Kevin M. Ferri

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EDUCATION

Pennsylvania State University, University Park, PA **August 2020**
Doctor of Philosophy in Materials Science and Engineering GPA: 3.92/4.0

North Carolina State University, Raleigh, NC **June 2016-December 2017**
Doctor of Philosophy in Materials Science and Engineering GPA: 3.9/4.0

Clemson University, Clemson, SC **August 2012-May 2016**
Bachelor of Science in Physics GPA: 3.5/4.0

- Member and accountant of the society of physics students, South Carolina Palmetto Fellows Scholar, Clemson Palmetto Pact Scholar

RESEARCH EXPERIENCE

Pennsylvania State University and North Carolina State University, Dr. Jon-Paul Maria **June 2016 - Present**
PhD Candidate

- Explore how thin film geometries can replicate single bulk ceramic grain boundaries with large areas that can be probed and used to understand interfacial defect chemistry and dopant diffusion characteristics as they relate to bulk electrical behavior
- Develop a process where high percentages of MgO are substituted into ZnO in order to form $Mg_xZn_{1-x}O$ at the phase transition boundary between wurtzite and rocksalt in an effort to form hexagonal ferroelectrics.
- Explore the emergent interfacial properties between oxides and nitrides, specifically as they pertain to two-dimensional quantumly confined electron gasses.
- Responsibilities include the deposition and subsequent characterization of various thin film systems, in an effort to better understand structure-property relations, as well as the role that defect chemistry plays on materials systems.

Clemson University, Dr. Apparao Rao and Dr. Ramakrishna Podila **February 2015 - May 2016**
Student Researcher

- Research in the Nanomaterials Center at Clemson University
- Research focused on how carbon-based nanomaterials can be used in conjunction with energy storage devices such as capacitors in order to create more efficient energy storage and release devices.
- Responsibilities include the manufacturing and testing of nanomaterials such as carbon nanotubes in order to create prototypes of more energy efficient devices.

Clemson University, Dr. Joan Marler **November 2013 - May 2016**
Student Researcher

- Research in Atomic, Molecular, and Optical physics lab related to trapping and cooling ions.
- Research focused on the trapping and laser doppler cooling of positively charged ions as a means of observing reaction dynamics for cold chemistry measurements.
- Experience in designing and building various parts for the lab including mechanical, electrical, tuning and maintaining lasers, ultra-high vacuum systems, and electron guns.

Clemson University, Dr. Stephen Mosey **January 2015 - May 2015**
Student Researcher

- Research in Geophysics focusing on developing quantitative tools to improve our ability to predict groundwater flow and transport processes.
- Experience in the design and implementation of an electrical resistivity system applied to a lysimeter.
- Research focused on aiding in the detection and tracking of radioactive isotopes as they permeated through soil.

LEADERSHIP EXPERIENCE

Society of Physics Students, Clemson, SC **August 2015 - May 2016**
Accountant

- Supported the president with tasks necessary for club continuation, such as dealing with the finances of the organization

Target, Simpsonville, SC **June 2012 - July 2015**
Sales Floor Team Member and Leader

- Managed the staff that was on one half of the floor in the store, including assisting in tasks, and delegating tasks in order to maintain an efficient store

TECHNICAL SKILLS AND CERTIFICATIONS

Thin Film Deposition and Processing Techniques

- DC, RF, reactive, and pulsed magnetron sputtering
- Electron beam evaporation
- Pulsed laser deposition
- Reactive ion etching
- Photolithography
- Chemical Vapor Deposition

Characterization

- X-ray diffraction (XRD), reflectivity (XRR), and grazing incidence geometries
- Atomic Force Microscopy
- Energy dispersive spectroscopy
- Scanning electron microscopy
- IR measurements in reflectivity and transmission
- Electrical/probe-station, Hall Effect, and 4-point probe measurements

Software

- Microsoft Office
- MATLAB
- OriginPro
- IgorPro
- X'pert Reflectivity
- Highschore
- Crystal Maker
- Solidworks
- LaTeX
- LabView
- Python Coding

Lab Management

- Design, assemble, install, and maintain PVD equipment
- Helium leak checking
- Install supporting equipment such as gas, water, and electrical
- Design and implementation of electronic circuitry

Other Skills

- Writing standard operating procedures
- Performing equipment trainings

Posters and Talks

Thin Film Varistor Prototypes, Talk. International Conference on Electroceramics, Lausanne Switzerland, July 2019.

Investigating the role of grain size, dopant choice, and orientation of ZnO thin film varistor prototypes, Poster. Electronic Materials and Applications Conference, Orlando Fl, January 2019.

Structure-process-property Relationships in HfN thin films on sapphire, Talk. Electronic Materials and Applications Conference, Orlando Fl, January 2017.

Helically coiled carbon nanotube arrays for improved capacitance, Poster. Departmental Meeting, Clemson SC, August 2015.

Low temperature chemistry with trapped ions, Poster. American Physics Society Southeastern Section, Columbia SC, November 2014.

Trapping and Cooling Ions, Poster. Departmental Meeting, Clemson SC, August 2014.

Papers

Song, Y., Lundh, J., Wang, W., Leach, J., Eichfeld, D., Krishnan, A., Perez, C., Borman, T., **Ferri, K.,** Maria, JP., Chowdhury, S., Ryou, J., Foley, B., Choi, S. *The doping dependence of the thermal conductivity of bulk gallium nitride substrates*, InterPACK, submitted. (2020)

Childress A, **Ferri K**, Rao A. *Enhanced supercapacitor performance with binder-free helically coiled carbon nanotube electrodes*. Carbon **140**, 377-384 (2018).

Rost C, Braun J, **Ferri K**, Backman L, Giri A, Opila E, Maria JP, Hopkins P. *Hafnium nitride films for thermoreflectance transducers at high temperatures: Potential based on heating from laser absorption*. Appl. Phys. Lett. **111**, 151902 (2017).