

ZHONGLIANG ZHOU

+86 15528225361 ◇ Zhongliangzhou1997@outlook.com

EDUCATION

Harbin Institute of Technology (HIT) China MEng (Expected 2021) in Electromagnetic Field and Wireless Technology GPA: 80/100	2019.09 - present
University of Electronic Science and Technology of China (UESTC) BEng in Biomedical Engineering GPA:80.78/100	2015.09 - 2019.06
The Beijing Genomics Institute Exchange Student in BGI Research Institute GPA:84.70/100	2018.03 - 2018.07

PUBLICATIONS

1. **Zhongliang Zhou**[‡], Cong Wang[‡], Luqman Ali, Keun-Woo Lee, Zhao Yao*, and Ho-Kun Sung*, “Performance-enhanced Vertical LED using Laser Irradiation Treatment to Control Wafer-level n-GaN Protrusion Arrays”, Materials Science in Semiconductor Processing.
2. Cong Wang[‡], **Zhongliang Zhou**[‡], and Meng Zhao*, “Multilayer SiNx Passivated Al₂O₃ Gate Dielectric Featuring a Robust Interface for Ultralong-Lifetime AlGaIn/GaN HEMT”, Applied Physics Letters (Under review).
3. **Zhongliang Zhou**, Cong Wang*, Meng Zhao, and Ali Luqman, “Programmable DGS Resonator for Ultra-High Q-Factor Thickness Detection Microwave Sensor”, Microwave and Optical Technology Letters (under review).
4. Ho-Kun Sung, Cong Wang*, Meng Zhao*, Alok Kumar, Guo-Feng Yan, Cheng-Peng Jiang, **Zhongliang Zhou**, and Dan-Qing Zou, “Wafer-scale Fabrication and Assembly Method of Multichannel Microelectrode Arrays for ECoG Application”, Biomedical Microdevices (Under review)
5. Alok Kumar, Cong Wang*, Fan-Yi Meng, Jun-Ge Liang*, Bing-Fang Xie, **Zhongliang Zhou**, Meng Zhao, and Nam-Young Kim, “Design Analysis of Aerosol Deposited BaTiO₃ Film based on Interdigital Capacitor and Squared Spiral Capacitor for Humidity Sensing Application” Analytica Chemical Acta (Under review).
6. Nan Qiu, Wei-Yi Ma, Xin Fan, You-Jin Zhang, Yi Li, Yue-Ning Yan, **Zhongliang Zhou**, Fali Li, Dian-Kun Gong*, and De-Zhong Yao*, “Rapid Improvement in Visual Selective Attention Related to Action Video Gaming Experience”, Frontiers in Human Neuroscience.

[‡] means first and second authors contributed equally to this work. * means corresponding author.

RESEARCH EXPERIENCE

<i>Supervisor: Cong Wang Professor Institute: Advanced Material and Nanotechnology Lab, HIT</i> Intelligent Algorithm Applied for Microwave Sensor Design	2019.08 - 2020.06
<ul style="list-style-type: none">• Designed a novel high-quality factor optimized microwave resonator with programmable defective ground structure (DGS) based on Adaptive Genetic Algorithm (AGA).• Combined conventional Couple Split-Square Resonator (CSRR) with DGS to obtain maximum Q-factor and ultra-high sensitivity.• Applied AGA to achieve faster convergence with fewer iterations compared with conventional genetic algorithm.• Obtained a high sensitivity microwave thickness sensor which could be used in micron-sized instrument measurement.• A paper has been submitted and is currently under review (as shown in PUBLICATIONS 3).	
Performance-Enhanced Vertical LED Using Laser Irradiation Treatment to Control Wafer-Level N-GaN Protrusion Arrays	2019.08 - 2020.04
<ul style="list-style-type: none">• Proposed a controllable, mask-free, and wafer-level surface texturing method, which is applied to n-GaN protrusion array using laser irradiation treatment targeting to achieve high-performance vertical light-emitting diodes.• Modified a portion of the n-GaN epitaxial film with optimized laser irradiation conditions to generate an appropriate morphological structure to get high-performance LEDs.• Explored the impact of laser lift-off (LLO) on high output power of Vertical LED and analyzed the in-depth mechanism.• Set multiple controlled process conditions of peeling the n-GaN from the epitaxial film by irradiation to get optimum parameters.• Increased the light output power up to 47.8% at an injection current of 350 mA compared with the conventional vertical LED and reached the standards of industrial grade which could be expected to save costs in mass production.• A paper has been published (as shown in PUBLICATIONS 1).	

Multilayer SiNx Passivated Al₂O₃ Gate Dielectric Featuring a Robust Interface for Long Lifetime AlGaIn/GaN HEMT

2019.12 - 2020.06

- Designed a multilayer SiNx passivation-based robust and high-reliability interface for effective suppression of current collapse and reduction of leakage current in AlGaIn/GaN heterostructure..
- Controlled various kind of chemical vapor deposition-grown multilayer SiNx to minimize the off-state leakage current.
- Achieved a very long operation lifetime HEMT (125 °C and 150 °C to 2.019×10^{10} h and 2.204×10^8 h) for high-power applications based on the accelerated three-temperature life test.
- A paper has been submitted and is currently under review (as shown in PUBLICATIONS 2).

Aerosol Deposited BaTiO₃ Film Based Interdigital Capacitor and Squared Spiral Capacitor for Humidity Sensing Application

2019.08 - present

- Designed highly sensitive aerosol deposited BaTiO₃ film based inter-digital capacitors (IDCs), and a squared spiral capacitor (SSC) used for humidity sensing application.
- Set up a stable multi-parameter (temperature, ultraviolet light) humidity or volatile organic compounds (VOC) test chamber.
- A paper has been submitted and is currently under review (as shown in PUBLICATIONS 5).

Wafer-scale Fabrication and Assembly Method of Multichannel Microelectrode Arrays for ECoG Application

2019.08 - present

- Designed high density electrocorticography (ECoG) based microelectrode arrays (MEAs) to timely record the neural activities to provide the fundamental understanding in neuroscience and biomedical engineering.
- Applied surface-mounted fabricated MEAs on well packaged Printed Circuit Boards (PCBs) via slot-type connector.
- Provided step-by-step fabrication technology, assembly method, and measurement process, which could be beneficial for the researchers that are still facing potential wafer-scale fabrication issues of MEAs.
- A paper has been submitted and is currently under review (as shown in PUBLICATIONS 4).

Supervisor: Xu-Min DING Professor Institute: Microwave metasurface lab, Harbin Institute of Technology

Computational Metasurface Design Based on Deep Learning

2020.01 - present

- Build a multilayer neural network based on Pytorch to simulate metasurface transmission processing.
- Formulated incident function form to achieve integral or differential, when across metasurface.

Supervisor: Supervisor: Dian-Kun Gong Institute: Key laboratory of neuroinformatic, ministry of education, UESTC

Rapid Improvement in Visual Selective Attention Related to Action Video Gaming Experience

2016.07-2017.09

- Figured out whether cognitive and neural plasticity was observable after a brief action video game session.
- Designed an integrated mini program to preprocess raw EEG data..
- Analyzed EEG data during game time based on different types of people (ordinary or expert).
- A paper has been published (as shown in PUBLICATIONS 6).

INTERN EXPERIENCE

Supervisor: Ning Qv Engineering Institute: Genomics applied engineering lab, The Beijing Genomics Institute

Analysis of human genetic sequences

2018.03 - 2018.07

- Analyzed human genetic sequences to explore the specific drug resistance.
- Exploited a novel gene text processing procedure.
- Practiced an ancestral research based on big data of human genome.

SKILLS

Professional software

Programing language

Machine learning programming

Deep learning programming

System

Familiar with microwave device fabrication, STM32.

CST, Advanced Design System, Origin, Photoshop, SolidWorks

Python, C, R, Perl, MATLAB

Optimum algorithm (e.g. GA, PSO, ACO), classification algorithm

Pytorch, Sklearn, Numpy, Pandas.

Linux, Windows, Cluster system.

LEADERSHIP/TEAMWORK EXPERIENCE

Azalea volunteer teachers' team <i>Project Leader</i>	2016.07
<ul style="list-style-type: none">• Raised funds \geq 10,000RMB both online/offline for the cost of team operation and education equipment.• Solved the problems of unstable voltage with emitter-follower.• Realize current frequency test with diodes and MCU.	
Nanyang Technological University summer innovative training courses	2017.01
<ul style="list-style-type: none">• Leadership and team cohesion training.• Attended academic forum and wrote an innovation report.• Attend professional biomedical engineering class to learn international advanced technologies.	

AWARDS

The Freshman motivation scholarship, UESTC	2015.09
The People's Scholarships: the Second-class once (10%), the Third-class second (20%), UESTC	2015.09-2018.10
Outstanding individual in social practice, UESTC	2016.10
Postgraduate admission scholarship, HIT	2018.09

EXTRACURRICULAR ACTIVITIES

Member, Youth Volunteers Association, UESTC	2015.09-2016.07
Member, Student Union of UESTC	2015.09-2016.07
Vice-captain of school curling team, UESTC	2017.09-2018.06