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RESEARCH POSITIONS

Postdoc, Optoelectronics, *Tsinghua University*, Beijing, China 04/'24 – Now
Doctorate researcher, Optomechanics, *CNRS-IEMN*, Paris/Lille, France 2020 – 2024
R.A., Materials optics, *Tsinghua University TBSI*, Shenzhen, China 2018 – 2020
Advisor: Bilu Liu, Baofu Ding
Visiting grad student, *University of California*, San Diego, USA 03/2017

EDUCATION

Ph.D. in Microsystems sensors, *Universite de Lille*, Lille, France 2020 – 2024
Thesis title: *Analysis of device properties of silicon nitride membrane nanoelectromechanical resonators for future optomechanical thermometry applications*
Advisor: Didier Théron, Xin Zhou
M.Eng. in Electronics, *Xi'an Jiaotong University*, Xi'an, China 2015 – 2018
Advisor: Wenhui Yi
B.Sc. in Optics, *Harbin University of Sci and Tech*, Harbin, China 2010 – 2014

RESEARCH INTERESTS

His interests focus on opto-electronics sensors, including

- Advanced manufacturing (nano-scale device model, LayoutEditor design)
- Nano-electronics device modelling (theory, FEM simulation analysis)
- Optoelectronics, optomechanics, imaging, neuronal devices and computation

AWARDS & HONORS

Shuimu postdoctoral fellowship, Tsinghua University 2024 – 2026
Doctoral scholarship, Centre National de la Recherche Scientifique 2020 – 2024
Academic scholarship, Xi'an Jiaotong University 2015 – 2018
Excellent graduate student, Xi'an Jiaotong University 11/2016
Outstanding Young Volunteer Award, Xi'an Jiaotong University 11/2016
3rd award (province) of National Undergraduate Mathematical Contest, Chinese Mathematical Society (CMS) 11/2013

PRESENTATIONS & CONFERENCES

NEMS talk (Invited) at Beijing Academy of Quantum Info Sciences	01/2025
Nano-optoelectronics group meeting at Tsinghua University, Beijing	09/2024
Department EE talk (Invited) at Xi'an Jiaotong University, Xi'an	01/2024
NEMS for interface science (Invited) at EPFL, Lausanne, Switzerland	12/2023
Global Young Scholars forum (Invited) at CUHK-Shenzhen, Shenzhen	12/2023
Red wine & Cheese lunch free talk at University of Bordeaux, France	10/2022
Microsystems group meeting at CNRS-IEMN, Lille/Paris, France	12/2021
Optics group meeting at Tsinghua University TBSI, Shenzhen	2018 – 2020
Molecular imaging group meeting at Peking University, Beijing	05/2018
Biomechanics group meeting at Xi'an Jiaotong University, Xi'an	04/2017
Juice & Snacks lunch free talk at University of California, San Diego	02/2017
Electronics group meeting at Xi'an Jiaotong University, Xi'an	2015 – 2018

Condensed Matter Physics seminar (Invited) at Peking University	11/2024
Quantum Physics IAS workshop (virtual meeting) at Princeton	08/2024
Frontiers of Nanomechanical Systems (FNS), Delft, The Netherlands	06/2023
LIMMS-IEMN workshop on NEMS/MEMS (virtual meeting)	12/2022
Technologies for Neuroengineering (virtual Nature conferences)	10/2022
Nanomechanics and optomechanics seminar, Bordeaux, France	10/2022

PUBLICATIONS

First-author and essential contribution papers:

Imaging nanomechanical vibrations and manipulating parametric mode coupling via scanning microwave microscopy
Hao Xu, Srisaran Venkatachalam, Toky-Harrison Rabenimanana, Christophe Boyaval, Sophie Eliet, Flavie Braud, Eddy Collin, Didier Theron, Xin Zhou*
(* corresponding author)
2024, ***Nano Letters***, 24 (28), 8550–8557.

Fabrication of silicon nitride membrane nanoelectromechanical resonator
Hao Xu, Srisaran Venkatachalam, Christophe Boyaval, Pascal Tilmant, Francois Vaurette, Yves Deblock, Didier Theron, Xin Zhou*
2023, ***Microelectronic Engineering***, 280 (2023) 112064.

Capacitively coupled distinct mechanical resonators for room temperature phonon-cavity electromechanics
Alok Pokharel, Hao Xu, Srisaran Venkatachalam, Eddy Collin, Xin Zhou*
2022, ***Nano Letters***, 22 (18), 7351-7357.

Magnetically tunable and stable deep-ultraviolet birefringent optics using two-dimensional hexagonal boron nitride
Hao Xu, Baofu Ding*, Youan Xu, Ziyang Huang, Dahai Wei, Shaohua Chen, Tianshu Lan, Yikun Pan, Hui-Ming Cheng* and Bilu Liu*
(* corresponding author)
2022, ***Nature Nanotechnology***, 17, 1091-1096.

PUBLICATIONS

A 2D material-based transparent hydrogel with engineerable interference colours
Baofu Ding, Pengyuan Zeng, Ziyang Huang, Lixin Dai, Tianshu Lan, Hao Xu, Yikun Pan, Yuting Luo, Qiangmin Yu, Hui-Ming Cheng and Bilu Liu*
2022, ***Nature Communications***, 13(1), 1-8.

High-q silicon nitride drum resonators strongly coupled to gates
Xin Zhou*, Srisaran Venkatachalam, Ronghua Zhou, Hao Xu, Alok Pokharel, Andrew Fefferman, Mohammed Zaknoune, Eddy Collin
2021, ***Nano Letters***, 21(13), 5738-5744.

Obtaining high mechanical performance silk fibers by feeding purified carbon nanotube/lignosulfonate composite to silkworms
Hao Xu, Wenhui Yi*, Dongfan Li, Ping Zhang, Sweejiang Yoo, Lei Bai, Jin Hou, and Xun Hou
(* corresponding author)
2019, ***RSC Advances***, 9(7), 3558-3569.

Supramolecular interactions of poly [(9, 9-dioctylfluorenyl-2, 7-diyl)-co-thiophene] with single-walled carbon nanotubes
Ping Zhang, Wenhui Yi*, Hao Xu, Chao Gao, Jin Hou, Weiqiu Jin, Yue Lei, and Xun Hou
2018, ***Nanotechnology Reviews***, 7(6), 487-495.

Other contribution proceedings:

Scanning microwave microscopy for investigations of mechanical vibrations and mode coupling
Xin Zhou*, Hao Xu, Didier Theron, Sophie Eliet, Christophe Boyaval, Pascal Tilmant, Francois Vaurette, Dmitri Yarekha, Jeanmarcel Houpin
2023, *Frontiers of Nanomechanical Systems (FNS) workshop*, Delft, The Netherlands

Scanning microwave microscopy for detecting mechanical vibrations of silicon nitride membranes
Hao Xu, Didier Theron, Sophie Eliet, Xin Zhou*
2022, *GDR seminar on Optomechanics and Nanomechanics*, Bordeaux, France

TECHNICAL SKILLS

Developer Languages: Python (Matplotlib, Numpy, Pandas)
Developer Tools: COMSOL, Mathematica (Maple), Origin, LaTeX (Overleaf), Github etc
Hobbies: Triathlon (amateur Level III, CTSA), Full-Marathon (amateur Level II, CAA), semi-Marathon (amateur Level I, CAA), Kayaking, Guitar playing, Sketch painting