Pengcheng Zhao, PhD (Beihang University, BUAA)

zhaopc@buaa.edu.cn pczhao.cn (86) 13126822622 / (852) 51312272

HJ805, The Hong Kong Polytechnic University, Hong Kong

About me

- I am currently a Postdoctoral Fellow at the Hong Kong Polytechnic University (PolyU), collaborating with Prof. Jin Wei and Prof. Zhang Aping. My research interests focus on laser spectroscopy, fiber-optic sensors and devices. I've participated in 4 research grants, published 10 peer-reviewed papers such as *Nature Communications*, *Laser & Photonics Reviews*, and *Optics Letters*, and co-authored 3 national patents. I also serve as a reviewer for international journals such as *Sensors and Actuators A: Physical*. Throughout my academic career, I was the recipient of numerous national scholarships and awards, including "China's Top 10 Optical Breakthrough in 2020", and the Excellent Doctoral Thesis Award of Beijing as well as BUAA in 2023.

Employment History

04/2022 – now — **Postdoctoral Fellow** at Department of Electrical and Electronic Engineering, **PolyU**, Hong Kong, China.

07/2017 – 01/2021 — **Research Assistant** in Prof. Jin Wei group (PhD Joint Supervision) at Department of Electrical Engineering, **PolyU**, Hong Kong, China.

Education

09/2015 – 01/2022 — **PhD** in Engineering (after 09/2017) & Master study in Engineering (before 09/2017) (Supervisor: Prof. Shangchun Fan), School of Instrumentation and Optoelectronic Engineering, **BUAA**, China.
Thesis title: *Investigation on fiber-optic photothermal interferometry for high sensitivity gas detection.*

09/2011 – 07/2015 — **Bachelor** of Engineering, College of Instrumentation & Electrical Engineering, **Jilin University**, China.

Research Publications (Selected)

Journal Articles

1. **P. Zhao**, Y. Zhao, H. Bao, *et al.*, "Mode-phase-difference photothermal spectroscopy for gas detection with an anti-resonant hollow-core optical fiber," *Nature communications*, vol. 11, no. 1, pp. 1–8, 2020.
2. **P. Zhao**†, K. V. Krishnaiah†, L. Guo, *et al.*, "Ultraminiature optical fiber-tip 3d-microprinted photothermal interferometric gas sensors," *Laser & Photonics Reviews*, p. 202 301 285, 2024.
3. **P. Zhao***, H. L. Ho, S. Fan, and W. Jin*, "Evanescent wave lab-on-fiber for high sensitivity gas spectroscopy with wide dynamic range and long-term stability," *Laser & Photonics Reviews*, p. 2 200 972, 2023.
4. L. Guo, **P. Zhao***, H. L. Ho, *et al.*, "Pump-probe-alternating photothermal interferometry for two-component gas sensing," *Optics Letters*, vol. 48, no. 24, pp. 6440–6443, 2023.
5. **P. Zhao**, H. L. Ho, W. Jin*, S. Fan*, S. Gao, and Y. Wang, "Hollow-core fiber photothermal methane sensor with temperature compensation," *Optics Letters*, vol. 46, no. 11, pp. 2762–2765, 2021.
6. **P. Zhao**, H. L. Ho, W. Jin*, *et al.*, "Gas sensing with mode-phase-difference photothermal spectroscopy assisted by a long period grating in a dual-mode negative-curvature hollow-core optical fiber," *Optics Letters*, vol. 45, no. 20, pp. 5660–5663, 2020.

Conference Proceedings

1. **P. Zhao**†, K. V. Krishnaiah†, L. Guo, *et al.*, "High-sensitivity fiber-tip photothermal gas sensor based on a 3d μ-printed fabry-pérot microcavity," in *Optical Fiber Sensors*, Optica Publishing Group, 2023, Th5–2.
2. L. Guo, **P. Zhao***, H. L. Ho, *et al.*, "Two-component photothermal gas sensor with a pump-probe-alternating technique," in *Optical Fiber Sensors*, Optica Publishing Group, 2023, Tu3–16.
3. **P. Zhao**, S. Fan, H. L. Ho, and W. Jin*, "Microfiber evanescent-wave photothermal methane sensor with sub-ppm sensitivity," in *Optical Fiber Sensors*, Optica Publishing Group, 2022, Th3–5.
4. **P. Zhao***, H. L. Ho, W. Jin, *et al.*, "Lp01-lp11 mode conversion in a negative curvature hollow-core fiber by use of a long-period grating," in *Asia Communications and Photonics Conference*, Optica Publishing Group, 2020, M4A–118.
5. **P. Zhao***, Y. Zhao, H. Bao, *et al.*, "Ultrasensitive photothermal gas sensor with a dual-mode anti-resonant hollow-core fiber," in *Optical Fiber Sensors*, Optica Publishing Group, 2020, W3–7.

Project Experiences

04/2022 to present — **Optical Fiber Biomedical Sensing and Imaging Technologies** National Natural Science Foundation of China (NSFC) (K-ZGAV) (Participation).

04/2022 to 04/2024 — **PolyU Postdoc Matching Fund (PDF) Scheme** PolyU(1-W23B) (Technical Leader).

01/2019 to 12/2023 — **Microstructured hollow-core optical fiber multi-component trace gas analyzer** NSFC National Major Project for Research Instrument Development(61827820), HK$7m (Participation).

07/2017 to 10/2018 — **Research on Optical Fiber Angle Sensor Based on Graphene Diaphragm** Joint Supervision Scheme with the Chinese Mainland, Taiwan and Macao Universities(1-ZVG4), HK$180,600 (Technical Leader).

Awards and Achievements

2023
- **The Excellent Doctoral Thesis Award of Beijing**, Beijing Municipal Education Commission
- **The Best Doctoral Thesis Award of BUAA**, Beihang University

2022
- **The Best Doctoral Thesis Nomination Award of CSAA**, Chinese Society of Aeronautics and Astronautics

2021
- **China's Top 10 Optical Breakthroughs**, Chinese Laser Press
- **Top 10 Outstanding Graduate Students**, Beihang University
- **CASC Scholarship**, China Aerospace Science and Technology Corporation

2020
- **National scholarship for postgraduate student**, Ministry of Education and Finance of the People's Republic of China
- **First prize for "Tanghui Electronics" inspirational scholarship**, China Instrument and Control Society
- **Merit Student**, Beihang University
- **Second prize for AVIC scholarship**, Aviation Industry Corporation of China

Awards and Achievements (continued)

2018 **First prize for China Innovation & Entrepreneurship International Competition**, China Instrument and Control Society

Conference Talks

11/2023 **28th International Conference on Optical Fiber Sensors (OFS)**, Hamamatsu, Japan

08/2022 **27th OFS**, Virginia, United States (Online)

Teaching Experiences

2024 **New sensing technology**, Undergraduate course, Online
Chapter 10.3 Laser Photothermal Interferometric Fiber-optic Gas Sensing Technology, BUAA.

2023 **Sensor technology and applications**, Undergraduate course, Online
Chapter 6.11 Microstructure optical fiber gas sensor, BUAA.