Yoshikazu HIRAI (Ph.D.)

Junior Assosiate Professor
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(As of December 26, 2024)

a. Professional Preparation

Ritsumeikan University, Shiga, JAPAN;	Mechanical Engineering;	B.S., 2002
Ritsumeikan University, Shiga, JAPAN;	Mechanical Engineering;	M.S., 2004
Kyoto University, Kyoto, JAPAN;	Mechanical Engineering;	Ph.D., 2007
Kyoto University, Kyoto, JAPAN;	Biomedical Engineering;	2007-2009

b. Appointments

2021–present: **Junior Associate Professor**, Department of Mechanical Engineering and Science, Kyoto University, Kyoto JAPAN
2014–2017: **Adjunct Assistant Professor**, Institute for Integrated Cell-Material Sciences (iCeMS), Kyoto University, Kyoto, JAPAN
2013–2021: **Assistant Professor**, Department of Micro Engineering, Kyoto University, Kyoto JAPAN
2009–2013: **Program Specific Assistant Professor**, Advanced Biomedical Engineering Research Unit, Kyoto University, Kyoto, JAPAN
2007–2009: **Postdoctoral Research Scientist**, Micro Engineering, Kyoto University, Kyoto, JAPAN

c. Publications

(i) Five most closely related to current research

1. Keita Saikawa, Masaya Zetsu, Daiki Ueshima, Taiichi Shikama, Ken-ichiro Kamei, Osamu Tabata, **Yoshikazu Hirai**, "Microfluidics-Guided Fluorescent Nanodiamond Assembly Method for Highly Sensitive Thermometry", *Sens. Actuator A-Phys.*, **386** (2025), 116312
2. Jiandong Yang, **Yoshikazu Hirai**, Kei Iida, Shinji Ito, Marika Trumm, Shiho Terada, Risako Sakai, Toshiyuki Tsuchiya, Osamu Tabata, Ken-ichiro Kamei, "Integrated Gut–Liver-on-a-Chip Platform as an in Vitro Human Model of Non-Alcoholic Fatty Liver Disease", *Commun. Biol*., **6** (2023), 310
3. Shun Kiyose, **Yoshikazu Hirai**, Osamu Tabata, Toshiyuki Tsuchiya, "Microfabricated Alkali Metal Vapor Cells Filled With an On-Chip Dispensing Component", *Jpn. J. Appl. Phys*., **60** (2021), SCCL01
4. Ken-ichiro Kamei, Yoshiki Kato, **Yoshikazu Hirai**, Shinji Ito, Junko Satoh, Atsuko Oka, Toshiyuki Tsuchiya, Yong Chen, Osamu Tabata, "Integrated Heart/Cancer on a Chip to Reproduce the Side Effects of Anti-Cancer Drugs *in vitro*", *RSC Adv.*, **7** (2017), pp. 36777–36786
5. Xiaoxu Ma, Yoshiki Kato, Floris van Kempen, **Yoshikazu Hirai**, Toshiyuki Tsuchiya, Fred van Keulen, Osamu Tabata, "Experimental Study of Numerical Optimization for 3-D Microstructuring using DMD-Based Grayscale Lithography", *J. Microelectromech. Syst.*, **24** (2015), pp. 1856–1867

(ii) Five other significant publications

1. **Yoshikazu Hirai**, Daisuke Takagi, Satoshi Anai, Yoshitomo Chihara, Toshiyuki Tsuchiya, Kiyohide Fujimoto, Yoshihiko Hirao, Osamu Tabata, "ALA-Induced Fluorescence Detection with Photoresist-Based Microfluidic Cell Sorter for Bladder Cancer Diagnosis", *Sens. Actuator B-Chem.*, **213** (2015), pp. 547–557
2. Ken-ichiro Kamei, **Yoshikazu Hirai**, Momoko Yoshioka, Yoshihide Makino, Qinghua Yuan, Minako Nakajima, Yong Chen, Osamu Tabata, "Phenotypic and Transcriptional Modulation of Human Pluripotent Stem Cells Induced by Nano/Microfabrication Materials", *Adv. Healthcare Mater.*, **2** (2013), pp. 287–291
3. **Yoshikazu Hirai**, Koji Sugano, Toshiyuki Tsuchiya, Osamu Tabata, "Embedded Microstructure Fabrication using Developer-Permeability of Semi-Cross-Linked Negative Resist", *J. Microelectromech. Syst.*, **19** (2010), pp. 1058–1069

4. **Yoshikazu Hirai**, Yoshiteru Inamoto, Koji Sugano, Toshiyuki Tsuchiya, Osamu Tabata, "Moving Mask UV Lithography for Three-Dimensional Structuring", *J. Micromech. Microeng.*, **17** (2007), pp. 199–206
5. **Yoshikazu Hirai**, Sadik Hafizovic, Naoki Matsuzuka, Jan G. Korvink, Osamu Tabata, "Validation of X-ray Lithography and Development Simulation System for Moving Mask Deep X-ray Lithography", *J. Microelectromech. Syst.*, **15** (2006), pp. 159–168

d. Five Synergistic Activities

1. Invited Session Program Chair of *the 19th IEEE International Conference on Nano/Micro Engineered and Molecular Systems (IEEE-NEMS 2024)*, Kyoto, Japan, 2-5 May 2024
2. Microelectromechanical Systems Committee Member of *IEEE Electron Devices Sciety (EDS)*, 2023–present
3. Treasurer of *the 7th IEEE International Symposium on Inertial Sensors and Systems (IEEE INERTIAL 2020),* Vertual, 23-26 March 2020
4. Associate Editor of *IEEE Transuctions on Nanotechnology,* 2019–present
5. Rewiewr for *IEEE Journal of Microelectromechanical Systems* (Gold Reviewers: 2021 and 2022), 2012–present

e. Five relevant achievements

1. Recognized in *Gold Reviewer* for *IEEE Journal of Microelectromechanical Systems*, 2021 and 2022.
2. *The Excellent Technical Paper Award* in the Sensors and Micromachines Division, The Institute of Electrical Engineers of Japan (IEEJ), 2015 and 2023
3. *The Institute of Electrical Engineers of Japan (IEEJ) Distinguished Paper Award*, 2017
4. *Outstanding Reviewer Award* in Journal of Micromechanics and Microengineering, 2016
5. *The Igarashi Award* in The Sensors and Micromachines Division, The Institute of Electrical Engineers of Japan (IEEJ), 2015

f. Volunteering experience

1. **Journal service**: (i) Associate Editor for *IEEE Transuctions on Nanotechnology,* 2019–present. (ii) Editorial board for *Sensors and Actuators Reports,* 2021–present. (iii) Reviewr for *Journal of Micromechanics and Microengineering*, 2007–present. (iv) Reviewr for *IEEE Journal of Microelectromechanical Systems*, 2012–present. (v) Reviewr for *Sensors and Actuators A: Physical, Sensors and Actuators B: Chemical, Lab on a Chip, and more than 20 peer review journals.*
2. **Conference service**: (i) Local organizer for *the 7th IEEE International Conference on Nano/Micro Engineered and Molecular Systems (IEEE-NEMS 2012), Kyoto, JAPAN,* 5-8 March 2012. (ii) Treasurer for *the 7th IEEE International Symposium on Inertial Sensors and Systems (IEEE INERTIAL 2020)*, Vertual, 23-26 March 2020. (iii) Local Arrangement Committee (Executive Group) for *the 22nd International Conference on Solid-State Sensors, Actuators and Microsystems (Transducers 2023),* Kyoto, Japan, 25-29 June 2023. (iv) Invited Session Program Chair for *the 19th IEEE International Conference on Nano/Micro Engineered and Molecular Systems (IEEE-NEMS 2024)*, Kyoto, JAPAN, 2-5 May 2024. (v) Technical progam comittie member for *the IEEE International Conference on Nano/Micro Engineered and Molecular Systems (IEEE-NEMS)*, 2013–2015, and 2017–2022. (vi) Technical progam comittie member for *the IEEE SENSORS*, 2017, 2018, and 2021–2024. (vii) Technical progam comittie member for *the IEEE NANO*, 2022–2023.

g. Website for more details

All publications: https://mdde.me.kyoto-u.ac.jp/publications/
Activity Databse on Education and Research, Kyoto University:
https://kdb.iimc.kyoto-u.ac.jp/profile/en.b9403183d8618c83.html