

## Dr. Wei XU

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### Education Background

- [1] Ph.D. Hong Kong University of Science and Technology 2013/08–2017/06
- [2] M.S. Huazhong University of Science and Technology 2010/09–2013/03
- [3] B.S. Huazhong University of Science and Technology 2006/09–2010/07

### Working Experience

- [1] Visiting Scholar in University of California, Berkeley, USA Jun 2024–Present
- [2] Associate Professor (Tenured) in Shenzhen University Jul 2023–Present
- [3] Assistant Professor in Shenzhen University Jul 2018–Jun 2023
- [4] Visiting Scholar in HKUST Jul 2018–Jun 2019
- [5] Research Associate for HKUST-MIT Joint Project Jul 2017–Jun 2018

### Awards

- [1] JMEMS RightNow Paper, IEEE Electron Devices Society 2024
- [2] Director Award of State Key Laboratory of RFHI (Category B) 2023
- [3] Outstanding Undergraduate Teaching Award 2023
- [4] Second Prize for Excellent Paper Award on IMMS 2023 2023
- [5] IEEE MEMS 2023 Best Paper Award Nominee 2023
- [6] IEEE Senior Member 2022
- [7] IEEE ISCAS Best Paper Award Nominee 2022
- [8] IEEE MEMS 2020 Best Paper Award 2020
- [9] JMEMS RightNow Paper, IEEE Electron Devices Society 2020
- [10] Outstanding Teacher, Shenzhen University 2020
- [11] Leading Talent in Nanshan District (Class C), Shenzhen 2019
- [12] Shenzhen Overseas High-Level Talent (Class C), Shenzhen 2018
- [13] JMEMS RightNow Paper, IEEE Electron Devices Society 2016

### Current Research Directions

- [1] Integrated CMOS-MEMS Sensor and Sensor Fusion System
- [2] Flexible Wearable Sensors for IoT and Medical Application

## Representative Publications (\*Corresponding Author)

- [1] X. Song, L. Huang, Y. Lin, L. Hong and W. Xu\*, "Surface Micromachined CMOS-MEMS Pirani Vacuum Gauge with Stacked Temperature Sensor," IEEE Journal of Microelectromechanical Systems, vol. 33, no. 2, pp. 274-281, 2024. ([Highlighted as JMEMS RightNow Paper](#))
- [2] W. Xu, L. Hong, X. Pan and Izhar, "Monolithically Integrated Bidirectional Flow Sensor and Stacked Temperature/Humidity Sensor based on CMOS-Compatible MEMS Technology," IEEE Transactions on Instrumentation and Measurement, vol. 73, pp. 1-9, pp. 7501609, 2024.
- [3] W. Xu, Z. Li, Z. Fang, B. Wang, L. Hong, G. Yang, S. T. Han, X. Zhao, and X. Wang, "A Sub-5mW Monolithic CMOS-MEMS Thermal Flow Sensing SoC with  $\pm 6\text{m/s}$  Linear Range," IEEE Journal of Solid-State Circuits (**JSSC**), 2023, doi: 10.1109/JSSC.2023.3314765.
- [4] W. Xu\*, X. Wang, Z. Ke, and Y. K. Lee, "Bidirectional CMOS-MEMS Airflow Sensor with sub-mW Power Consumption and High Sensitivity," IEEE Transactions on Industrial Electronics, vol. 69, no. 3, pp. 3183-3192, 2022.
- [5] Izhar, W. Xu\*, H. Tavakkoli, X. Zhao, and Y. K. Lee, "CMOS Compatible MEMS Multienvironmental Sensor Chip for Human Thermal Comfort Measurement in Smart Buildings," IEEE Transactions on Electron Devices, vol. 69, no. 11, pp. 6290-6297, 2022.
- [6] W. Xu\*, X. Wang, R. Wang, J. Xu, and Y.K. Lee\*, "CMOS MEMS Thermal Flow Sensor with Enhanced Sensitivity for HVAC Application," IEEE Transactions on Industrial Electronics, vol. 68, no. 5, pp. 4468-4476, 2021.
- [7] W. Xu\*, X. Wang, X. Zhao, Y. Yang, and Y. K. Lee, "Determination of Thermal Conductivities for Thin-Film Materials in CMOS MEMS Process," IEEE Transactions on Instrumentation and Measurement, vol. 70, pp. 6001309, 2021.
- [8] W. Xu, X. Wang, X. Zhao, and Y.K. Lee, "Two-Dimensional CMOS MEMS Thermal Flow Sensor with High Sensitivity and Improved Accuracy," IEEE/ASME Journal of Microelectromechanical Systems, vol. 29, no. 2, pp. 248-254, 2020. ([Highlighted as JMEMS RightNow Paper](#)).
- [9] W. Xu, S. Ma, X. Wang, Y. Chiu, and Y. K. Lee\*, "A CMOS-MEMS

Thermoresistive Micro Calorimetric Flow Sensor with Temperature Compensation," IEEE Journal of Microelectromechanical Systems, vol. 28, no. 5, pp. 841-849, 2019.

- [10] W. Xu, K. Song, S. Ma, B. Gao, Y. Chiu and Y. K. Lee, "Theoretical and Experimental Investigations of Thermoresistive Micro Calorimetric Flow Sensors Fabricated by CMOS MEMS Technology, " IEEE Journal of Microelectromechanical Systems, vol. 25, no. 5, pp. 954-962, Oct. 2016 ([Highlighted as JMEMS RightNow Paper](#))
- [11] K. Xiao, X. Song, M. Duan, and W. Xu\*, "An Ultralow-Power Flexible Thermal Flow Sensor Based on Electrochemical Impedance" Transducers, pp. 694-697, 2023. (Top Conf., Oral)
- [12] X. Song, K. Xiao, and W. Xu\*, "A Low Power and Ultrathin Flexible Shear Stress Sensor with High Sensitivity Suspended Over a Flexible Substrate" Transducers, pp. 306-309, 2023. (Top Conf., Oral)
- [13] L. Huang, Izhar, X. Zhou, M. Fang, S. Huang, Y. K. Lee, X. Pan, and W. Xu\*, "A real-time wireless calorimetric flow sensor system with a wide linear range for low-cost respiratory monitoring," IEEE 36th International Conference on Micro Electro Mechanical Systems (MEMS), Munich, pp. 107-110, 2023. ([Best Paper Award Nominee](#))
- [14] Z. Li, Z. Fang, B. Wang, M. Ahmed, X. Pan, S. T. Han, X. Zhao, and W. Xu\*, "System-Level Modeling and Design of a Temperature Compensated CMOS MEMS Thermal Flow Sensor," IEEE International Symposium on Circuits and Systems, pp. 2072-2076, 2022. ([Best Paper Award Nominee](#))
- [15] X. Xu, Z. Fang, J. Zheng, B. Gao, and W. Xu\*, "Theoretical and experimental studies of electrochemical impedance based micro calorimetric flow sensor," The 21th International Conference on Solid-State Sensors, Actuators and Microsystems (Transducers), pp. 1223-1226, 2021.
- [16] X. Wang, Y. Guo, X. Zhao, W. Xu\*, "A Bidirectional CMOS MEMS Thermal Wall Shear Stress Sensor with Improved Sensitivity and Low Power Consumption," IEEE 34rd International Conference on Micro Electro Mechanical Systems (MEMS), pp. 131-134, 2021. (Top Conf., Oral)

- [17] Z. Fang, X. Xu, J. Zheng, L. Zhang, Y. Yang, and W. Xu\*, "Micro Thermal Flow Sensor for Ion Solution Based on The Monitoring of Slope of Impedance Changes," IEEE 34rd International Conference on Micro Electro Mechanical Systems (IEEE MEMS 2021), in press, 2021. (Top Conf., Oral)
- [18] W. Xu\*, X. Wang, X. Zhao, Z. Ke, and Y. K. Lee\*, "An Integrated CMOS Mems Gas Flow Sensor with Detection Limit Towards Micrometer Per Second," IEEE 33rd International Conference on Micro Electro Mechanical Systems (MEMS), Vancouver, Canada, pp. 200-203, 2020. ([Best Paper Award](#), only three articles were selected internationally)
- [19] W. Xu, M. Duan, M. Ahmed, S. Mohamad, A. Bermak, and Y. K. Lee, "A Low Cost Micro BTU Sensor System Fabricated by CMOS MEMS Technology", in The 19th International Conference on Solid-State Sensors, Actuators and Microsystems (Transducers), Kaohsiung, Taiwan, Jun 18-22, 2017, pp. 406-409. (Top Conf., Oral)
- [20] W. Xu, B. Gao, S. Ma, A. Zhang, Y. Chiu, and Y. K. Lee, "Low-cost Temperature-Compensated Thermoresistive Micro Calorimetric Flow (T2MCF) Sensor by Using 0.35 $\mu$ m CMOS MEMS Technology," IEEE 29th International Conference on Micro Electro Mechanical Systems (MEMS), Shanghai, China, Jan. 2016, pp. 189-192. (Top Conf., Oral)

### **Funding in Recent Five Years**

- [1] National Natural Science Foundation of China (62474115, 2025-2028, 480,000 RMB)
- [2] Independent Scientific Research Program of State Key Laboratory of Radio Frequency Heterogeneous Integration (Independent Scientific Research Program No. 2024013, 2024-2027, 150,000 RMB).
- [3] Natural Science Foundation of Guangdong Province (2024A1515030026, 2024-2026, 300,000 RMB)
- [4] Shenzhen Basic Research Key Project (JCYJ20220818095810023, 2022/11-2025/10, 2 Million RMB)
- [5] National Natural Science Foundation of China (52105582, 2022-2024, 300,000RMB)
- [6] Natural Science Foundation of Guangdong Province (2022A1515010894, 2022-

2024, 100,000 RMB)

[7] Natural Science Foundation of Guangdong Province (2020A1515011555, 2019-2022, 100,000 RMB)

[8] Ministry of Education Project (202011020030, 2021, 50,000 RMB)

[9] Open Funding of the State Key Laboratory (DMETKF2021016, 2020-2022, 80,000 RMB)

[10] Shenzhen Basic Research General Project (JCYJ20210324095210030, 2021-2024, 600,000 RMB)

[11] Shenzhen High-end Talent Start-up Project (827-000451, 2020-2022, 3 million RMB)

[12] Shenzhen University Young Teachers Fund (85304-211, 2018-2022, 200,000 RMB)

### **Opening**

Looking for Research Assistants and Postdoctoral Researchers in the field of MEMS Sensors. Interested candidates are invited to send their CVs to [weixu@szu.edu.cn](mailto:weixu@szu.edu.cn)