Matthew Hartensveld, PhD

GaN and Micro-LED Expert

Contact

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Key Skills

Micro-LEDs
GaN
Nanowires
Transistors
Fabrication
Device Physics
Reverse Engineering
Crystal Growth
Simulations
Layout

Education

BS Microelectronic Eng. 2018
MS Materials Sci. Eng. 2018
PhD Microsystems Eng. 2021
Rochester Institute of Tech.

GPA 3.94

Research Topics

GaN LED-FET Integration
LED fabrication schemes
GaN surface treatments
LED charge modulation
LED area engineering
DUV LEDs
Multi-Color LEDs
GaN CMOS
Flexible nanowire devices
GaN Etching
GaN NVM
Alternating Current LEDs

Summary

- From fabricating transistors in my garage in high school, I form new ideas using limited resources leading to new and improved devices
- Leadership of engineers in cleanroom and through company
- Expertise in GaN micro-LEDs and transistors, resulting in 15 publications and 5 patents

Experience

September 2019-Current
CTO at Innovation Semiconductor, Inc.
Formed contacts with supporting companies
Interfaced with commercial foundry
Led team of electrical engineers
Developed new IP and breakthrough technology

May 2017-August 2017
Intern at Texas Instruments
Optimized RTP process for BiCMOS technology using statistical analysis

June *2016-August 2016*
Intern at Northrop Grumman
Investigated and returned SiC silicide process to POR
Purposed and developed improved silicide for SiC SITs
Extracted metal work function of SiC device
Purposed and developed bi-layer resist lift-off process

June 2015-August 2015
Intern at Northrop Grumman
Developed a lift-off process for GaN devices
Developed GaN laser dicing process
Improved deep trench etch through statistical analysis

June 2014-August 2014
Researcher at UCSB
Improved ALD TiN process to achieve record low resistivity

Patents

[1] M. Hartensveld and J. Zhang “Nanowire Light Emitting Switch Devices and Methods Thereof,” 11011571, 2021.
[2] M. Hartensveld and J. Zhang “Capacitive Control of Electrostatic Field Effect Optoelectronic Device,” 2019, Patent pending.
[3] M. Hartensveld “Monolithic Semiconductor LED Display Systems and Methods Thereof”, 2020, Patent pending.
[4] M. Hartensveld “Volume Engineering for LEDs and Methods Thereof”, 2021, Patent pending.
[5] M. Hartensveld “Monolithic Color-Tunable Light Emitting Diodes and Methods Thereof”, 2021, Patent pending.