

BURCU OZDEN

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EDUCATION

Auburn University, Auburn, AL | *PhD of Physics*; May 2016

Dissertation: "Investigation of Point Defects in AlGaIn/GaN High Electron Mobility Transistor Heterostructures Grown on Si Wafers"

Auburn University, Auburn, AL | *MS of Physics Non Thesis*; August 2013

Bogazici University, Istanbul, Turkey | *MS and BS of Teaching in Physics*; June 2011

RESEARCH/TEACHING EXPERIENCE

University of Pittsburgh, Pittsburgh, PA | *Postdoctoral Research Associate*; August 2016- Present

- Specialize on exciton-photon transfer and electric transport properties of polariton condensates.
- Conduct experimental studies on fabrication of AlGaAs/GaAs microcavities.
- Collaborate with theoreticians to develop a model for our experimental findings.
- Contribute programming the software for the experimental setup.
- Revise the experimental techniques and adapt new ones.

Auburn University, Auburn, AL | *Graduate Research Assistant*; January 2014 – May 2016

- Administered experimental and theoretical studies on Power Electronic devices.
- Collaborated with Dow Corning Corporation & IMEC to study electrically active defect distribution in large area AlGaIn/GaN HEMT epi-structures grown on Si wafers.
- Developed new technique to characterize optical and electrical properties of AlGaIn/GaN HEMT epi-structures.
- Found that our newly developed technique can be used for diagnosing and characterizing of defects for wafer vendors
- Analyzed the data in LabVIEW and Origin programs.
- Helped my advisor to review research articles.
- Contributed to writing grant proposals.

Auburn University, Auburn, AL | *Teaching Assistant*; September 2013 – May 2016

General Physics I – II & Engineering Physics I – II

- Instruct students in Mathematics and Physics for Provost Leadership Undergraduate Scholarship Program.
- Guide students on their homework.
- Consult students on their careers.

Auburn University, Auburn, AL | *Teaching Assistant*; August 2011 – December 2013

General Physics I – II & Engineering Physics I – II

- Led laboratory and/or problem-solving and discussion sections for groups of 20 - 40 students.
- Conducted office hours to help students understand and solve homework problems.
- Prepared and graded course material weekly, including quizzes and practice problems for labs.
- Supervised students in final projects, graded exams and homework.

Essex University, Colchester, England | *Research Intern*; June-August 2009 & 2010

- Sustained ERASMUS program funded project on performance of GaInNAs/GaAs multiple quantum well solar cells.
- Designed and characterized optical and electrical characteristics of solar cells that I fabricated.
- Assembled and maintained setup for quantum efficiency measurements.

SELECTED PUBLICATIONS

- B. Ozden, M. P. Khanal, J. Park, S. Uprety, V. Mirkhani, K. Yapabandara, K. Kim, M. Kuroda, M. J. Bozack, W. Choi, and M. Park, "Raman and X-ray Photoelectron Spectroscopy Investigation of the Effect of Gamma-Ray Irradiation on MoS₂", Under review
- B. Ozden, M. P. Khanal, S. Youn, V. Mirkhani, K. Yapabandara, and M. Park, M. Zhao, H. Liang, P. Kumar Kandaswamy, and Y. N. Saripalli, "Defects in AlGaIn/GaN HEMTs heterostructures studied by photocurrent spectroscopic measurements" *The ECS Journal of Solid State Science and Technology*, **5**, P3206 (2016).
- B. Ozden, M. P. Khanal, V. Mirkhani, K. Yapabandara, C. Yang, S. Ko, S. Youn, M. C. Hamilton, M. H. Sk, A. C. Ahyi, and M. Park, "Time-resolved photocurrent spectroscopy diagnostics of electrically active defects in AlGaIn/GaN high electron mobility transistor (HEMT) structures grown on Si wafers" *Journal of Nanoscience and Nanotechnology*, **16**, 7630 (2016).
- V. Mirkhani, F. Tong, D. Song, Y. Chung, B. Ozden, K. Yapabandara, M. Hamilton, D.-J. Kim, H. Koo, K. K. Lee, and M. Park, "Simulation of the refractive index of Ga doped ZnO nanoparticles embedded in PEDOT: PSS using effective medium approximations", *Journal of Nanoscience and Nanotechnology*, **16**, 7358 (2016).
- B. Ozden, C. Yang, F. Tong, M. P. Khanal, V. Mirkhani, M. H. Sk, A. C. Ahyi, and M. Park, "Depth-resolved ultra-violet spectroscopic photo current-voltage measurements for the analysis of AlGaIn/GaN high electron mobility transistor epilayer deposited on Si", *Applied Physics Letters*, **105**, 172105 (2014).
- F. Tong, K. Yapabandara, C-W. Yang, M. Khanal, C. Jiao, M. Goforth, B. Ozden, A. Ahyi, M. Hamilton, G. Niu, D. A. Ewoldt, G. Chung, and M. Park, "Spectroscopic photo I-V diagnostics of nitride-based high electron mobility transistor structures on Si wafers", *Electronics Letters*, **49**, 1547 (2013).
- U. Obahiagbon, H. Mohammed, B. Ozden, T. Isaac-smith, O. Akpa, M. A. Awaah, M. Park, K. Das, "Fabrication and characterization of CGS/n-Si heterojunction for photovoltaic application", TMS 142nd Annual Meeting and Exhibition, San Antonio, TX, March 3-7 (2013).

SELECTED PRESENTATIONS

- Oral Presentation, "Spectroscopic photo current voltage measurements to investigate non-uniform defect distributions in AlGaIn/GaN HEMT heterostructures" AVS 63rd International Symposium and Exhibition", Nashville, TN, November 6-11 (2016).
- Oral Presentation, "Photo IV Analysis of Sub-Bandgap Defects in AlGaIn/GaN HEMT Structures on Si Substrates", MRS 2015 Fall Meeting and Exhibition, Spectroscopic, November 30 (2015).
- Oral Presentation, "Qualitative Analysis of Surface Traps in AlGaIn/GaN HEMTs Structures Using TRPC", CAM 2015, Mexico, September 9 –12 (2015).
- Poster Presentation, "Depth-dependent UV Spectroscopic Photo IV Analysis of AlGaIn/GaN HEMT Layers", UKC 2015, Atlanta, GA, July 19 – August 1 (2015).
- Oral Presentation, "Investigation of electrically active defects distribution in AlGaIn/GaN high electron mobility transistor devices grown on Si wafers via depth-resolved ultra-violet spectroscopic photo current-voltage measurements", EMC 2015 Columbus, OH, June 24-26 (2015).
- Oral Presentation, "Depth-resolved ultra-violet spectroscopic photo current-voltage measurements for the analysis of AlGaIn/GaN HEMT epilayer deposited on Si, Interdisciplinary Colloquium", Auburn University, AL, Feb. 3 (2015).
- Oral Presentation, "Investigation of AlGaIn/GaN heterostructures on Si wafers via photo I-V measurement", AAS 91st Annual Meeting, Auburn AL, March 12-14 (2014).
- Oral Presentation, "Spectroscopic photo I-V diagnostic of nitride based HEMT structures", Graduate Forum Presentation, Auburn University, March 4 (2014).

AWARDS/HONORS

- Awarded 500\$ for travel expenses by the AVS Electronic Materials & Photonics Division | September 28 2016
- Honor as Marshall student of Graduate School | Auburn University | August 6 2016.

- Awarded 250\$ for travel expenses by Graduate School | Auburn University | June 05 2016.
- Awarded 500\$ for travel expenses by College of Science and Mathematics| Auburn University | October 12 2015.
- Funded for the 2015 Canadian-American-Mexican Graduate Student Physics Conference | U.S. National Science Foundation, the American Physical Society's Forum on Graduate Student Affairs, and the Sociedad Mexicana de Fisica | June 26, 2015.
- Awarded 175\$ for travel expenses by Graduate School | Auburn University | June 24 2015.
- Awarded as outstanding graduate research assistant by Physics Department | Auburn University | April 17 2015.
- Awarded as outstanding graduate student by Graduate School | Auburn University | March 20 2015.
- Selected as the recipient of 2015 Women of Distinction Graduate Student Leadership Award by Women Resource Center |Auburn University | March 13 2015.
- Awarded as outstanding graduate student from the department of physics by International Student Organization |Auburn University | April 21 2014.
- Second place in paper competition in the Physics and Mathematics Section of AAS 91st Annual Meeting |March 12-14 2014.
- Honor Degree | Bogazici University, Istanbul Turkey | June 2011.
- Erasmus Mundus Summer Internship Scholarship | Bogazici University, Istanbul Turkey | June-August 2010.
- Honor Student | Bogazici University, Istanbul Turkey | November 2010.

PROFESSIONAL MEMBERSHIPS

- American Physics Society | Member | 2014 – Present.
- Delta Epsilon Iota Honor Society | Member 2014 – Present.
- Auburn University Graduate Student Council | President | Spring 2016.
- Auburn University Graduate Student Council | Vice President | 2015 – 2016.
- Auburn University Academic Honesty Committee | Graduate Student Representative| 2015 – 2016.
- Graduate Women in Science | Secretary | 2014 – Present | Member | 2012-2014.
- Auburn University Turkish Student Organization | *President* | 2014 - 2015 |*Vice President* | 2013-2014.
- Auburn University Concession Board Committee | Graduate Student Representative | 2014 – 2015.
- Alabama Science Academy | Member | 2014 – 2016.
- The American Association of University Women | Member | 2014 – 2016.

KEY SKILLS

Computer

- LabVIEW, Origin, Python, Visual Basic, Matlab.

Experimental

- Fabrication: Lithography, Spin coating, RF sputtering, Annealing, Reactive Ion Etching, Oxidation, E-beam evaporation.
- Characterization: Current-Voltage (I-V), Capacitance-Voltage (C-V), Raman spectroscopy, Photoluminescence (PL) spectroscopy, PL imaging, Spectroscopic photo I-V, AFM, SEM, EDS, XPS.

Certificates

- LabVIEW Certified Associate Developer Certificate | May 2015.
- KEYENCE Microscope VHX-1000 Training Certificate | May 2015.
- Preparing Future Faculty Course Certificate | May 2015.
- The SANS Information Baseline Security Awareness Training Course – Securing the Human | November 2014.

VOLUNTEER EXPERIENCE

MRS 2015 Fall Annual Meeting | Symposium Assistant | December 2015

- Volunteered to chair the session.
- Helped the presenters on technical issues.
- Counted the time for the presenters.

Society of Women in Science and Mathematics Annual Meeting | Career Corner Representative | May 2015

- Represented Physics Department of Auburn University at the career corner.
- Prepared set of demonstrations for 220 high school female students.
- Consulted students on their possible career in Physics.

AU Explore| *Event Assistant* | May 2015

- Chaired an experiment section for 30 elementary school students.
- Explained the experiment and concepts behind it.
- Demonstrated an example experiment set up.

Women Leadership Conference | *Dining Coordination Committee Chair* | January 2015

- Administered the dining committee for Women Leadership Conference.
- Ordered the food that was served in the conference.
- Monitored the delivery and serving of the food.

Search Committee for Diversity Student Advocate | *Graduate Student Representative* | Spring 2015

- Sorted and arranged the application of candidates.
- Obtained information about candidates.
- Collaborated with committee members to choose best candidates.
- Interviewed with the candidates.

Concession Board Committee | *Graduate Student Representative* | Spring 2014- Present

- Evaluated funding proposal made by different programs at Auburn University.
- Assessed the oral presentations and raised questions to ensure the appropriate allocation of funds to organizations.
- Came up an agreement with other board members and we made a recommendation to the president who has final authority to approve the funding request.

Turkish Student Organization | *President* | 2014 – March 2015

- Collaborated with other board members to improving living conditions of Turkish students at Auburn University.
- Initiated a utility share program for incoming Turkish students.
- Organized various events and promoted relationships between Turkish students and students from other cultures.
- Wrote a funding proposal resulting in a \$1760 disbursement from Student Government Association.
- I sought to increase highest number membership in the organization.

Graduate Women in Science | *Secretary* | 2014 – Present

- Conducted outreach activities for elementary school students.
- Volunteered to develop science activities for kids for Mad Scientists Day at Auburn University.
- Led a group of undergraduate student volunteers to conduct a physics experiment.
- Invited speakers and arranged workshops for graduate women in science.

Auburn University Junior Mad Scientist Day | *Event Assistant* | September 2014

- Created science activities for students' age between 5 and 11 years old.
- Upgraded previous activities.
- Supervised physics activities for students.
- Provided equipment for the activities.

Auburn University Semiconductor Day for National Science Foundation Project | *Event Assistant* | April 2014

- Performed a skit for 8th grade students to explain physics concepts.
- Arranged laboratory activities for students.
- Responded students' questions regarding being a scientist.

Auburn University Division B Regional Science Olympiad | *Event Assistant* | March 2014 - 2015

- Guided high school students during the event.
- Evaluated students' performances.
- Photographed the event.

REFERENCES

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