Noah P. Allen

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EDUCATION:

Doctor of Philosophy in Electrical Engineering – Electronics ***Expected Graduation May 2018***
Virginia Tech, Blacksburg, Virginia
- Research Topic: Effect of Deep Levels on GaN Power Device Characteristics

Masters of Science in Electrical Engineering – Electronics ***December 2014***
Virginia Tech, Blacksburg, Virginia
- Thesis Title: "Electrical Characterization of Ruthenium Dioxide Schottky Contacts on GaN"
- *3.6 GPA on 4.0 scale*

Bachelor of Science in Electrical Engineering ***May 2009***
- *Georgia Institute of Technology, Atlanta, Georgia*
- Senior Design: "Helicopter Control Using the Vicon Motion Capture System"

Georgia Tech Lorraine Study Abroad, *Metz, France* ***Summer 2007***

SKILLS:

LAB EXPERIENCE:
- Level 100/1000 Cleanroom
  - Georgia Tech MRC Cleanroom
  - Cornell NanoScale Facility
  - Virginia Tech MicrON Cleanroom
- Experience implementing CMOS process
- *Tool experience available on request*

PROCESSED MATERIAL:
- Gallium Nitride (GaN)
- Indium Nitride (InN)
- Gallium Arsenide (GaAs)
- Silicon (Si)

LANGUAGES:
- C/XC
- VHDL
- Java
- Matlab
- LabVIEW
- Assembly

ELECTRICAL TEST EQUIPTMENT:
- Oscilloscope
- IV Curve Tracer
- Signal Generator
- DMM
- Logic Analyzer
- Probe Station

MODELING:
- CrossLight - APSYS
- Tanner Tools L-Edit
- Virtuoso Layout Suite
- Silvaco SSuprem3
- NI MultiSim
- Cadence PSPICE

RESEARCH EXPERIENCE:

Graduate Researcher, Doctor of Philosophy at Virginia Tech ***January 2010 to Present***
Virginia Tech, Blacksburg, Virginia
Research Mentor: Louis Guido, PhD
- Project: Understanding the effects and origin of deep-level traps in GaN power devices introduced during MOCVD growth
- Fabricate Schottky and PN diodes in a cleanroom environment capable of large breakdown voltages and low on-resistances
- Utilize optical and electrical characterization methods (DLTS, SSPC, IV, CV etc.) to explain deviations from ideal diode operation

Summer Intern, Electronic Systems Sector at Northrop Grumman ***May 2010 to August 2010***
Northrop Grumman Advanced Technology Labs, Baltimore, MD
Internship Mentors: Monica Lilly and Joe Payne, PhD
- Project: Optimization of Raith E-Beam Tool for High Resolution CNTFET Applications
- Created high resolution Raith E-Beam lithography process to minimize CNTFET channel
- Worked on side projects including creating a DUV process for higher resolution photolithography and assisting employees with SEM imaging
- Passed knowledge on to employees for later implementation

Undergraduate Researcher, NNIN REU Program at Cornell NanoScale Facility ***May 2008 to August 2008***
Cornell University, Ithaca, NY
Research Mentor: Mr. Donald Tennant
- Project: "Using Near-field Holography to Investigate Super Hydrophobic Surfaces"
- Created high resolution resist process for near-field holography system in the attempt to study its application for super hydrophobic surfaces
- More information: http://www.nnin.org/nnin_2008reu.html

Undergraduate Researcher, Georgia Tech Research Institute Nanotechnology Lab ***August 2007 to May 2009***
Georgia Institute of Technology, Atlanta, Georgia
Research Mentor: W. Jud Ready, PhD
- Project: "Correlation of Design Parameters in Carbon Nanotube-Based Supercapacitors"
- Structured the use of carbon nanotubes in electro-chemical double layer capacitors in such a way that will improve modern supercapacitors
- More information: http://nano.gtri.gatech.edu/index.html

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PUBLISHED WORK:

- ***[In Progress]*** Allen, Noah, et al. "*Electrical characteristics of RuO_2 Schottky contacts on n-type GaN from CV and IVT measurements*"
- Wang, Jingshan, et al. "*Thin-film GaN Schottky diodes formed by epitaxial lift-off*"
- Chern, Kevin T., et al. "*GaInN/GaN solar cells made without p-type material using oxidized Ni/Au Schottky electrodes.*" *Materials Science in Semiconductor Processing* 55 (2016): 2-6.
- Nguyen, Peter D., et al. "*Heteroepitaxial Ge MOS Devices on Si Using Composite AlAs/GaAs Buffer*." *IEEE Journal of the Electron Devices Society* 3.4 (2015): 341-348.
- Chern, Kevin T., et al. "*GaInN/GaN-Ni/Au transparent conducting oxide Schottky barrier solar cells*." *Photovoltaic Specialist Conference (PVSC), 2014 IEEE 40th*. IEEE, 2014.
- Allen, Noah, et al. "*Paper-based capacitive mass sensor*." *Sensors, 2011 IEEE*. IEEE, 2011

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TEACHING EXPERIENCE:

Instructor, Electrical Engineering Department at Virginia Tech — ***Summer I 2016***
Course Titles: (ECE 2004) Electric Circuit Analysis
- Introduced basic laws and analysis techniques for electric circuits

Instructor, Electrical Engineering Department at Virginia Tech — ***Summer II 2015***
Course Titles: (ECE 2204) Electronics
- Introduced concepts of non-linear electronic devices including theory, biasing and circuit design.

Instructor, Engineering Education Department at Virginia Tech — ***Summer II 2011[(1)]***
Course Title: (ENGE 1104) Exploration of Digital Future — ***Summer II 2012***
- ***[(1)]***Successfully introduced the use of LabVIEW myDAC as a tool for teaching basic electric circuit theory and computer programming — ***Spring 2013***, ***Summer I 2013 [(2)]***
- ***[(2)]***Designed and implemented Arduino-based microcontroller workshops as a means for introducing basic embedded programming and circuit design — ***Summer I/II 2014***

Teaching Assistant, Electrical Engineering Department at Virginia Tech — ***Summer I 2012***
Course Titles: (ECE 2504/3544) Intro. To Computer Engineering / Digital Design I
Instructor: Jason Thweatt
- Provided support for two courses answering questions, validating lab assignments and grading homework's, tests and projects

Teaching Assistant, Electrical Engineering Department at Virginia Tech — ***Fall 2011***
Appointment: Electronics/Circuit Support Group — ***Spring 2012***
Advisor: Dennis Sweeney, PhD
- Fielded questions pertaining to 7 undergraduate circuit analysis and electronics courses along with providing support for the MATLAB and PSPICE software packages

Teaching Assistant, Engineering Education Department at Virginia Tech — ***Fall 2012***
Course Title: (ENGE 1024) Engineering Exploration
Instructors: Jaime De La Reelopez, PhD / Kacie Hodges, PhD / Holly Matusovich, PhD
- Instructed three lab sections where the engineering design process, scientific method and professional ethics topics and applications were covered

Student Worker, Engineering Education Department at Virginia Tech — ***Summer I/II 2011***
Advisor: Tom Walker
- Employed by Engineering Education Department to create LabView myDAC projects used to demonstrate different Electrical and Computer Engineering practices

Teaching Assistant, Engineering Education Department at Virginia Tech — ***Spring 2011***
Course Title: (ENGE 1104) Exploration of Digital Future
Instructor: Tom Walker
- Introduced students to computer and software based technologies in a lab setting
- Received highest evaluation as a teaching assistant during semester

AWARDS & ACTIVITIES:

- Bradley Department of ECE Bradley Fellowship Award, Spring 2015
- Engineering Education Teach Talks Scholarship, Spring 2013
- Electrical Engineering Department Fellowship Award, Spring 2011
- ETA KAPPA NU (HKN) Electrical and Computer Engineering Honor Society, February 2010
- Member, IEEE, January 2007 - Present
- Presidential Undergraduate Research Award, UROP, August 2008
- PURA Travel Award, UROP, March 2008/February 2009
- Poster Presentation at Annual TMS Conference, March 2008/February 2009
- Intel Diversity Summit 2008, Intel Foundation, August 2008
- Intel 2008 REU Fellow, Intel Foundation, May 2008