), IAC-24,B4,8,8,x87131, 14-18 October 2024, Milan Italy

   https://doi.org/10.52202/078365-0104

5. A.K. Sugihara, T. Wada, T. Suda, S. Kawasaki, T. Shibata, M. Fujita, O. Mori, **A. Torisaka**, Status of HELIOS-R Membrane-Deployed Microwave Interferometer Demonstration Mission, Proceedings of 75th International Astronautical Congress (IAC2024), IAC-24,A3,4B,8,x89917, 14-18 October 2024, Milan Italy

   https://doi.org/10.52202/078365-0068

6. A.K. Sugihara, Y. Takao, A. Kumamoto, T. Matsuura, T. Shibata, **A. Torisaka**, O. Mori, Multi-static Radar Tomography of Small Bodies with Micro-miniature Solar Sails, Proceedings of 75th International Astronautical Congress (IAC2024), IAC-24,B4,6A,11,x89959, 14-18 October 2024, Milan Italy

   https://doi.org/10.52202/078357-0090

7. Yuto Nakagawa, Masanori Matsushita, Yuki Takao, Ahmed Kiyoshi Sugihara, Osamu Mori, Tetsuya Kusumoto, Haruhito Ohki, Kaho Nakagawa, Shusaku Tsuruya, Yukiho Ohtsuki, Sho Nishimura, Masahiro Fujita, Hiroaki Yoneda, Shun Yasuda, Tomoyo Shibata,Toshiyuki Hori, Hiroaki Ito, Akihito Watanabe, Sota Kume, Atsuki Ochi, Sora Kanamaru, Motoki Moritani, Hiraku Sakamoto, Atsushi Shirane, Kenichi Okada, **Ayako Torisaka**, Nobukatsu Okuizumi, Yasutaka Satou, Yasuyuki Miyazaki, Atsuhiko Senba, Development of Multifunctional Lightweight Membrane Structure for Antennas and Power Generation on Small Satellites, Proceedings of 38th Annual Small Satellite Conference, SSC24-WVIII-02,2024, Logan, UT, USA

8. **A. Torisaka**, S. Bilen, N. Ashok, M. Doshi, Y. Yao, X. Ning, Adaptive ultra-lightweight patch antenna using Shape Memory Polymer, Proceedings of The AIAA Science and Technology Forum and Exposition (Scitech2024),AIAA 2024-0187,Jan 2024, Orlando

   doi:10.2514/6.2024-0187

9. H. Ogatsu, **A. Torisaka**, Development of Carbon Fiber/Carbon Nanotube/Shape-Memory Polymer Composites and Experiment of Shape Fixity and Recovery, 2023 US-Japan Joint Symposium for Composite Materials, June 2023, Tokyo
10. **A. Torisaka**, V.B. Ozdemir, K. Kwok, Shape memory behavior and conductivity of CF-CNT-SMP, Proceedings of The AIAA Science and Technology Forum and Exposition (Scitech2023),AIAA-2023-2401, 22-27 January 2023, National Harbor,

    doi:10.2514/6.2023-2401
11. **A. Torisaka**, Reduction of Patch Antenna Dielectrics by Topology Optimization and Influence on Radio Wave Characteristics, Proceedings of The AIAA Science and Technology Forum and Exposition (Scitech2021), AIAA 2021-0429, 11-15 January 2021, Online

    doi: 10.2514/6.2021-0429
12. Y. Sugawara, T, Chujo, Y. Kubo, Y. Sato, M. Otsuki, R. Ikeda, M. Fujita, K. Sawada, K. Tsumura, S. Matsuura, T. Kotani, A.S Sugihara, **A. Torisaka**, O. Mori, S. Kawasaki, J. Kawaguchi, Transformable spacecraft: Feasibility study and conceptual design, Proceedings of 71st International Astronautical Congress (IAC2020), IAC-20.D1.2.8, 12-14 Oct 2020, Online
13. **A. Torisaka**, S. Hasegawa, S. Miura, V. Parque, T. Miyashita, H. Yamakawa, M.C. Natori, Optimization and demonstration of 3D self-assembly system of hierarchical modular space structure using electromagnet, Proceedings of The AIAA Science and Technology Forum and Exposition (Scitech2020), AIAA 2020-1671, 6-10 January 2020, Orlando Florida

    doi:10.2514/6.2020-1671
14. **A. Torisaka**, Y. Shintaku, S. Miura, V. Parque, T. Miyashita, Study on detection of material difference deeply buried in a soft tissue using impact oscillation under forced displacement, Proceedings of 8th International Conference on Mechanics of Biomaterials and Tissues, 15-19 December 2019, Waikoloa Beach, Hawaii, USA
15. **A. Torisaka**, K. Eguchi, S. Miura, V. Parque, T. Miyashita, Runnability Improvement of the moon rover with leg-circle transformable wheel, 30th International Conference on Adaptive Structures and Technologies(ICAST2019), 55, 7-11 October 2019, Montreal, QC, Canada
16. K. Saito, **A. Torisaka**, V. Parque, S. Miura, T. Miyashita, A Study of Angular Momentum Unloading Strategy of Reaction Wheel by Solar Radiation Pressure Using Membrane Structure, Proceedings of The 5th International Symposium on Solar Sailing (ISSS), 19037, July 2019, Ahen Germany
17. **A. Torisaka**, K. Ogawa, S. Miura, V. Parque, T. Miyashita, H. Yamakawa, Study on in-plane and out-of-plane deformation considering elastic plasticity of membrane, Proceedings of AIAA Scitech 2019 Forum,Jan7-11 2019,San Diego, AIAA 2019-2255
    doi:10.2514/6.2019-2255
18. S. Nakano, S. Miura, P. Victor, **A. Torisaka**, T. Miyashita, Data Assimilation Using the Particle

Filter for Online Identification of Organ Properties, Proceeding of the 14th Asian Conference on Computer Aided Surgery, Nov.16-18(2018), Shanghai, China

19. **A. Torisaka**, D. Hayashi, S. Kawasaki, N. Nishii, Y. Terada, S. Yokoyama, H. Sakamoto, Development of shape monitoring system using SMA dipole antenna on a deployable membrane structure, Proceedings of 69th International Astronautical Congress (IAC), IAC-18-C2.5.2, Bremen, Germany, 1-5 October 2018
20. H, Nakanishi, H. Sakamoto, H. Furuya, M. Yamazaki, Y. Miyazaki, A. Watanabe, K. Watanabe, **A. Torisaka**, and M. Oda, Development of Nano-Satellite OrigamiSat-1 with Highly Functional Deployable Membrane, Proceedings of 4th international symposium for Solar Sailling, 17085, Kyoto, Jan 2017
21. N. Okuizumi, O. Mori, J. Matsumoto, K, Saito, H. Sakamoto, **A. Torisaka** and Y. Shirasawa, Development of Deployment Structures and Mechanisms of Spinning Large Solar Power Sail, Proceedings of 4th international symposium for SolarSailling,17043, Kyoto, Jan 2017
22. **A. Torisaka**, Y. Satoh, T. Akita, M.C Natori, H. Yamakawa, T. Miyashita, Membrane Space Structure with Sterical Support of Booms and Cables, AIAA Science and Technology Forum and Exposition 2016 (AIAA SciTech2016), Proceeding of SciTech2016, AIAA 2016-1217, Jan 2016 doi: 10.2514/6.2016-1217
23. **A. Torisaka**, Y. Satoh, T. Akita, M.C Natori, H. Yamakawa, T. Miyashita, Characteristics of Square Shaped and Hexagonal Shaped Membrane Space Structures with Sterical Support of Booms and Cables, Proceeding of ICAST2015, pp.655-666, 2015 Oct ISBN: 9781510821897
24. T. Watanabe, **A. Torisaka**, S. Ozawa, H. Yamakawa, H. Sahara, Development of A Testbed for Simultaneous Control of Relative Position and Attitude Using Electromagnets, Proceeding of 30th International Symposium on Space Technology and Science (ISTS2015), 2015-d-38, July 2015
25. H. Furuya, Y. Satou, H. Sakamoto, M. Takai, N. Okuizumi1, M. Natori, **A. Torisaka**, T, Yokomatsu, H. Kurashige, A. Watanabe, Deployment Experiments of Wrapping Fold Boom-Membrane Integrated Space Structures for De-Orbiting Satellites, Proceeding of 30th International Symposium on Space Technology and Science (ISTS2015), 2015-c-45, July 2015
26. **A. Torisaka**, S. Masuda, N. Kobayashi, H. Yamakawa, Experimental verification of the position and attitude control law between two objects using multiple coils, Proceedings of 25th International Conference on Adaptive Structures and Technologies (ICAST2014), Oct 2014, pages 1—11, ISSN: 1927-7946, Delft
27. N. Watanabe, Y. Okazawa, N. Kobayashi, Y. Sugawara, **A. Torisaka**, Reduction of system matrices of plate in absolute nodal formulation by component mode synthesis method, The 3rd Joint International Conference on Multibody System Dynamics and The 7th Asian Conference on Multibody Dynamics (ACMD), 30 June-3 July2014, Busan, Korea
28. **A. Torisaka**, Y. Sato, T. Akita, M.C. Natori, H. Yamakawa, N. Kobayashi, Study on optimum connecting points of boom-membrane structure as a basic model for larger lightweight space structure, Proceedings of 24th International Conference on Adaptive Structures and Technologies (ICAST2013), pp. 131-142, 6-9 Oct2013, Aruba
ISBN:9781510851191
29. H. Sakamoto, H. Furuya, M.C. Natori, N. Katsumata, A. Watanabe, N. Kawabata, R. Sakai, N. Okuizumi, O. Mori, Y. Shirasawa, M. Takai, Y. Satou, **A. Torisaka**, R. Funase, Origami-based Membrane Storage and Deployment Technology for De-orbiting Satellites, Proceeding of 64th

International Astronautical Congress 2013, IAC-13-B4.6A.4, 2013 Sept

30. **A. Torisaka**, S. Ozawa, H. Yamakawa, N. Kobayashi, Position and Attitude Control of Formation Flying Satellites for Restructuring Their Configurations by Electromagnetic Forces at the Docking Phase, AIAA/GNC,Aug2013, Proceeding of AIAA/Guidance, Navigation, and Control(GNC), AIAA-2013-4540, Aug 2013
    doi: 10.2514/6.2013-4540
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65. **A. Torisaka**, H. Yamakawa, Topology Optimization of Small Satellite Installed Table Considering Vibration Reduction, Proceedings of the 53rd Space Sciences and Technology, Sept 2009, Kyoto
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71. **A. Torisaka**, H. Yamakawa, Research on damping joints for satellites, Proceedings of the 46th JSASS/JSME Structures Conference, pp.200-202, 2004

PATENTS:

1. Flat antenna, 7699873, (2025/6/20) (Japan)
2. Flat antenna, 7652443,(2025/03/18) (Japan)
3. Docking retention and release mechanism, 2023-117366,(2023/07/19) (Japan)

PROFESSIONAL AFFILIATIONS:

International: American Institute of Aeronautics and Astronautics (AIAA): Senior Member (Oct 2014 -present), Member (2006 - present)

Domestic: The Japan Society of Mechanical Engineers (JSME): Member (March 2004 - present)
The Japan Society for Aeronautical and Space Sciences (JSASS): Member (2006 - present)

PROFESSIONAL ACTIVITIES AND SERVICE:

- **Session Chair**:
  - International: International Conference on Adaptive Structures and Technologies (ICAST2019)
  - Domestic: Space Sciences and Technology Conference (2019)
    the JSASS/JSME Structures Conference (2014 - 2018)
    Symposium on Aerospace Structure and Materials (2012 - 2018)
- **Committees**:
  - May 2024 - Present AIAA, Space Craft Technical Committee member
  - April 2025 – March 2026 JSME, Space Engineering Division, General Affairs Committee, chair
  - April 2024 – March 2025 JSME, Space Engineering Division, 3rd Planning

Committee, secretary

- April 2023 – March 2024 JSME, Space Engineering Division, 2nd Planning Committee, Chair
- March 2022-Feb 2023 QS Global Academia Survey
- April 2020 – March 2023 JSME, Space Engineering Division, Public Relations Committee, member
- April 2020 – March 2021 JSME, Space Engineering Division, 2nd Planning Committee, secretary
- Jan 2020 – March 2024 JSME, Space Engineering Division, Deployable Antenna research society, secretary
- April 2019 - Present Ministry of Education, National Institute of Science and Technology Policy (NISTEP), Professional investigator
- April 2019 – March 2021 JSASS, Space Utilization Technical Committee, member
- April 2018 – March 2022 JAXA, Large Space Structure Working Group, Member
- Jan 2016 – April 2024 AIAA, Space Craft Technical Committee, friend member
- April 2017 - March 2019 JSASS, Structures Technical Committee, member
- Aug 2017 - March 2018 JAXA, Geostationary Radar Working Group, Member

CAMPUS SERVICE:

- Public Relations Committee, Committee, (April 2025- March 2026)
- Graduate School Admission Committee, (April 2024- March 2025)
- Faculty Development Committee, (April 2024- March 2026)
- Japan Society of Mechanical Engineers Annual Meeting Executive Committee,(April 2022- March 2023)
- Graduate Educational Affairs Committee (April 2022-March 2024)
- Diversity Committee (April 2015 - March 2016)
- Open Lecture “The world of aerospace engineering” (Aug 2015)

COURSES TAUGHT:

<Current>

At Tokyo Metropolitan University

- Light Weight Space Structure (graduate course)
- Elastic Mechanics (upper level course)
- Structural Mechanics in Aerospace Engineering1 (upper level course)
- Structural Mechanics in Aerospace Engineering2 (upper level course)
- Material structural mechanics: practice (upper level course)

- Introduction to Aerospace Engineering 1(lower level course)
- Introduction to Aerospace Engineering 2(lower level course)

At Waseda University

- Design and Control of Space Structures (upper level & graduate course)

At Kogakuin University

- Design and Drawing (upper level course)

<in the past>

At Tokyo Metropolitan University

- Research Project Seminar (graduate course)
- Aerospace Engineering: Experiment 2 (upper level course)
- Design and Drawing (upper level course)
- Aerospace Engineering: Experiment 1 (lower level course)

At Waseda University

- Mechanical Engineering Laboratory Fundamental (upper level course)
- Mechanical Engineering Laboratory Advanced (upper level course)
- Basic science and engineering experiments 2B (lower level course)
- Basic science and engineering experiments 2A (lower level course)
- Mechanical Engineering Experiment F (upper level course)

At Meiji University

- Industrial Mechanics (lower level course)

At Aoyama Gakuin University

- Machine Design and Drawing (upper level course)
- Mechanical Engineering Laboratory Ⅰ (upper level course)
- Mechanical Engineering Laboratory II (upper level course)
- Hands-on Practice of Mechanical Engineering (lower level course)
- Mechanical Dynamics and Practice (lower level course)
- Engineering Mechanics (lower level course)
- Practical Work of Machining Center (lower level course)

LICENSES: Licensed Private Pilot (FAA) (Sept 2013- present)

Japan pet animal breeding manager Level2 (2022- present)