

Cassandra Leah Remple

(303) 709-3003 | cassi.remples@gmail.com

Education

Materials Science and Engineering, Ph.D.

Washington State University, Pullman WA

Predicted Graduation: 07/23

GPA: 3.93

Chemical Engineering, B.S.

Minor: Chemistry

Oregon State University, Corvallis OR

Graduation: 12/17

GPA: 3.49

Research Experience

Graduate Research Assistant

Washington State University, Pullman, WA

Advisor: Dr. Matt McCluskey

07/19 – Present

- PL, FTIR, and Raman Spectroscopy to characterize defects in semiconducting oxides, primarily Ga₂O₃
- PL and Raman Mapping with Klar Scientific Inc. tooling to characterize surface defects
- Low temperature PL and Fourier-transform infrared spectroscopy (FTIR)

Graduate Research Assistant

Washington State University, Pullman, WA

Advisor: Dr. Yi Gu

07/19 – 09/20

- Serviced unused First Nano CVD until it was fully operational, initiated process development of In₂Se₃ 2D thin films

Undergraduate Research Assistant

Oregon State University, Corvallis, OR

Advisor: Dr. John Conley

10/16 – 08/17

- Experience in a cleanroom environment using various deposition tools and characterization equipment
- Fabricated thin film devices and performed CV and IV electrical testing of capacitors, diodes, and transistors
- Investigated and modeled the quadratic coefficient of capacitance (α VCC) on high-k ALD MIM capacitors

Johnson Scholar Internship Program

Oregon State University, Corvallis, OR

Advisor: Dr. Chih-hung Chang

06/14 - 09/15

- Awarded a Johnson Fellowship for 2014 and 2015 Summer Internship Programs
- Fabricated and characterized ZnS thin film using chemical solution and micro-reactor assisted solution deposition
- Performed a mechanistic study on ZnS film growth for photovoltaic applications with in situ characterization

Work Experience

Process Technician

Amorphyx Inc.

Supervisor: Sean Muir

09/17 – 07/19

- Part of the processing team with technicians and engineers to fabricate multi-layer devices using photolithography and various thin film deposition techniques
- Process development, characterization, and technical report writing for incorporation of amorphous metal nonlinear resistors (AMNRs) into multiple display applications
- DOE and execution for material development of amorphous metal thin films via PVD systems, and for ALD and reactive sputter dielectric films
- Device testing with a Semiconductor Parameter Analyzer and LCR meter to understand current-voltage and capacitance-voltage relationships
- Device reliability testing and model development for LCD applications and related oxide breakdown investigation for multiple conduction mechanisms (i.e. Fowler Nordheim tunneling and Frenkel-Poole emission)

Student Test Engineer

Center for Applied Systems and Software, OSU

Supervisor: Jamin Kalita

04/15 – 06/16

- Feature testing and stress testing on software for Hewlett Packard Enterprise networking switches
- Experience with fiber optic and transceiver networking hardware
- Honorable mention for the Test Lab Community Leader Award

Honors & Achievements

- 1st Place of Undergraduate Poster Competition, 2017 Pacific North West American Vacuum Society Conference

- Johnson Fellowship – 2014, 2015
- Honor Roll at OSU – Winter 2014, Spring 2014, Spring 2015, and Summer 2015
- Semifinalist for OSU's Waldo-Cummings Outstanding Student Award – 2015

Skills

- **Spectroscopy:** photoluminescence, Raman, FTIR, UV-Vis
- **Processing:** atomic layer deposition, sputtering and other PVD techniques, plasma etch, and photolithography (pattern and etch processing)
- **Analytical Tools and Techniques:** capacitance vs. voltage (CV), current vs. voltage (IV), profilometry, quartz crystal microbalance, four-point probe, x-ray diffraction (XRD), x-ray reflectivity (XRR), Hall effect,
- **Software/Languages:** Origin, JMP, Excel, Visio, Aspen HYSYS and ATHENA (Silvaco)

Peer Reviewed Publications

- **Remple, C.;** Huso, J.; McCluskey, M. D. Photoluminescence and Raman Mapping of β -Ga₂O₃. *AIP Advances* **2021**, *11* (10), 105006. <https://doi.org/10.1063/5.0065618>.
- Jesenovec, J.; **Remple, C.;** Huso, J.; Dutton, B.; Toews, P.; McCluskey, M. D.; McCloy, J. S. Photodarkening and Dopant Segregation in Cu-Doped β -Ga₂O₃ Czochralski Single Crystals. *Journal of Crystal Growth* **2021**, 126419. <https://doi.org/10.1016/j.jcrysgro.2021.126419>.
- Chiu, D.; He, Y.; Gao, Z.; **Remple, C.;** Chang, C.-H. Growth Kinetics of ZnS Thin Films from a High-Rate Chemical Bath Deposition with Trisodium-Nitrilotriacetate Complexing. *ECS Journal of Solid State Science and Technology* **2018**, *7* (11), P615–P623. <https://doi.org/10.1149/2.0031811jss>.

Presentations

- *Photoluminescence Spectroscopy of Cr³⁺ in β -Ga₂O₃ and (Al_{0.1}Ga_{0.9})₂O₃*, **Remple C.;** Barmore, L. M.; Jesenovec, J.; Dutton, B.; McCloy, J. S.; McCluskey, M. D., **GOX August 2022**, Washington, D.C., Poster
- *Photoluminescence Spectroscopy of Cr³⁺ in β -Ga₂O₃ and (Al_{0.1}Ga_{0.9})₂O₃*, **Remple C.;** Barmore, L. M.; Jesenovec, J.; Dutton, B.; McCloy, J. S.; McCluskey, M. D., **EMC MRS June 2022**, The Ohio State University, Columbus, OH, Talk
- *Fe³⁺ and Cr³⁺ Photoluminescence of Fe doped β -Ga₂O₃*, **Remple, C.;** Huso, J.; McCluskey, M. D., APS March Meeting 2021, Virtual, Talk
- *Growth Kinetics of ZnS Thin Films from a High-Rate Chemical Bath Deposition with Trisodium-nitrilotriacetate Complexing*, D. Chiu, Y. He, Z. Gao, **C. Remple**, C.-H. Chang, **PNW AVS September 2017**, Oregon State University, Corvallis, OR, Poster
- *Electrode Induced Variation in Voltage Nonlinearity of ALD Al₂O₃ and HfO₂ Metal-Insulator-Metal Capacitors (MIMCAPs)*, D.Z. Austin, K. Holden, J. Hinz, **C. Remple**, and J.F. Conley, Jr., **ALD/ALE July 2017**, Denver, CO, Talk
- *Mechanistic Study of Ammonia Free ZnS Compound Semiconductor Thin Films*, **C. Remple**, D. Chiu, C.-H. Chang, **Johnson Fellowship Symposium**, November 2014, Oregon State University, Corvallis, OR, Talk

Professional Organizations

American Physical Society – Student Member

Materials Research Society WSU Student Chapter

- President for 2021-present
- Vice President for 2019-2020

Materials Research Society OSU Student Chapter

- President for 2015-2016 and 2016-2017, and Treasurer during 2014-2015
- Presided over all meetings and organized lab tours, industry field trips, seminars, and other club events

American Institute of Chemical Engineers – Student Member, Chemical Engineering Car Competition (2016)

Specialized Coursework

- PHYSICS 581: Graduate level course on semiconductor physics (properties and characterization methods, with an emphasis on point defects)
- MSE 403: Undergraduate course on ceramic materials and glass (structure, properties, defects, and applications)
- MATSE 571: Graduate level course on the microscopic analysis of surfaces

- MSE 515: Graduate level course on the electronic properties of materials
- PHYSICS 563: Graduate level course on solid state physics
- CHEM 480: Graduate level course on solid state chemistry
- ECE 416, 418: Undergraduate level courses covering semiconductor device physics, VLSI processing, and basic semiconductor processing techniques
- ECE 415: Undergraduate level course covering synthesis and characterization of nanomaterials, applications of nanomaterials, and integration of nanotechnology
- CHE 444: Undergraduate level course covering various methods of thin film device fabrication, and laboratory investigating influential process variables

Certificates

SChE Certificate Program: Inherently Safer Design License ELA905

SChE Certificate Program: Basics of Laboratory Safety

SChE Certificate Program: Process Safety Lessons Taught from Experience License ELA908