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Specialized field: *Ultrasonic devices and their applications*

Birth: *04 Aug. 1970 Tokyo, Japan*

Education:

*B. S. from The University of Tokyo, Japan
Precision Machinery Engineering, March 1994*

*M. S. from The University of Tokyo, Japan
Precision Machinery Engineering, March 1996*

*Dr. (Eng.) from The University of Tokyo, Japan
Precision Machinery Engineering, March 1999*

Professional career:

*1996-1999 Research Fellow (DC1)
The Japan Society for the Promotion of Science
1999-2001 Post-doctoral Fellow
The Inst. of Phys. and Chem. Res. (RIKEN)
2001-2002 Post-doctoral Fellow
Swiss Federal Institute of Technology, EPFL
2002-2005 Research Associate
Tohoku University
2005-2018 Associate Professor,
The University of Tokyo
2018-present Full Professor
The University of Tokyo*

Award and Honors:

*Ishii Science Encouragement Prize (1999)
Award Prize to Young Researcher for Encouragement of FANUC FA and Robot Foundation (1999)
An excellent paper presentation from the Institute of electrical engineering of Japan (2001)
Encouraging prize for young researcher, Japan Society of Applied Physics (2004)
Young Scientist Award, Symposium on Ultrasonic Electronics (2006)
Valued Reviewer in 2009, Journal of Sensors and Actuators A (Elsevier Science) (2009)
Nagamori Award, Nagamori foundation (2015)
Best teaching Award, Faculty of Eng., The Univ. of Tokyo (2016)*

Present scientific research projects:

*“High power ultrasonic transducer with multi-modal excitation”
“Double Parabolic refLectors wave-guided high-power Ultrasonic tranSducers(DPLUS)”
“Bio-medical ultrasonics”*

Miscellaneous:

*General chair for Int. Conference, IWPMA 2022, IWPMA2018
Organizing Committee Member of Int. Conference, ACTUATOR
Organizer for international conference ICAE2017
Organizer of “Sensors and Actuators committee”, The Japan Society for Precision Eng. (JSPE)
Editor of Journal of Sensors and Actuator (2009-2013)*

Publication list (from 2018 to 2022)

1. K. Chen, T. Irie, T. Iijima, S. Miyake and **T. Morita**, "Low-loss ultrasound transmission through waveguide from double parabolic reflectors (DPLUS) for thermal ablation," *IEEE Access*, 2022 (accepted)
2. K. Chen, T. Irie, T. Iijima, S. Miyake and **T. Morita**, "Optimization of the Thin Waveguide for Double-Parabolic-Reflectors Ultrasonic Transducers (DPLUS) for Thermal Ablation," *IEEE Transactions on Biomedical Engineering*, 2022 (accepted)
3. K. Yamada, K. Chen, T. Irie, T. Iijima, S. Miyake and T. Morita, "Tube-Type Double-Parabolic-Reflector Ultrasonic Transducer (T-DPLUS)," *Acoust. Sci. & Tech.*, vol. 43-5, pp. 287-290, 2022
4. A. Mustafa, T. Sasamura and T. Morita, "Robust Speed Control of Ultrasonic Motors Based on Deep Reinforcement Learning of a Lyapunov Function," *IEEE Access*, vol. 10, pp. 46895-46910, 2022
5. K. Chen, T. Irie, T. Iijima, T. Kasashima, K. Yokoyama, S. Miyake and **T. Morita**, "Hard-type piezoelectric materials based double-parabolic-reflectors ultrasonic transducer (DPLUS) for high-power ultrasound", *IEEE Access*, vol. 10, pp. 26117-26126, 2022
6. X. Wu, K. Chen, Y. Hoshijima, T. Hariu, H. Yamazaki, S. Miyake and **T. Morita**, "High-power ultrasonic transducer for effective hemolysis," *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control*, vol. 69, pp.181-186, 2021
7. T. Sasamura, A. Mustafa, S. Miyake and **T. Morita**, "Backdrivability improvement of traveling wave ultrasonic motor torque control by reducing static friction," *Sensors and Actuators A*, vol. 332, Part 2, 113149, 2021
8. S. Hachisuka, H. Yokozawa, F. Wang, S. Miyake, J. Twiefel and **T. Morita**, "Dynamic resonant frequency control system of ultrasonic transducer for non-sinusoidal waveform excitation," *Sensors and Actuators A*, vol. 332, 113124, 2021
9. K. Chen, T. Irie, T. Iijima, T. Kasashima, K. Yokoyama and **T. Morita**, "Selection criteria of piezoelectric materials for double-parabolic-reflectors ultrasonic transducers (DPLUS) for high-power ultrasound," *Jpn. J. Appl. Phys.*, vol. 60, 106504, 2021
10. K. Chen, T. Irie, T. Iijima and **T. Morita**, "Double-parabolic-reflectors Ultrasonic Transducer with flexible waveguide for minimally invasive treatment," *IEEE. Trans. Biomed. Eng.*, vol.68, no.10, pp.2965-2973, 2021
11. Q. Liu, K. Chen, J. Hu and **T. Morita**, "An ultrasonic tweezer with multiple manipulation functions based on the double-parabolic-reflector wave-guided high-power ultrasonic transducer," *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control*, vol. 67, no. 11, pp.2471-2474, 2020
12. S. Miyake, T. Harada, H. Shimizu, S. Kishimoto and **T. Morita**, "High power characteristics of (Bi,Na)TiO₃-BaTiO₃ ceramics and application for miniature ultrasonic motor," *Sens. Mater.*, vol. 32, No. 7, p. 2443-2452, 2020
13. K. Chen, T. Irie, T. Iijima and **T. Morita**, "Wideband multi-modes excitation by one Double-parabolic-reflectors Ultrasonic Transducer (DPLUS)," *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control*, vol. 67, no. 8, pp. 1620-1631, 2020
14. S. Asano, S. Nishimura, Y. Ikeda, **T. Morita** and H. Hosaka, "Energy harvester for safety shoes using parallel piezoelectric links," *Sensors and Actuators A*, vol. 309, 112000, 2020
15. Y. Tanoue and T. Morita, "Rod drive type ultrasonic linearmotor with quadruped stator," *Jpn. J. Appl. Phys.*, vol. 59 SKKD13, 2020
16. Q. Liu, K. Chen, J. Hu and **T. Morita**, "DPLUS based ultrasonic tweezers for micro/nano manipulation," *Jpn. J. Appl. Phys.*, vol. 59, SKKD12, 2020
17. Y. Tanoue and **T. Morita**, "Opposing preloads type ultrasonic linear motor with quadruped stator," *Sensors and Actuators A*, vol. 301, 111764, 2020
18. J. Li, H. Huang and **T. Morita**, "Stepping piezoelectric actuators with large working stroke: a review," *Sensors and Actuators A*, vol. 292, pp.39-51, 2019
19. A. Musutafa and **T. Morita**, "Dynamic preload control of traveling wave rotary ultrasonic motors for energy efficient operation," *Jpn. J. Appl. Phys.*, vol.58, SGGD04, 2019
20. A. Musutafa and **T. Morita**, "Efficiency optimization of rotary ultrasonic motors using extremum seeking control with current feedback," *Sensors and Actuators A*, vol. 289, pp. 26-33, 2019
21. K. Chen, T. Irie, T. Iijima and **T. Morita**, "Acoustic focusing to the waveguides utilizing double parabolic reflectors," *Appl. Phys. Lett.*, vol. 114, 072902, 2019
22. T-F Lu, Y. Fan and **T. Morita**, "An investigation of piezoelectric actuator high speed operation for sensorless control," *Measurement*, vol.136, pp.105-115, 2019
23. S. Miyake, R. Ozaki, H. Hosaka and **T. Morita**, "High-power piezoelectric vibration model considering the interaction between nonlinear vibration and temperature increase," *Ultrasonics*, vol. 93, pp. 93-101, 2019
24. S. Miyake, T. Kasashima, M. Yamazaki, Y. Okimura, H. Nagata, H. Hosaka and **T. Morita**, "Quantitative evaluation method for nonlinear characteristics of piezoelectric transducer under high stress with complex nonlinear elastic constant," *Jpn. J. Appl. Phys.*, Vol. 57, 07LB14, 2018
25. H. Yokozawa, Y. Doshida, S. Kishimoto and **T. Morita**, "Resonant-type smooth impact drive mechanism actuator using lead-free piezoelectric material," *Sensors and Actuators A*, vol. 274, pp. 179-183, 2018