

REID MARKLAND

(205) 807-3264
reidmarkland@gmail.com

425 South Gay Street
Auburn, AL 36830

EDUCATION

BS Auburn University, Physics Graduation – July 2023
 Magna Cum Laude
 GPA: 3.63 / 4.0

BS Auburn University, Mathematics Graduation – May 2024
 GPA: 3.53 / 4.0

EXPERIENCE

Plasma Lab Research Assistant
Auburn University, Auburn, AL May 2021 – December 2021

Aided in the design of NASA-funded experiments to better measure and understand the effect of solar plasma on the lunar surface.

Principal Investigators: Dr. Uwe Konopka, Dr. Masatoshi Hirabayashi

Films, Interfaces, and Nanostructures of Oxides Lab Research Assistant
Auburn University, Auburn, AL Fall 2021 – Winter 2024

Assisted the creation of a Generative Adversarial Network designed to interpret RHEED imaging and provide feedback for more accurate film growth with the end goal of higher levels of automation in the MBE thin film growth process. Resulted in a conference presentation at the APS March Meeting¹.

Principal Investigator: Dr. Ryan Comes

PARADIM Undergraduate Research Intern (REU Program)
Cornell University, Ithaca, NY Summer 2022

Aided in the preparation and beginning stages of a project researching the complex multiferroic phase dynamic of Bismuth Ferrite through growth (via MBE) and characterization of Bismuth Ferrite, Terbium Scandate tri-layer superlattices.

Principal Investigator: Dr. Darrell Schlom

Graduate Mentor: Ms. Maya Ramesh (Point of Contact)

LANL Undergraduate Research Intern (SULI Program)

Los Alamos National Lab, Los Alamos, NM

Spring 2023

Helping to bring a variety of research projects centered around ferroelectrics and nanodevices to fruition by means of PLD growth, materials characterization, data analysis, and writing of technical reports resulting in a co-authorship² and MRS Conference presentation³.

Principal Investigator: Dr. Aiping Chen

HONORS AND AWARDS

Magna Cum Laude

July 2023

Auburn University, Auburn, AL

Graduated Magna Cum Laude in physics.

Dean's List

Auburn University, Auburn, AL

2020-2022

Summer and Fall 2020, Fall 2022

Lexus Eco Challenge First Prize National Winner

Hoover High School, Hoover, AL

2019-2020

Collaborated as a part of Bio Bucs team in environmental research competition resulting in achieving first in state and top placement nationally.

Advisor: Janet Ort

TSA TEAMS National Competition 8th Overall Presentation, 10th Overall Team

Hoover High School, Hoover, AL

2019

Lead Hoover High STEM Team in national competition at Washington D.C after winning first in state.

Advisor: Janet Ort

PUBLICATIONS

¹ Machine Learning Analysis of Reflected High Energy Electron Diffraction Images of Epitaxial Oxide Thin Films.

Talk given at American Physical Society (APS) March Meeting '22 by Patrick Gemperline.

² High-throughput combinatorial approach expedites the synthesis of a lead-free relaxor ferroelectric system.

Pre-published by Zhang, Di, et al at: arXiv preprint arXiv:2312.17715 (2023).

³ High-Throughput Combinatorial Approach to the Synthesis of a Lead-Free Ferroelectric Relaxor System.

Talk given at Materials Research Society (MRS) Fall Meeting 2023.

TECHNICAL SKILLS

Programming: Python, MATLAB, Igor Pro

Applications:

Data Science/Machine Learning: Statistical Analyses, Predictive Modeling, Linear/Nonlinear Optimization, Deep Learning, Visual Recognition, Generative AI

Thin Film Growth: Molecular Beam Epitaxy, Pulsed Laser Deposition

Materials Characterization: X-ray Diffraction, Atomic Force Microscopy, Electronic Property Analysis

Software Platforms: CAD Software (FreeCAD, SolidWorks, etc), Microsoft Office Applications, LabVIEW, Origin Pro

HOBBIES

Philosophical Reading/Writing

I'm ever developing my multifaceted, interdisciplinary understanding of the world, which greatly informs my problem-solving processes.

Active Lifestyle

As staying physically and mentally healthy is incredibly important to me, I go to the gym regularly, play sports with friends, and cook most of my meals.

Inclusivity

I've been part of the Auburn Physicists for Inclusivity (Phys4Inc) organization which strives to uphold a collaborative, inclusive presence within and beyond our department. I'll be carrying the mindset I've cultivated here with me wherever I may go.

REFERENCES

Ms. Janet Ort, Teacher
Environmental Sciences
Hoover High School
jort@hoover.k12.al.us

Dr. Uwe Konopka, Associate Professor
Experimental Plasma Physics
Auburn University
uzk0003@auburn.edu

Dr. Masatoshi Hirabayashi, Assistant Professor
Aerospace Engineering
Auburn University
thirabayashi@auburn.edu

Dr. Ryan Comes, Thomas and Jean Walter Associate Professor
Condensed Matter Physics
Auburn University
ryan.comes@auburn.edu

Dr. Darrell Schlom, Herbert Fisk Johnson Professor of Industrial Chemistry
Materials Science and Engineering
Cornell University
schlom@cornell.edu

Ms. Maya Ramesh, PHD Candidate
Materials Science and Engineering
Cornell University
mr862@cornell.edu

Dr. Aiping Chen, Staff Scientist
Materials Science and Engineering
Center for Integrated Nanotechnologies (CINT),
Los Alamos National Laboratory
apchen@lanl.gov