

Zihao Deng

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EDUCATION

South China University of Technology

Master of Mechanical Engineering

Guangzhou, China

09/2022 - 07/2025

- **GPA:** 85.62/100 (Supervisor: Prof. Zongtao Li, Prof. Xinrui Ding)
- **Research Interests:** Optical Sensing Technology; Smart Manufacturing; Electrospun Perovskite Nanofibers

IELTS: 7.0 (6.0+)

South China University of Technology

Bachelor of Mechanical Engineering

Guangzhou, China

09/2018 – 07/2022

- **GPA:** 80.49/100
- **Awards:** Outstanding Graduates Award (Top 2%); Second-class Scholarship (Top 6%, 2020-2021); Progress Award (Top 15%, 2019-2020)

PUBLICATIONS

- [1] **Zihao Deng**, Jiayong Qiu, Jiasheng Li, Zongtao Li (Supervisor), Xinrui Ding (Supervisor). Improving the light extraction efficiency of white-light perovskite light-emitting diodes based on quantum dot nanowires [J]. *Optics Letters*, 2025, 50(3): 904-907.
- [2] Xinrui Ding (Supervisor), **Zihao Deng**, Jiasheng Li, Ruining Qian, Bowen Duan, Zongtao Li (Supervisor). Improving Edge Quality of Liquid Crystal Display 3D Printing using Local Dimming method [J]. *IEEE Photonics Journal*, 2025, 17(1): 2500208.
- [3] Jiexin Li*, Xinrui Ding* (Supervisor), Yuzhi Shi*, Jiasheng Li, **Zihao Deng**, Jiayong Qiu, Jinhui Zhang, Wei Luo, Guanwei Liang, Long Zhao, Yong Tang, Aiqun Liu, Zongtao Li (Supervisor). Bioinspired ultrathin photonic colour convertors for highly efficient micro-light-emitting diodes [J]. *FlexMat*, 2024, 1(3): 258-268.
- [4] Zongtao Li (Supervisor), Jiayong Qiu, Jiasheng Li, Qiliang Zhao, Ruixiang Qian, **Zihao Deng**. Manufacturing a high-transmittance quantum-dot pixel frame using magnetic field and vibration field composite stamping[J]. *Journal of Materials Processing Technology*, 2023, 313: 117873.
- [5] Zongtao Li (Supervisor), Jiexin Li, **Zihao Deng**, Yihua Qiu, Jiasheng Li, Yikai Yuan, Liang Xu, Xinrui Ding (Supervisor). Solid-Liquid Hybrid-State Organic Lens for Highly Efficient Deep Ultraviolet Light-Emitting Diodes[J]. *Advanced Photonics Research*, 2022, 3(5): 2100211.
- [6] Zongtao Li (Supervisor), Jiexin Li, **Zihao Deng**, Jiayong Liang, Jiasheng Li. Unravelling the origin of low optical efficiency for quantum dot white light-emitting diodes from the perspective of aggregation-induced scattering effect[J]. *IEEE Transactions on Electron Devices*, 2021, 68(4): 1738-1745.
- [7] Zongtao Li (Supervisor), Jiexin Li, Jiasheng Li, **Zihao Deng**, Yuehua Deng. Scattering effect on optical performance of quantum dot white light-emitting diodes incorporating SiO₂ nanoparticles[J]. *IEEE Journal of Quantum Electronics*, 2020, 56(3): 1-9.
- [8] **Zihao Deng**, Jiexin Li, Jiayong Liang, Jiayi Li, Jiasheng Li, Xinrui Ding (Supervisor), Zongtao Li (Supervisor). Solid-liquid mixing-state organic lenses for deep-ultraviolet light-emitting diodes to enhance the light-extraction efficiency[C]//*2021 22nd International Conference on Electronic Packaging Technology (ICEPT)*. IEEE, 2021: 1-4.
- [9] Jiayong Liang, Jiexin Li, **Zihao Deng**, Yihua Qiu, Zongtao Li (Supervisor), Jiasheng Li. Enhanced Optical Performance and Thermal Stability of Quantum Dot Converters for Laser Source[C]//*2021 22nd International Conference on Electronic Packaging Technology (ICEPT)*. IEEE, 2021: 1-4.

INTERNSHIP

Prospective Technology for LED Development

Guangdong Province Key Laboratory of Semiconductor Micro Display Enterprises, Foshan Nationstar Optoelectronics Company Ltd

Foshan, China

07/2023 – 07/2024

- Optimized the optical lens for wide-angle Package on Board (POB) LEDs, resulting in an increase of the light emission angle beyond 30 degrees.
- Analyzed the impact of geometric structure and packaging layer size on the optical performance of LEDs in a certain Huawei project, providing theoretical support for the optimization process of LED devices.
- Formulated comprehensive optical simulation protocols to guide engineers in employing pertinent software tools for theoretical analysis and the optimization of structural designs.
- Conducted a thermal analysis to investigate the reason of invalid gold wires in a specific automotive-LED, and a feasible solution at the structural level without additional cost was provided.

RESEARCH EXPERIENCE

Research of Fluorescent Fiber-Based Multidimensional Optical Waveguide Bending Sensor

Guangzhou, China

National-Local Joint Engineering Research Center for the Development of Semiconductor Display and Optical Communication Devices, South China University of Technology

07/2023 – Present

- Developed a multi-dimensional optical waveguide bending sensor with an air-gap structure, achieving 0.0811 dB/° sensitivity and ~130 ms response via refractive index modulation and triple-wavelength fluorescence conversion.
- Fabricated wavelength-tunable CsPbX₃-PVDF fluorescent converters via optimized the manufacturing process - electrospinning, enabling multi-dimensional signal generation through bandgap engineering.
- Achieved 99.81% multi-dimensional bending recognition accuracy (angle/direction) using a random forest algorithm, validated by 1000-cycle stability tests and optomechanical characterization.

High Resolution Micro Display Manufacturing Technology

Guangzhou, China

Research Center for High-Performance Manufacturing of Functional Structures and Devices, South China University of Technology

03/2021 – Present

- Proposed a magnetic-vibration composite stamping process to prepare a high-aspect-ratio and high-transmittance quantum dot (QD) pixel frame, which led to a 4.5-fold increase in the maximum photoluminescence intensity of pixelated QD converter.
- Assembled micro- and nanoscale waveguide structures through inkjet printing and vacuum deposition, obtaining a high-resolution color converter with optical absorption heterogeneity that can be used for high optical efficiency optoelectronic devices.
- Contributed to a publication^[4] in *FlexMat* and *Journal of Materials Processing Technology* and a conference paper^[9] in 2021 22nd International Conference on Electronic Packaging Technology (ICEPT).

Improvement of Optical Performance of Deep Ultraviolet LED devices

Guangzhou, China

Research Center for High-Performance Manufacturing of Functional Structures and Devices, South China University of Technology

09/2020 - Present

- Developed solid-liquid hybrid state organic lenses used for deep ultraviolet LEDs whose crossed-link network guarantee a high transmittance rate and excellent deep-UV resistance, achieving a 52.5% enhancement in radiant power compared to conventional quartz lens.
- Proposed the utilization of local dimming method in conjunction with free-form lenses to improve the inherent light leakage issue in liquid crystal displays (LCDs), enhancing the forming accuracy by up to 81.56% of UV-photocuring 3D printing process.
- Contributed to a publication^[5] in *IEEE Photonics Journal* and *Advanced Photonic Research* and a conference paper^[8] in 2021 22nd International Conference on Electronic Packaging Technology (ICEPT).

Optical Effects and Mechanisms related to Fluorescent Material

Guangzhou, China

National-Local Joint Engineering Research Center for the Development of Semiconductor Display and Optical Communication Devices, South China University of Technology

04/2020 – Present

- Proposed an optical absorption heterogeneity strategy to boost the photoluminescence intensity of QD thin films at high excitation state, a record-high luminous efficiency per unit thickness of 1600 lm W⁻¹mm⁻¹ was achieved.
- Introduced SiO₂ particles with scattering effect, leading to an increased utilization of excitation light which improved the conversion energy of quantum dots, and the luminous efficiency of LED packaging with hemispherical lenses was raised by 11.08%.
- Contributed to a publication^[6] in *FlexMat* and *IEEE TRANSACTIONS ON ELECTRON DEVICES* and a publication^[7] in *IEEE JOURNAL OF QUANTUM ELECTRONICS*.

AWARDS AND HONORS

- 2nd prize of 18th South China University of Technology “Challenge Cup”
- 2022 Outstanding Graduates Award of South China University of Technology
- 2022 Outstanding individual in social practice
- 2021 Second-class scholarship
- 1st prize of 16th Guangdong “Challenge Cup”
- 2020 Progress award scholarship