GUOFAN ZHANG | CURRICULUM VITAE

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Duke University
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EDUCATION AND QUALIFICATIONS

Duke University **Aug. 2024 – Present**
Master student, Medical Physics

Yunnan University (YNU) **Sep. 2023 – Jul. 2024**
Joint Undergraduate student, Materials Science and Engineering, Bachelor of Engineering
GPA: 3.62/4.00 General GPA: 90.05/100 (ranked 4th in school)

GAP Year for medical reason

Southern University of Science and Technology (SUSTech) **Sep. 2020 – Jul. 2022**
GPA: 3.55/4.00

Yunnan University (YNU) **Sep. 2019 – Jun. 2020**
Academic Scholarship & Honors:
Provincial Outstanding Graduates (≈0.5%) (2023)
China National Scholarship for 2021-2022 Academic Year (≈0.2%) (2022)
University First-class Scholarship & Outstanding Student by YNU (≈5%) (2022)
University First-class Scholarship & Outstanding Student by YNU (≈5%) (2021)
University Second-class Scholarship & Outstanding Student by YNU (≈9%) (2020)

PUBLICATIONS

Journal Publication

Guofan Zhang†*, Tan Zhang, Fang-Fang Yin*, A roadmap for the implementation of 3D-printed organs in healthcare, Device, 2025, 100847, https://doi.org/10.1016/j.device.2025.100847. (First and corresponding author)

Shaoyong Cai†, **Guofan Zhang**†, Lei Wang, Tianlan Jian, Jiatong Xu, Fengyu Su*, Yanqing Tian*, Ratiometric fluorescent sensor based on TPU-PVP coaxial nanofibers for monitoring trace ammonia in breath, *Materials Today Chemistry*, Volume 26,2022,101148, https://doi.org/10.1016/j.mtchem.2022.101148. (Co-First author)

Shaoyong Cai†, Guangjie Song†, **Guofan Zhang**, Lei Wang, Tianlan Jian, Jiatong Xu, Fengyu Su*, Yanqing Tian*, A multicolor fluorescent sensor array based on curcumin and its analogs as a shrimp freshness indicator, *Sensors and Actuators B: Chemical,* Volume 367, 2022, 132153, https://doi.org/10.1016/j.snb.2022.132153.(Secondary author)

He Zhang†, Fangyuan Sun, Ge Cao, Dongyan Zhou, **Guofan Zhang**, Fengyu Su*, Yanqing Tian*, Yanhong Tian*, Bifunctional flexible electrochromic supercapacitors based on silver nanowires flexible transparent electrodes, *International Journal of Extreme Manuf*acturing Volume 5 2023, https://doi.org/10.1088/2631 -7990/aca638. (Co-author)

Ge Cao†, Jiatong Xu†, Shaoyong Cai, Yonghao Chen, He Zhang, **Guofan Zhang**, Yanqing Tian*, Highly conductive and dispersible PANI microtubes prepared in the presence of methyl orange, *ACS applied polymer materials*, https://doi.org/10.1021/acsapm.2c01674. (Co-author)

Min Shen†, Hongtian Liu†, Tingting Pan*, Juewei Ning, Dongyan Zhou, Guangjie Song, Yuguo Wang, Shaoyong Cai, Xi Xia, **Guofan Zhang**, Fengyu Su*, Yanqing Tian*, Crosslinked PVA electrospinning nanofibrous film as a new platform for the design of K^+ sensor, *Sensors and Actuators B: Chemica*l, Volume 380, 2023, 133317, https://doi.org/10.1016/j.snb.2023.133317. (Co-author)

Guofan Zhang†, Xuanzhi Wang, Qirui Sun, Hanchi Zhao, Jiaao Han, Rui Liu*, A Versatile Method to Accurately Predicting Electronic Absorption Spectra of Tetrapyrrole Macrocycles. https://doi.org/10.26434/chemrxiv-2025-9gsp2 (Submitting to *J. Am. Chem. Soc.*)

Patent

Yanqing Tian, Shaoyong Cai, **Guofan Zhang**, Ziqiang Wang. 2022. A kind of curcumin derivative, double emission ratio fluorescence sensor and preparation method and application thereof. CN114634523 A, filed June 2022. Issued Patent.
Yanqing Tian, Shaoyong Cai, Guangjie Song, **Guofan Zhang**. 2021. A kind of fluorescent ink and its preparation method and application. CN 114031977 A, filed November 2021. Issued Patent.

RESEARCH EXPERIENCE

3D Printing Phantom **Dr. Fang-Fang Yin's Lab at DKU**
Main Researcher **Aug 2024 – Present**
Preparation of lung phantoms that can simulate human breathing movements through 3D printing for dose verification of radiotherapy:

- Study the characteristics of different 3D printing methods
- Prepare polymers suitable for light-curing 3D printers
- Use the printed phantoms for radiotherapy dose verification

Predicting Molecular UV-Vis Spectra Using Artificial Intelligence **Dr. Rui Liu's Lab at DKU**
Main Researcher **Jan 2025 – Present**
Developed a machine learning framework to predict molecular UV-Vis absorption spectra from SMILES strings using the Chemprop-based neural network architecture:

- Integrated 3D conformer generation (RDKit and DFT-optimized) and compared their influence on spectral accuracy via dynamic time warping (DTW) and RMSE metrics.
- Automated hyperparameter tuning using Bayesian optimization to maximize spectral prediction performance (SRMSE metric).
- Currently exploring the use of Kolmogorov-Arnold Networks (KANs) and molecular embeddings for zero-shot prediction of absorption features, aiming to scale to broader compound libraries.

Curcumin and its derivatives for breath ammonia detection **Dr. Yanqing Tian's Lab at SUSTech**
Main Researcher **May 2021 – Jul 2022**
Design and experiments studies for the modification and optimization of curcumin (CUR):

- Preparation of curcumin boron fluoride derivatives-BFC and exploration of its photophysical properties;
- Construction of ratiometric trace ammonia fluorescent probe by BFC to fluorescein (FL);
- Preparation of core-shell nanofibers with outer layer Thermoplastic polyurethane (TPU) attached FL and inner layer Polyvidone (PVP) attached BFC by coaxial electrospinning;
- Validation of Probe for Detecting Helicobacter Pylori Patients' Feasibility.

A multicolor fluorescent sensor array based on curcumin **Dr. Yanqing Tian's Lab at SUSTech**
Assistant Researcher **May 2020 – Apr 2021**
Preparation of sensing labels which could simply construct a fluorescent sensor array with high-contrast colour change for real-time and visual monitoring shrimp freshness:

- Fabrication of fluorescent sensing label;
- Photophysical properties of Cur and its analogs;
- Sensing properties of the labels and Monitoring of shrimp freshness.

CONFERENCE

Poster for the 9th International Symposium on Space Radiation Research and Particle Radiotherapy Suzhou 2024
Poster for 23rd National High-tech Ceramics Academic Annual Conference Hangzhou 2024
Oral Abstract for 22nd International Symposium on Organometallic Chemistry Kyoto 2025

HONOURS AND AWARDS

First Prize in the micro photography contest by Dept. of MAT of Sci & Eng. at SUSTech Dec 2021
Second Prize of The Third Metallographic Skill Competition at SUSTech May 2022
Third Prize & Individual Award in the micro photography contest by SCH of MAT and ENG at YNU Aug 2022
Invited Report of Chinese Materials Conference 2025 Jul 2025

ACTIVITIES

Volunteer from Volunteer Union of SUSTech (33.5 hours accumulated) Sep 2020-present
Volunteer leader of the 11th Guangdong University Student Material Innovation Competition Nov 2021-Jan 2022
Teaching assistant for CHEM 110 and CHEM 150 Dec 2024-May 2025

SKILLS

Basic Experimental Techniques: Spectro fluorophotometer, Ultraviolet–visible spectroscopy, SEM, EDS, XRD, FTIR, NMR etc.

Computer Skills: Origin, Mestrenova, MDI Jade, ChemDraw, SOLIDWORKS, Linux, MATLAB, Python etc.