ABOUT / CURRICULUM VITAE

Yuning Lei, Ph.D.

Research Associate in Microrobotics and Control Engineering at the University of Oldenburg, Germany.

I have been a Research Associate at the University of Oldenburg since April 2023. My research focuses on liquid-metal nanocharacterization, microassembly in SEM-FIB and nanorobotic structures.

I received my Ph.D. in Engineering Science from Université Bourgogne Franche-Comté in 2023, following doctoral research at FEMTO-ST Institute. I previously studied at the University of Orléans.

y.lei@uol.de Oldenburg, Germany **ORCID iD** 0000-0003-0711-4476

Academic record as of 12 November 2026.

Research & experience

April 2023 – present

Research Associate

University of Oldenburg · Oldenburg, Germany

- Microrobotics and Control Engineering, Department of Computing Science.
- Research project PI for LiCoVac (Liquid Metal Contact Angle Measurement in Vacuum).
- Planning and management of international collaborative research and staff exchanges (EU-HORIZON-MSCA, DAAD-PPP).

October 2022 – March 2023

Research Engineer (Ingénieur d'étude)

Université Bourgogne Franche-Comté · Besançon, France

- Département AS2M.

October 2019 – March 2023

Ph.D. Fellow

FEMTO-ST Institute · Besançon, France

- Silica origami fabrication, robotic microassembly, characterization and actuation at the tip of an optical fiber in SEM.
- Advisors: Cédric Clévy, Jean-Yves Rauch and Philippe Lutz.
- Contributions to the COLAMIR and DyNaBot collaborative research projects.

October 2019 – March 2023

Teaching Assistant

University of Franche-Comté · Besançon, France

- UFR de sciences et techniques.

March – September 2019

Research Assistant

PRISME Laboratory · Orléans, France

- Data assimilation of parallel turbulent flows from experimental local measurements, using linearized Navier–Stokes equations and Kalman-filter-based feedback control.

March 2016 – September 2017

Research Assistant

WILO Intec · Aubigny-sur-Nère, France

- Hydraulic testing of centrifugal pumps, measurement uncertainty analysis and development of an uncertainty-analysis tool.

Education

October 2019 – March 2023

Ph.D. in Engineering Science

Université Bourgogne Franche-Comté · Besançon, France

- Dissertation: Nanorobotic Origami Unfolded at the Tip of Optical Fiber.
- Defended on 24 March 2023 in Besançon.

September 2017 – August 2019

M.Sc. in Mechatronics, Autonomous, Robotics and Signal

University of Orléans · Orléans, France

- Robotic vision, visual servoing, mobile-robot control, complex-system modeling and feedback control.

September 2016 – August 2017

B.Sc. in Expertise Environmental Measurements

IUT de Bourges, University of Orléans · Bourges, France

- Environmental monitoring, physicochemical analysis, chromatography and spectrometry.

September 2014 – August 2016

University Technology Degree (DUT) in Physical Measurements

IUT de Bourges, University of Orléans · Bourges, France

September 2013 – June 2014

First-year studies in Computer Science

IUT de Lannion, University of Rennes · Lannion, France

- Completed the first year before switching to Physical Measurements.

September 2012 – August 2013

University Diploma (DU) — Preparation for Scientific and Technological Training

IUT de Limoges, University of Limoges · Limoges, France

- Diplôme universitaire de préparation aux formations scientifiques et technologiques.

Lectures & tutorials

Spring 2024–2026

Force Sensing (Microrobotics I)

AMiR, University of Oldenburg

Lecture · 1.5 h × 1 session

Spring 2024–2026

Scanning Probe Microscope (Microrobotics II)

AMiR, University of Oldenburg

Lecture · 1.5 h × 1 session

Spring 2024–2026

AFM in SEM (Microrobotics II)

AMiR, University of Oldenburg

Lecture · 1.5 h × 1 session

Spring 2023

Automated Nanohandling (Microrobotics II)

AMiR, University of Oldenburg

Lectures · 1.5 h × 2 sessions

Fall 2021 & 2022

Digital Control

Master MIR, UFR-ST

Tutorials · 4 h × 5 sessions

Fall 2020 & 2021

Automation and Control

ISIFC, UFC

Tutorials · 4 h × 8 sessions

Fall 2020 & 2021

Servo-control with MATLAB and Simulink

Master SAPIAA, UFR-ST

Tutorials · 1.5 h × 4 sessions

Technical skills

SEM / FIB	Zeiss Auriga 60, Thermo Fisher APREO S, FEI Helios NanoLab, FEI Quanta 600 and Tescan Lyra2.
Microfabrication	Lithography, physical vapor deposition (PVD), wet etching and plasma etching (RIE/DRIE).
Characterization	Nanoindentation, interferometry and profilometry.
Robotics & computing	MATLAB/Simulink, LabVIEW, ROS, V-REP; C/C++, Java, Python, MATLAB and Visual Basic.
Design & simulation	SolidWorks, Creo, AutoCAD/Inventor, Blender, Inkscape, Alphacam; COMSOL and ANSYS.

Service & memberships

Since November 2020

MARSS Community

Publicity Chair and Program Committee member

Since February 2021

IEEE Robotics and Automation Society

Member

Since November 2020

SAGIP

Member

Since September 2017

GDR Robotique

Member

Since November 2020

GDR MACS

Member

Honors & fellowships

September 2022

“Micron d’Or” Award

Salon Micronora 2022, Association Micronora

March 2022

3rd Award — Photo Contest

CAZAC Day 2022, Carl Zeiss Application Community

July 2020

First Prize — “Breakthrough in Science” Award

Ph.D. Student Poster Competition, FEMTO-ST Institute

October 2019 – October 2022

French Government Doctoral Fellowship (36 months)

Ministère de l’Enseignement supérieur, de la Recherche et de l’Innovation

CNU qualification

March 2026

CNU qualification, Section 61

Qualification for Associate Professor positions in French universities.

Languages

Chinese	Native
French	Advanced
English	B1; TOEIC 720/990 (December 2017)
German	Elementary

Publications

Reproducible fabrication of liquid metal droplets via electromigration and FIB sputtering in SEM

Yuning Lei; James L. Mead; Waldemar Klauser; Sergej Fatikow

Journal of Micro and Bio Robotics, 21, article 14, 2025.

https://doi.org/10.1007/s12213-025-00192-5

Reproducible Fabrication of Liquid Metal Droplet with FIB Sputtering for Contact Angle Measurement in SEM

Yuning Lei; Sergej Fatikow

2024 International Conference on Manipulation, Automation and Robotics at Small Scales (MARSS), pp. 1–6, 2024.

https://doi.org/10.1109/MARSS61851.2024.10612731

High resolution surface contact temperature measurements by means of micro-thermocouples in vacuum conditions

L. Thiery; J.Y. Rauch; **Y. Lei**

International Journal of Thermal Sciences, 195, article 108663, 2024.

https://doi.org/10.1016/j.ijthermalsci.2023.108663

Origami nanorobotique déployé en bout de fibre

Yuning Lei

Ph.D. thesis, Université Bourgogne Franche-Comté, 2023.

https://doi.org/10.70675/dadb617bzbb91z4f8dza2c3z91bb140d6adc

Large-Workspace Polyarticulated Micro-Structures Based-On Folded Silica for Tethered Nanorobotics

Yuning Lei; Cédric Clévy; Jean-Yves Rauch; Philippe Lutz

IEEE Robotics and Automation Letters, 7(1), pp. 88–95, 2022.

https://doi.org/10.1109/LRA.2021.3118470

Conference contributions

Nanorobotics Polyarticulated Structure with Integrated Actuator at Tapered Optical Fiber Tip

Yuning Lei; Cédric Clévy; Jean-Yves Rauch; Philippe Lutz

MARSS 2022 · Toronto, Canada

Listed in the official technical programme for 28 July 2022, in the Design and Fabrication (IV) session.