

# SEMI204

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## Education

### **University of Oregon**

Eugene, OR

Master of Science in Applied Physics

June 2017-June 2018 (expected)

Focus: Semiconductor Processing and Fabrication

### **California Polytechnic State University, San Luis Obispo**

San Luis Obispo, CA

Bachelor of Science, Physics, Cum Laude

September 2014-December 2016

## Research Projects

Department of Physics, California Polytechnic State University, San Luis Obispo

Dr. Colleen Marlow

### **Single-Walled Carbon Nanotubes**

**September 2016-December 2016**

- Automated measurement of single-walled carbon nanotube devices through creating a LabVIEW program that allowed future students to further optimize data acquisition.
- Wrote MATLAB scripts to analyze data acquired by a Keithley 2400 Source Measure Unit to find any discrepancies in the measurements due to various sources of error such as surfactants, shorts, and time-dependent resistance changes.
- Presented progress at weekly team meetings by highlighting any new or exciting trends in data and explained the next task for the upcoming week.
- Tested the stability of the LabVIEW program by comparing device and resistor conductance over a period sourcing different currents and voltages and changing the compliance of the SMU.
- Increased the quality of the electrical characterization of devices by replacing female banana plugs and re-soldering connections to pins for a test box.

Dr. Karl Saunders

### **Smectic Liquid Crystals**

**May 2016-December 2016**

- Studied smectic liquid crystal (LC) double critical point phase transitions by analyzing the free energy density due to changes in electric field, polarization, and temperature through an improved numerical model constructed from literature.
- Found two critical points for the transition that depended on both temperature and electric field.
- Communicated research findings in the project to parents, perspective and current students, and professors by presenting a poster at the October 2016 College of Science and Math Summer Research Symposium.
- Discovered a mathematical error in the previous student's senior project, corrected the equations, then corrected, converted and optimized the MATLAB code into usable Python code.

### **Nematic Liquid Crystals**

**June 2015-August 2016**

- Studied how environmental influences change the free energy density of the nematic LC director profile through both analytical and numerical methods.
- Validated results of numerical code by matching numeric data to analytic data with the Python package FEniCS (finite element solver), allowing for progression in numerical analysis.
- Utilized the Python package SymPy to simplify and compute complicated analytical equations.
- Found solutions to the desired systems by exploring multiple situations with different electric field and material parameters.
- Senior project writeup was accepted to the Cal Poly Digital Commons.

## Work Experience

### **Meathead Movers**

**January 2017-June 2017**

Meathead

Worked alongside other young adults to support families by packing, protecting, and moving their belongings from one place of residence to another.

- Maintained the trucks by restocking used materials, cleaning the floor, reorganizing the toolbox, throwing away trash after moves, and maximizing the logistical efficiency of crews leaving on time on a day-to-day basis.
- Ensured the safety of furniture, televisions, pictures/paintings, and other delicate items by wrapping them with moving pads to protect them during transport leading to no damage claims from clientele.
- Prevented damage to items by stacking them in the truck as guided by Mentor to efficiently fit everything in the space provided.
- Reduced on-site injuries by communicating with team members to guarantee the safety of ourselves and the pieces through callouts for lifting and setting items, stairs or steps, doorframes, walls, etc.
- Made the client more comfortable by establishing a calm and lighthearted climate where constant communication was held as to move progress.

### **Department of Physics**

**September 2015-December 2016**

Instructional Student Assistant

Graded assignments, quizzes, and lab reports from rubrics set by the professor.

- Assisted the professor in reducing his work load by grading and maintaining Excel spreadsheets of student grades, averages, and course grades.
- Utilized knowledge of physics to grade various methods of solving problems using discretion to distribute points fairly.
- Maintained constant communication with professor about status of grades and student progress.