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## EDUCATION

### Tokyo Institute of Technology, Tokyo, Japan

March, 2013 **Doctor of Engineering**

**Department of International Development Engineering**

Thesis: Grip and release processes with controlling adhesion force

Advisor: Associate Professor Kunio Takahashi

March, 2011 **Master of Engineering**

**Department of International Development Engineering**

Thesis: Adhesion between elastic beam and rigid body

Advisor: Associate Professor Kunio Takahashi

April, 2009 Accelerated promotion to Master's degree program

April, 2006 Admission to Bachelor's degree program

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## RESEARCH APPOINTMENTS

### Tokyo Institute of Technology, Tokyo, Japan

April, 2024 – present **Associate Professor at Institute of Innovative Research (IIR)**

April, 2016 – March, 2024 **Assistant Professor at Institute of Innovative Research (IIR)**

May, 2013 – March, 2016 **Assistant Professor at Precision and Intelligence (P&I) Laboratory**

April, 2012 – April, 2013 **JSPS Research Fellow**

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## Affiliated academic society

- The Adhesion Society of Japan (2012/4-)
- The Japan Society of Mechanical Engineers (2013/6-)
- The Society of Materials Science, Japan (2014/4-)
- The Society of Polymer Science, Japan (2017/1-)
- Society of Automotive Engineers of Japan (2018/11-)
- Japan Welding Society (2024/3-)

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## AWARDS

Open Innovator Achievement Award, Tokyo Institute of Technology, 2023

The Encouragement Award of The Adhesion of Society of Japan, The Adhesion Society of Japan, 2018  
Seiichi Tejima Doctoral Dissertation Award, Tokyo Institute of Technology, 2014

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## GRANTS AS A PRINCIPAL INVESTIGATOR AND FELLOWSHIPS

Grant-in-Aid for Scientific Research (Grant-in-Aid for Scientific Research (C)), Japan Society for the Promotion of Science (JSPS), 2021-2023

Grant-in-Aid for Scientific Research (Grant-in-Aid for Young Scientists), Japan Society for the Promotion of Science (JSPS), 2018-2020

Grant-in-Aid for Scientific Researchers Supporting the Next Generation, The Japan Welding Engineering Society (JWES), 2018

Grant-in-Aid for Scientific Research (Grant-in-Aid for Young Scientists (B)), Japan Society for the Promotion of Science (JSPS), 2015-2017

Grant-in-Aid for Scientific Research (Grant-in-Aid for Research Activity start-up), Japan Society for the Promotion of Science (JSPS), 2013-2014

Grant-in-Aid for Scientific Research (Grant-in-Aid for JSPS Fellows), Japan Society for the Promotion of Science (JSPS), 2012-2013

Research Fellowship for Young Scientists, Japan Society for the Promotion of Science (JSPS), 2012-2013

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## JOURNAL PUBLICATIONS

1. Akihiro Maesaka, Yushin Kakei, Tsutomu Osaka, Yoshihiro Kudo, Yu Sekiguchi, Chiaki Sato, “Experimental approach for measuring the peeling strength of a sheet bonded on a curved adherend with pressure sensitive adhesive and predicting the peeling resistance by finite element analysis”, [The Journal of Adhesion, in press.](#)
2. Ming Ji, Chao Kang, Yu Sekiguchi, Masanobu Naito, Chiaki Sato, “Spectral collocation method for free vibration of sandwich plates containing a viscoelastic core”, [Composite Structures, Vol. 337, 118024, 2024.](#)
3. Chao Kang, Ming Ji, Yu Sekiguchi, Masanobu Naito, Chiaki Sato, “A high-throughput technique to evaluate the probability distribution of strength of adhesively bonded joints after moisture absorption”, [The Journal of Adhesion, in press.](#)
4. A Takahashi, Y Sekiguchi, N Taki, M Okamura, C Sato, “Analyzing deformation of a cationic photopolymerized epoxy adhesive during the curing process in UV irradiation and dark reaction based on finite element method and measurement”, [The Journal of Adhesion, Vol. 100, Issue 7, pp. 599-615, 2024.](#)
5. Jin-Woo Han, **Yu Sekiguchi**, Kazumasa Shimamoto, Haruhisa Akiyama, Chiaki Sato, “Experimental measurement of moisture distribution in the adhesive layer using near-infrared spectroscopy”, [Journal of](#)

[Applied Polymer Science, Vol. 140, Issue 25, e53982, 2023.](#)

6. Tatsuro Kimura, Ming Ji, Ryu Onodera, **Yu Sekiguchi**, Chiaki Sato, “Inverse design of composite xylophone beams using finite element-based machine learning”, [Discover Mechanical Engineering, Vol. 2, 12, 2023.](#)
7. Ryu Onodera, Tatsuro Kimura, **Yu Sekiguchi**, Chiaki Sato, “Estimation of thickness and Young’s modulus of adhesive layer in adhesively bonded joint by impact sound”, Journal of the Adhesion Society of Japan, Vol. 59, No. 4, pp. 104-110, 2023.
8. R Okumura, K Shimamoto, **Y Sekiguchi**, K Kimura, H Kageyama, Y Yamamoto, Y Matsuki, C Sato, “Effects of low temperatures and high strain rates on the tensile properties of polyurethane polymers for adhesives”, [The Journal of Adhesion, Vol. 99, Issue 15, pp. 2238-2259, 2023.](#)
9. Chao Kang, J.J.M. Machado, **Yu Sekiguchi**, Ming Ji, Chiaki Sato, Masanobu Naito, “A butt shear joint (BSJ) specimen for high throughput testing of adhesive bonds”, [The Journal of Adhesion, Vol. 99, Issue 14, pp. 2080-2096, 2023.](#)
10. Ming Ji, **Yu Sekiguchi**, Kazuaki Inaba, Masanobu Naito, Chiaki Sato, “Forward and inverse analysis of transient responses for a cantilevered rectangular plate under normal and oblique impact loadings”, [International Journal of Impact Engineering, Vol. 174, 104514, 2023.](#)
11. Kota Nakamura, **Yu Sekiguchi**, Kazumasa Shimamoto, Keiji Houjou, Haruhisa Akiyama, Chiaki Sato, “Creep crack growth behavior during hot water immersion of an epoxy adhesive using a spring-loaded double cantilever beam test method”, [Materials, Vol. 16, Issue 2, 607, 2023.](#)
12. **Yu Sekiguchi**, Keiji Houjou, Kazumasa Shimamoto, Chiaki Sato, “Two-parameter analysis of fatigue crack growth behavior in structural acrylic adhesive joints”, [Fatigue & Fracture of Engineering Materials & Structures, Vol. 46, Issue 3, pp. 909-923, 2023.](#)
13. K Houjou, **Y Sekiguchi**, K Shimamoto, H Akiyama, C Sato, “Energy release rate and crack propagation rate behaviour of moisture-deteriorated epoxy adhesives through the double cantilever beam method”, [The Journal of Adhesion, Vol. 99, Issue 6, pp. 1016-1030, 2023.](#)
14. Wei-Hsun Hu, Ming Ji, Ta-Te Chen, Siqian Wang, Mizuki Tenjimbayashi, **Yu Sekiguchi**, Ikumu Watanabe, Chiaki Sato, Masanobu Naito, “Light-induced topological patterning toward three-dimensional shape-reconfigurable origami”, [Small, Vol.18, 2107078, 2022.](#)
15. Asuka Hayashi, **Yu Sekiguchi**, Chiaki Sato, “Effect of temperature and loading rate on the mode I fracture energy of structural acrylic adhesives”, [Journal of Advanced Joining Processes, Vol. 5, 100079, 2022.](#)
16. A Takahashi, **Y Sekiguchi**, C Sato, “Volume change and viscoelastic properties of UV-curable adhesives for precise positioning during curing process and their formulation”, [The Journal of Adhesion, Vol. 98, pp. 2029-2044, 2022.](#)

17. **Yu Sekiguchi**, Chiaki Sato, “Effect of Bond-Line Thickness on Fatigue Crack Growth of Structural Acrylic Adhesive Joints”, [Materials, Vol. 14, 1723, 2021.](#)
18. **Yu Sekiguchi**, Chiaki Sato, “Experimental investigation of the effects of adhesive thickness on the fracture behavior of structural acrylic adhesive joints under various loading rates”, [International Journal of Adhesion and Adhesives, Vol. 105, 102782, 2021.](#)
19. **Yu Sekiguchi**, “Cohesive Zone Model (CZM) for numerical analysis: A Review”, [Journal of the Adhesion Society of Japan, Vol. 56, No. 11, pp. 447-455, 2020 \(in Japanese\).](#)
20. Asuka Hayashi, **Yu Sekiguchi**, Kosuke Haraga, Chiaki Sato, “Adhesive joint mechanical properties and sea-island structure using a second-generation acrylic adhesive under different curing temperature condition”, [Journal of the Adhesion Society of Japan, Vol. 56, No. 8, pp. 296-302, 2020 \(in Japanese\).](#)
21. Asuka Hayashi, **Yu Sekiguchi**, Chiaki Sato, “AFM observation of sea-island structure formed by second generation acrylic adhesive”, [The Journal of Adhesion, Vol. 97, No. 2, pp. 155-171, 2021.](#)
22. **Yu Sekiguchi**, Asuka Hayashi, Chiaki Sato, “Analytical determination of adhesive layer deformation for adhesively bonded double cantilever beam test considering elastic-plastic deformation”, [The Journal of Adhesion, Vol. 96, No. 7, pp. 647-664, 2020.](#)
23. **Y. Sekiguchi**, M. Nakanouchi, K. Haraga, I. Takasaki, C. Sato, “Experimental investigation on strength of stepwise tailored single lap adhesive joint using second-generation acrylic adhesive via shear and low-cycle shear tests”, [International Journal of Adhesion and Adhesives, Vol. 95, 102438, 2019.](#)
24. Katsuo Komatsu, **Yu Sekiguchi**, Ryohei Ihara, Akihiko Tatsumi, Chiaki Sato, “Experimental investigation of an adhesive fracture energy measurement by preventing plastic deformation of substrates in a double cantilever beam test”, [The Journal of Adhesion, Vol. 95, pp. 911-928, 2019.](#)
25. **Yu Sekiguchi**, Ryo Sakakibara, Chiaki Sato, “Buckling analysis of a beam on an elastic foundation considering initial imperfection”, [Journal of the Adhesion Society of Japan, Vol. 55, No. 7, pp. 254-265, 2019 \(in Japanese\).](#)
26. M. Nakanouchi, C. Sato, **Y. Sekiguchi**, K. Haraga, H. Uno, “Development of application method for fabricating functionally graded adhesive joints by two-component acrylic adhesives with different elastic moduli”, [The Journal of Adhesion, Vol. 95, pp. 529-542, 2019.](#)
27. **Yu Sekiguchi**, “Study on the reversible adhesion inspired from Gecko foot hairs”, [Journal of the Adhesion Society of Japan, Vol. 55, No. 2, pp. 50-56, 2019 \(in Japanese\)](#)
28. Norihide Abe, **Yu Sekiguchi**, Chiaki Sato, “Parameter identification of material model of toughened adhesive polymer for elasto-plastic finite element analysis”, [Journal of the Adhesion Society of Japan, Vol. 54, No. 10, pp. 358-366, 2018 \(in Japanese\)](#)
29. **Yu Sekiguchi**, Yuki Yamagata, Chiaki Sato, “Mode I fracture energy of adhesive joints bonded with adhesives

with different characteristics under quasi-static and impact loading”, [Journal of the Adhesion Society of Japan, Vol. 53, No. 10, pp. 330-337, 2017](#)

30. Syota Kawasaki, **Yu Sekiguchi**, Gosuke Nakajima, Kosuke Haraga, Chiaki Sato, “Digital Image Correlation measuring of strain and stress distribution on mixed adhesive joints bonded by honeymoon adhesion using two types of second-generation acrylic adhesives of two components”, [Journal of the Adhesion Society of Japan, Vol. 53, No. 6, pp.192-201, 2017](#)
31. Yoshiaki Uratani, **Yu Sekiguchi**, Chiaki Sato, “Expansion characteristics of thermally expandable microcapsules for dismantlable adhesive under hydrostatic pressure or in resin”, [The Journal of Adhesion, Vol. 93, No. 10, pp.771-790, 2017](#)
32. Hidenao Shiote, **Yu Sekiguchi**, Manabu Ohe, Chiaki Sato, “Influence of adhesion area, applied voltage, and adherend materials on residual strength of joints bonded with electrically dismantlable adhesive”, [The Journal of Adhesion, Vol. 93, No. 10, pp.831-854, 2017](#)
33. **Yu Sekiguchi**, Chiaki Sato, “Experimental investigation of the effect of tip shape in gecko-inspired adhesive devices under asymmetric detachment”, [Applied Adhesion Science, 5:8, 2017](#)
34. Yuki Yamagata, Xi Lu, **Yu Sekiguchi**, Chiaki Sato, “Experimental investigation of mode I fracture energy of adhesively bonded joints under impact loading conditions”, [Applied Adhesion Science, 5:7, 2017](#)
35. **Yu Sekiguchi**, Masato Katano, Chiaki Sato, “Experimental study of the Mode I adhesive fracture energy in DCB specimens bonded with a polyurethane adhesive”, [The Journal of Adhesion, Vol. 93, pp. 235-255, 2017](#)
36. Kazumasa Shimamoto, **Yu Sekiguchi**, Chiaki Sato, “Mixed mode fracture toughness of adhesively bonded joints with residual stress”, [International Journal of Solids and Structures, Vol.102-103, pp. 120-126, 2016](#)
37. **Y. Sekiguchi**, C. Sato, “Effect of detachment speed on adhesion strength of gecko inspired adhesive devices”, [Key Engineering Materials, Vol. 715, pp. 63-67, 2016](#)
38. S. Murakami, **Y. Sekiguchi**, C. Sato, E. Yokoi, T. Furusawa, “Strength of cylindrical butt joints bonded with epoxy adhesives under combined static or high-rate loading”, [International Journal of Adhesion and Adhesives, Vol. 67, pp. 86-93, 2016](#)
39. K. Shimamoto, **Y. Sekiguchi**, C. Sato, “Effects of surface treatment on the critical energy release rates of welded joints between glass fiber reinforced polypropylene and a metal”, [International Journal of Adhesion and Adhesives, Vol. 67, pp. 31-37, 2016](#)
40. **Sekiguchi Yu**; Takahashi Kunio; Sato Chiaki, “Adhesion mechanism of a gecko-inspired oblique structure with an adhesive tip for asymmetric detachment”, [Journal of Physics D Applied Physics, Vol. 48, 475301\(7pp\), Oct 2015](#)
41. Kazumasa SHIMAMOTO, **Yu SEKIGUCHI**, Chiaki SATO, “Thermal Stress Reduction and Strength

Evaluation of Welded Joints for Dissimilar Materials”, [Journal of the Adhesion Society of Japan, Vol. 51, No. 9, pp. 409-415, Sep 2015 \(in Japanese\)](#)

42. **Y. Sekiguchi**, S. Saito, K. Takahashi, C. Sato, “Flexibility and Poisson effect on detachment of gecko-inspired adhesive”, [International Journal of Adhesion and Adhesives, Volume 62, 55-62, 2015](#)
43. K. Shimamoto, **Y. Sekiguchi**, C. Sato, “The critical energy release rate of welded joints between fiber-reinforced thermoplastics and metals when thermal residual stress is considered”, [The Journal of Adhesion, Vol. 92, pp. 306-318, 2016](#)
44. Binti Ramli Mizah, **Yu Sekiguchi**, Chiaki Sato, “Novel method to measure creep strength of adhesively bonded butt joints subjected to constant loading using a hydro-pneumatic testing machine”, [The Journal of Adhesion, Volume. 92, Issue 1, pp. 65-79, 2016](#)
45. Siripong Mahaphasukwat, Kazumasa Shimamoto, Shota Hayashida, **Yu Sekiguchi** and Chiaki Sato, “Mode I critical fracture energy of adhesively bonded joints between glass fiber reinforced thermoplastics”, [Applied Adhesion Science, Volume 3, Article No. 4 \(13pages\), 2015](#)
46. Masaru Sano, Hiroyuki Oguma, Masahiro Sekine, **Yu Sekiguchi**, Chiaki Sato, “High-frequency welding of glass-fibre-reinforced polypropylene with a thermoplastic adhesive layer: Effects of ceramic type and long-term exposure on lap shear strength”, [International Journal of Adhesion and Adhesives, Volume 59, pp. 7-13, 2015](#)
47. Pasomphone Hemthavy, Takehiko Yazaki, Boqing Wang, **Yu Sekiguchi** and Kunio Takahashi, “Effect of shape of elastic beam hair on its adhesion with wavy surfaces”, [IOP Conference Series: Materials Science and Engineering, Volume 61, 012043, 2014](#)
48. **Y. Sekiguchi**, P. Hemthavy, S. Saito, K. Takahashi, “Experiments of the adhesion behavior between an elastic beam and a substrate”, [International Journal of Adhesion and Adhesives, Vol. 49, 1-6, 2014](#)
49. **Y. Sekiguchi**, P. Hemthavy, S. Saito and K. Takahashi, “Adhesion between side surface of an elastic beam and flat surface of a rigid body”, [Journal of Adhesion Science and Technology, Vol. 26, 2615-2626, 2012](#)
50. **Y Sekiguchi**, P Hemthavy, S Saito and K Takahashi, “Separation mechanisms of reversible adhesion joining using an elastic body with variable elastic modulus”, [Journal of Physics: Conference Series, Vol. 379, 012041\(9 pages\), 2012](#)
51. Y Honda, M Tanaka, **Y Sekiguchi**, P Hemthavy, and K Takahashi, “Optimum condition of boost switching regulator for charging tiny electric energy to capacitor”, [Journal of Physics: Conference Series, Vol. 379, 012023\(5 pages\), 2012](#)
52. **Y. Sekiguchi**, L. Lei, P. Hemthavy and K. Takahashi, “Mechanisms for Grip-and-Release process of adhesion contact using material with variable elastic modulus”, [Journal of Adhesion Science and Technology, Vol. 24, 1819-1830, 2010](#)

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**PROFESSIONAL ACTIVITIES**

Executive committee of Kanto Branch, Adhesion Society of Japan.

Executive head of Kanto Branch Young Networking Group, Adhesion Society of Japan.

Executive committee of the Technical Commission on Solid Phase Welding and Brazing, Japan Welding Society.