

MATTHEW D. MCCLUSKEY

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EDUCATION

- Ph.D. Physics, University of California, Berkeley, 1997
- M.A. Physics, University of California, Berkeley, 1993
- B.Sc. Physics, Massachusetts Institute of Technology, 1991

EXPERIENCE

- WSU, Department of Physics and Astronomy, Professor, 2009–
- Chief Technology Officer and co-founder, Klar Scientific, 2016–
- WSU, Department of Physics and Astronomy, Chair, 2012–16
- WSU, Materials Science Program, Interim Chair, 2008–9
- WSU, Department of Physics and Astronomy, Acting Chair, 2006–7
- WSU, Department of Physics, Associate Professor with tenure, 2004–9
- WSU, Department of Physics, Assistant Professor, 1998–2004
- Xerox Palo Alto Research Center (PARC), Postdoctoral Research Associate, 1997–8
- Lawrence Berkeley National Laboratory (LBNL), Graduate Student Researcher, 1993–6

DISSERTATION

- **Title:** [Hydrogen Local Vibrational Modes in Semiconductors](#)
- **Committee:** Eugene Haller (chair), Peter Yu (co-chair), Steven Louie, and Daryl Czhran

RESEARCH INTERESTS

- Optical and electrical properties of semiconductors and oxides
- Infrared spectroscopy of defects in semiconductors
- Synthesis and characterization of oxide materials
- High-pressure physics
- Optical microscopy and spectroscopy

PROFESSIONAL SOCIETIES

- American Physical Society (APS)
- AVS (Science and technology of materials, interfaces, and processing)
- Materials Research Society (MRS)
- National Academy of Inventors (NAI), Senior Member
- SPIE (The international society for optics and photonics)

AWARDS

- Senior Member, National Academy of Inventors, 2022
- Westinghouse Distinguished Professorship in Materials Science and Engineering, 2013–
- WSU College of Sciences New Faculty Performance Award, one awarded, 2002

Student awards (past 10 years)

- Julie Miller, NASA Space Grant, 2025
- Syeed Ahmed, MSEP Poster Presentation Winner (three awarded), 2021
- Leah Snyder, Ed & Virginia Donaldson Surface Science Fellowship, 2020
- Syeed Ahmed, Pacific Northwest AVS (PNW-AVS) poster 2nd prize, 2019
- Anya Rasmussen, WSU Association of Faculty Women Rigas Award, 2015
- Anya Rasmussen, Advanced Light Source Doctoral Fellowship in Residence, 2014–5

SERVICE AT WSU (past 10 years)

University

- Provost Tenure and Promotion Committee, 2015–7, 2024–
- Entrepreneurial Faculty Ambassador (EFA), 2021–
- Commercialization Gap Fund Internal Review Committee, 2017–
- EFA Speaker Series Committee, 2022–3
- Materials Science and Engineering Program Advisory Council, 2021–3
- Move In Volunteer, 2022
- Research Week panel on entrepreneurship, 2021
- Seed Grant Review Panel, 2010, 2014–6
- Academic Showcase Committee, 2011–2, 2014–7
- Keynote Speaker, Phi Beta Kappa Induction Ceremony, 2016
- Dean (College of Arts & Sciences) Review Committee, 2016
- Materials Science and Engineering Director Search Committee, 2014–5
- Materials Science and Engineering Advisory Committee, 2010–4, 2018–20
- Faculty address, “Crimson Reads,” 2014

College of Arts & Sciences

- Safety Committee, 2021–23
- *Ad hoc* Tenure and Promotion Committees, 2015–8

Department of Physics & Astronomy

- Chair, Safety/Space/Building Committee, 2018–23
- Chair, Experimentalist Search Committee, 2022–23
- Graduate Admissions Committee, 2021
- Promotion Guidelines Committee, 2019–20

- Department Chair, 2012–6
- Chair, Fiscal Analyst Search Committee, 2015
- Chair, Administrative Manager Search Committee, 2015
- Chair, Program Coordinator Search Committee, 2014
- Colloquium Coordinator, 2000, 2001, 2013
- Chair, Department Vision Committee, 2010–11
- Graduate Studies Committee, 2000–11 (Chair 2007–11)
- Research Experiences for Undergraduates (REU) Site, PI and Faculty Coordinator, 2007–10

SERVICE OUTSIDE WSU

- Steering Committee, International Conference on Defects in Semiconductors (ICDS), 2019– (Chair 2023–)
- External Advisory Board for NSF Materials Research Science and Engineering Center (MRSEC), University of Illinois, 2025–
- Scientific Advisory Committee for APEX, an Energy Frontier Research Center, 2024–
- Co-organizer, Focus Topic on Dopants and Defects in Semiconductors, APS March Meeting, 2009, 2013, 2021
- APS March Meeting Abstract Sorters' Meeting, 2003, 2020
- Chair, ICDS–30, Seattle, 2019
- International Advisory Committee, ICDS, 2003–17
- Program Committee, ICDS, 2015, 2017, 2021, and 2023
- National Science Foundation (NSF) review panels, 2002, 2009, 2012, 2017
- Chair, APS Northwest (APSNW) Meeting, 2015
- Department of Energy (DOE) review panels, 2009, 2010, 2011, 2013, 2015
- Environmental Molecular Sciences Laboratory (EMSL) User Executive Committee, 2011–14
- Corbett Prize Committee, ICDS, 2013
- APSNW Program Committee, 2005–6 and 2011–12
- Program Committee, Gordon Research Conference (GRC) on Defects in Semiconductors, 2010 and 2012
- Chair, GRC on Defects in Semiconductors, 2007–8 (Vice Chair 2005–6)
- Advisory Committee, University of Idaho DOE-EPSCOR Grant, 2005–7
- International Conference on Hydrogen in Materials organizing committee, 2002–6
- APSNW Executive Committee, 2004–5
- Co-organizer, Focus Topic on Wide-band-gap Semiconductors, APS March Meeting, 2004
- Co-organizer, Symposium on Hydrogen in Semiconductors, MRS Spring Meeting, 2004
- Session chair and poster judge for various conferences

REFEREEING

- **Journals:** ACS Photonics, Advanced Functional Materials, American Journal of Physics, Applied Materials and Interfaces, Applied Physics Letters, Applied Spectroscopy, Applied Surface Science, Canadian Journal of Physics, Central European Journal of Physics, Ceramics International, Chemical Physics Letters, Crystal Growth & Design, Crystals, IEEE Electron Device Letters, Japanese Journal of Applied Physics, Journal of Alloys and Compounds, Journal

of Applied Physics, Journal of Chemical Physics, Journal of Crystal Growth, Journal of the Electrochemical Society, Journal of Luminescence, Journal of Nanomaterials, Journal of Nuclear Materials, Journal of Physical Chemistry, Journal of Physics D, Journal of Vacuum Science and Technology (JVST) A, JVST B, Materials Letters, Materials Research Bulletin, Materials Science in Semiconductor Processing, Materials Today, Nanoscale, Nanotechnology, Nature, Nature Materials, New Journal of Physics, Optical Materials Express, Organic Electronics, Physical Review Applied, Physical Review B, Physica Status Solidi A, Physical Review Letters, Physical Review Materials, PLOS ONE, Reviews of Modern Physics, Semiconductor Science and Technology, Sensors and Actuators B, Thin Solid Films

- **Funding agencies:** DOE, NSF, Deutsche Forschungsgemeinschaft (DFG), French National Research Agency (ANR), Natural Sciences and Engineering Research Council of Canada, Petroleum Research Fund (PRF), United States – Israel Binational Science Foundation, National Science Center Poland
- **Other:** Advanced Light Source (ALS), Environmental Molecular Sciences Laboratory / Pacific Northwest National Laboratory (EMSL/PNNL), Le Studium, Stanford Synchrotron Radiation Laboratory, book proposals, tenure applications, external examiner/reader for Ph.D. committees (University of Alberta and Simon Fraser University)

OUTREACH

- MIT Graduate Alumni Book Club (remote): *The Last Weapon*, 2024
- MIT Educational Counselor, 2014–18
- MIT Reunion Gift Committee, 2015–6
- Contributor to WSU's *Ask Dr. Universe* column
- Physics videos on YouTube
- Leader, Franklin Elementary Math Club, 2009–10
- Recruiting trip, 2009 Joint Annual Conference of the National Society of Black Physicists and the National Society of Hispanic Physicists
- Team Leader, “Kids Judge” neuroscience event, 2006
- Development of lab exercises for the Nespelem school, on the Colville Indian reservation in northeast Washington, for 8th grade class
- Organized visits by WSU Children's Center (ages: 2-10)
- Mentor for Pullman High School senior science project
- Physics demonstrations for elementary students

PUBLICATIONS

Summary

- Authored or co-authored over 100 peer-reviewed publications and 2 textbooks. *H*-index = 42 ([Google Scholar](#), 1/1/2025).
- Top citations, work done at WSU:
 - 1,351: “Defects in ZnO,” *J. Appl. Phys.* (2009)
 - 456: “Tutorial: Defects in semiconductors—Combining experiment and theory,” *J. Appl. Phys.* (2016)
 - 244: “Infrared spectroscopy of hydrogen in ZnO,” *Appl. Phys. Lett.* (2002)
 - 234: *Dopants and Defects in Semiconductors* (CRC Press, 2018)
 - 234: “Point defects in Ga₂O₃,” *J. Appl. Phys.* (2020)
 - 195: “Persistent photoconductivity in strontium titanate,” *Phys. Rev. Lett.* (2013)
 - 167: “Nitrogen is a deep acceptor in ZnO,” *AIP Advances* (2011) (most cited AIP Advances article in 2012)
 - 167: “Local vibrational modes of impurities in semiconductors,” *J. Appl. Phys.* (2000)
- Top citations, work done before WSU:
 - 276: “Large band gap bowing of In_xGa_{1-x}N alloys,” *Appl. Phys. Lett.* (1998)
 - 249: “Phase separation in InGaN/GaN multiple quantum wells,” *Appl. Phys. Lett.* (1998)
 - 244: “Local vibrational modes of the Mg-H acceptor complex in GaN,” *Appl. Phys. Lett.* (1996)
 - 235: “Metastability of oxygen donors in AlGaN,” *Phys. Rev. Lett.* (1998)
 - 227: “Fano interference of the Raman phonon in heavily boron-doped diamond films grown by chemical vapor deposition,” *Appl. Phys. Lett.* (1995)
 - 185: “Optical properties of InGaN alloys grown by metalorganic chemical vapor deposition,” *J. Appl. Phys.* (1998)

Journal Articles (peer-reviewed)

Work done at WSU (2020–)

160. C. Remple, B.L. Dutton, J.B. Varley, J.S. McCloy, and M.D. McCluskey, [Cr is not an acceptor in β-Ga₂O₃](#), *Phys. Rev. Materials* **9**, 054606:1-8 (2025).
159. B.L. Dutton, C. Remple, J. Huso, J. Jesenovc, B.K. Downing, J.-X. Shen, J.B. Varley, L.F. Voss, M.D. McCluskey, and J.S. McCloy, [Micro-segregation phenomena and related spectroscopic signals in melt-grown β-Ga₂O₃ single crystals](#), *J. Appl. Phys.* **137**, 175703:1-10 (2025).
158. J.C. Miller, Y. Wang, Y. Zhang, T.A. Schmedake, and M.D. McCluskey, [Phase transitions of β-ZnTe\(en\)_{0.5} under hydrostatic pressure](#), *AIP Advances* **15**, 045308:1-5 (2025). Featured cover article.
157. S.E. Ahmed, C. Ingraham, M.D. McCluskey, J. Huso, and V.M. Poole, [Carbon impurities in oxide thin films: The effect of annealing and laser irradiation](#), *J. Vac. Sci. Technol. B* **43**, 022204:1-6 (2025).
156. M.M. Santillan, I. Chatratin, A. Janotti, and M.D. McCluskey, [Room temperature persistent photoconductivity of KTaO₃ single crystals](#), *Phys. Rev. Materials* **8**, L111601:1-5 (2024).

155. B.L. Dutton, C. Remple, N. Sakaguchi, A. Balog, N. Alem, J.B. Varley, L.F. Voss, M.D. McCluskey, and J.S. McCloy, [Growth phenomena and band gap shift in melt-grown \$\beta\$ -\(In_xGa_{1-x}\)₂O₃ alloys](#), *Phys. Status Solidi B* **2024**, 2400473:1-7 (2024).
154. J. Huso, M.D. McCluskey, J.S. McCloy, C.D. Frye, J.B. Varley, and L.F. Voss, [Photoluminescence and Raman spectroscopy of wide bandgap semiconductors damaged by deep-UV laser irradiation](#), *Optical Materials Express* **14**, 2929-2937 (2024).
153. J. Huso, M.D. McCluskey, J.S. McCloy, A. Bhattacharyya, S. Krishnamoorthy, C.D. Frye, J.B. Varley, and L.F. Voss, [Photoluminescence mapping of laser-damaged \$\beta\$ -Ga₂O₃](#), *MRS Commun.* **14**, 427-431 (2024).
152. C. Remple, J. Huso, M.H. Weber, J.S. McCloy, and M.D. McCluskey, [Electron irradiation effects on the optical properties of Hf and Zn doped \$\beta\$ -Ga₂O₃](#), *J. Appl. Phys.* **135**, 185702:1-10 (2024).
151. L.M. Barmore, A.M. Rasmussen, B. Whitfield, and M.D. McCluskey, [Phase transition in heptane under pressure](#), *J. Phys. Chem. C* **128**, 2266-2270 (2024).
150. J.E. Stehr, M. Jansson, S.J. Pearton, J.S. McCloy, J. Jesenovec, B.L. Dutton, M.D. McCluskey, W.M. Chen, and I.A. Buyanova, [Color center in \$\beta\$ -Ga₂O₃ emitting at the telecom range](#), *Appl. Phys. Lett.* **124**, 042104:1-6 (2024).
149. B.L. Dutton, J.B. Varley, C. Remple, J. Jesenovec, B.K. Downing, J.-X. Shen, S. Ghandiparsi, A. Neal, Y. Kim, A. Green, L.F. Voss, M.D. McCluskey, and J.S. McCloy, [Melt-grown semi-insulating Mn: \$\beta\$ -Ga₂O₃ single crystals exhibiting unique visible absorptions and luminescence](#), *J. Vac. Sci. Technol. A* **42**, 012801:1-8 (2024).
148. M.D. McCluskey, [Resonant interactions involving local vibrational modes in crystals](#), *J. Appl. Phys.* **134**, 201101:1-6 (2023).
147. L.M. Barmore, J. Jesenovec, J.S. McCloy, and M.D. McCluskey, [Photoluminescence of Cr³⁺ in \$\beta\$ -Ga₂O₃ and \(Al_{0.1}Ga_{0.9}\)₂O₃ under pressure](#), *J. Appl. Phys.* **133**, 175703:1-9 (2023).
146. S.E. Ahmed, V.M. Poole, J. Jesenovec, B.L. Dutton, J.S. McCloy, and M.D. McCluskey, [Room temperature persistent photoconductivity in barium calcium titanate](#), *J. Electronic Mater.* **52**, 2499-2504 (2023).
145. C. Remple, L.M. Barmore, J. Jesenovec, J.S. McCloy, and M.D. McCluskey, [Photoluminescence spectroscopy of Cr³⁺ in \$\beta\$ -Ga₂O₃ and \(Al_{0.1}Ga_{0.9}\)₂O₃](#), *J. Vac. Sci. Technol. A* **41**, 022702:1-7 (2023).
144. J. Jesenovec, B.L. Dutton, C. Remple, N. Smith-Gray, M. Murugesan, C. Peterson, B.K. Downing, S. Krishnamoorthy, M.D. McCluskey, and J.S. McCloy, [Alternative alloy to increase bandgap in gallium oxide, \$\beta\$ -\(Sc_xGa_{1-x}\)₂O₃, and rare earth Stark luminescence](#), *J. Crystal Growth* **596**, 126823:1-9 (2022).
143. T.D. Gustafson, N.C. Giles, B.C. Holloway, J. Jesenovec, B.L. Dutton, J.S. McCloy, M.D. McCluskey, and L.E. Halliburton, [Transition-metal ions in \$\beta\$ -Ga₂O₃ crystals: Identification of Ni acceptors](#), *J. Appl. Phys.* **132**, 185705:1-7 (2022).
142. H.-S. Lee, M.W. Rahman, D. Verma, V.M. Poole, R.C. Myers, M.D. McCluskey, and S. Rajan, [Selectively-patterned Mg-doped GaN by SiN_x-driven hydrogen injection](#), *J. Vac. Sci. Technol. B* **40**, 062201:1-6 (2022).
141. Y. Yu and M.D. McCluskey, [Classification of semiconductors using photoluminescence spectroscopy and machine learning](#), *Applied Spectroscopy* **76**(2), 228-234 (2022).
140. T.D. Gustafson, N.C. Giles, B.C. Holloway, C.A. Lenyk, J. Jesenovec, J. S. McCloy, M.D. McCluskey, and L.E. Halliburton, [Cu²⁺ and Cu³⁺ acceptors in \$\beta\$ -Ga₂O₃ crystals: A magnetic resonance and optical absorption study](#), *J. Appl. Phys.* **131**, 065702:1-14 (2022).
139. J. Jesenovec, C. Pansegrau, M.D. McCluskey, J.S. McCloy, T.D. Gustafson, L.E. Halliburton, and J.B. Varley, [Persistent room temperature photodarkening in Cu-doped \$\beta\$ -Ga₂O₃](#), *Phys. Rev. Lett.* **128**, 077402:1-6 (2022).

138. C. Pansegrau and M.D. McCluskey, [Persistent photoconductivity in barium titanate](#), *J. Appl. Phys.* **131**, 095701:1-4 (2022).
137. J. Jesenovc, C. Remple, J. Huso, B. Dutton, P. Toews, M.D. McCluskey, and J.S. McCloy, [Photodarkening and dopant segregation in Cu-doped \$\beta\$ -Ga₂O₃ Czochralski single crystals](#), *J. Crystal Growth* **578**, 126419:1-9 (2022).
136. C. Remple, J. Huso, and M.D. McCluskey, [Photoluminescence and Raman mapping of \$\beta\$ -Ga₂O₃](#), *AIP Advances* **11**, 105006:1-6 (2021).
135. C. Pansegrau, J. Jesenovc, J.S. McCloy, M.D. McCluskey, [Zinc-hydrogen and zinc-iridium pairs in \$\beta\$ -Ga₂O₃](#), *Appl. Phys. Lett.* **119**, 102104:1-4 (2021).
134. S.E. Ahmed, V.M. Poole, J. Igo, Y. Gu, and M.D. McCluskey, [Localized phase transition of TiO₂ thin films induced by sub-bandgap laser irradiation](#), *J. Vac. Sci. Technol. A* **39**, 053402:1-6 (2021).
133. J. Jesenovc, M. Weber, C. Pansegrau, M.D. McCluskey, K.G. Lynn, and J.S. McCloy, [Gallium vacancy formation and configuration in unintentionally doped \$\beta\$ -Ga₂O₃](#), *J. Appl. Phys.* **129**, 245701:1-9 (2021).
132. T.D. Gustafson, J. Jesenovc, C.A. Lenyk, N.C. Giles, J.S. McCloy, M.D. McCluskey, and L.E. Halliburton, [Zn acceptors in \$\beta\$ -Ga₂O₃ crystals](#), *J. Appl. Phys.* **129**, 155701:1-10 (2021).
131. J. Huso, M.D. McCluskey, Y. Yu, Md. M. Islam, and F. Selim, [Localized UV emitters on the surface of Ga₂O₃](#), *Scientific Reports* **10**, 21022:1-7 (2020).
130. J.R. Ritter, M.J. Caldas, T.J. da Silva, A. Calzolari, and M.D. McCluskey, [Surface effects on pyrene luminescence excitation](#), *ACS Applied Electronic Materials* **2**, 2806-2812 (2020).
129. J. Lapp, D. Thapa, J. Huso, A.J. Canul, M.G. Norton, M.D. McCluskey, and L. Bergman, [Enhancement of the ultraviolet photoluminescence of ZnO films: Coatings, annealing, and environmental exposure studies](#), *AIP Advances* **10**, 085217:1-8 (2020).
128. M.D. McCluskey and A. Janotti, [Defects in semiconductors](#), *J. Appl. Phys.* **127**, 190401:1-3 (2020).
127. S.E. Ahmed, J. Huso, J.R. Ritter, J. Igo, Y. Gu, and M.D. McCluskey, [Insulating regions in a TiO₂ thin film defined by laser irradiation](#), *J. Vac. Sci. Technol. B* **38**, 032203:1-7 (2020).
126. Y. Yu, X. Ye, and M.D. McCluskey, [Confocal microscopy with a microlens array](#), *Applied Optics* **59**, 3058-3063 (2020).
125. M.D. McCluskey, [Point defects in Ga₂O₃](#), *J. Appl. Phys.* **127**, 101101:1-13 (2020). [Featured Article](#).

Work done at WSU (2010–2019)

124. J.R. Ritter, K.G. Lynn, and M.D. McCluskey, [Iridium-related complexes in Czochralski-grown \$\beta\$ -Ga₂O₃](#), *J. Appl. Phys.* **126**, 225705:1-6 (2019).
123. J. Huso, J.R. Ritter, L. Bergman, and M.D. McCluskey, [High order oxygen local vibrational modes in ZnS_{1-x}O_x](#), *Phys. Stat. Solidi B* **2019**, 1800607:1-9 (2019).
122. J. Huso, L. Bergman, and M.D. McCluskey, [Bandgap of cubic ZnS_{1-x}O_x from optical transmission spectroscopy](#), *J. Appl. Phys.* **125**, 075704:1-5 (2019).
121. D. Thapa, J. Huso, J. Lapp, N. Rajabi, J. Morrison, M.D. McCluskey, and L. Bergman, [Thermal stability of ultra-wide-bandgap MgZnO alloys with wurtzite structure](#), *Journal of Materials Science: Materials in Electronics* **29**, 16782-16790 (2018).
120. J.R. Ritter, J. Huso, P.T. Dickens, J.B. Varley, K.G. Lynn, and M.D. McCluskey, [Compensation and hydrogen passivation of magnesium acceptors in \$\beta\$ -Ga₂O₃](#), *Appl. Phys. Lett.* **113**, 052101:1-5 (2018).

119. J. Huso, J.R. Ritter, D. Thapa, K.M. Yu, L. Bergman, and M.D. McCluskey, [Oxygen vibrational modes in ZnS_{1-x}O_x alloys](#), *J. Appl. Phys.* **123**, 161537:1-5 (2018).
118. V.M. Poole, J. Huso, and M.D. McCluskey, [The role of hydrogen and oxygen in the persistent photoconductivity of strontium titanate](#), *J. Appl. Phys.* **123**, 161545:1-5 (2018).
117. N.S. Parmar, J.-W. Choi, L.A. Boatner, M.D. McCluskey, and K.G. Lynn, [Formation of high concentrations of isolated Zn vacancies and evidence for their acceptor levels in ZnO](#), *Journal of Alloys and Compounds* **729**, 1031-1037 (2017).
116. V.M. Poole, S.J. Jokela, and M.D. McCluskey, [Using persistent photoconductivity to write a low-resistance path in SrTiO₃](#), *Scientific Reports* **7**, 6659:1-6 (2017).
115. X. Ye and M.D. McCluskey, [Subtractive imaging using Gaussian fits and image moments in confocal microscopy](#), *Res. J. Opt. Photonics* **1**(1), 1000102:1-5 (2017).
114. Q. Wang, L. Yang, S. Zhou, X. Ye, Z. Wang, W. Zhu, M.D. McCluskey, and Y. Gu, [Phase-defined Van der Waals Schottky junctions with significantly enhanced thermoelectric properties](#), *J. Phys. Chem. Lett.* **8**, 2887-2894 (2017).
113. D. Thapa, J. Huso, K. Miklos, P.M. Wojcik, D.N. McIlroy, J.L. Morrison, C. Corolewski, M.D. McCluskey, T.J. Williams, M.G. Norton, and L. Bergman, [UV-luminescent MgZnO semiconductor alloys: Nanostructure and optical properties](#), *J. Mat. Sci.:Mater. Electron.* **28**, 2511-2520 (2017).
112. X. Ye and M.D. McCluskey, [Modular scanning confocal microscope with digital image processing](#), *PLoS ONE* **11**(11), e0166212:1-14 (2016).
111. A.M. Rasmussen, E. Mafi, W. Zhu, Y. Gu, and M.D. McCluskey, [High pressure \$\gamma\$ -to- \$\beta\$ phase transition in bulk and nanocrystalline In₂Se₃](#), *High Pressure Res.* **36**, 549-56 (2016).
110. D. Thapa, J. Huso, J.L. Morrison, C.D. Corolewski, M.D. McCluskey, and Leah Bergman, [Achieving highly-enhanced UV photoluminescence and its origin in ZnO nanocrystalline films](#), *Optical Materials* **58**, 382–9 (2016).
109. C.D. Corolewski, N.S. Parmar, K.G. Lynn, and M.D. McCluskey, [Hydrogen-related complexes in Li-diffused ZnO single crystals](#), *J. Appl. Phys.* **120**, 035702:1-5 (2016).
108. A. Alkauskas, M.D. McCluskey, and C.G. Van de Walle, [Tutorial: Defects in semiconductors—Combining experiment and theory](#), *J. Appl. Phys.* **119**, 181101:1-11 (2016).
107. S.T. Hung, A. Bhuyan, K. Schademan, J. Steverlynck, M.D. McCluskey, G. Koeckelberghs, K. Clays, and M.G. Kuzyk, [Spectroscopic studies of the mechanism of reversible photodegradation of 1-substituted aminoanthraquinone-doped polymers](#), *J. Chem. Phys.* **144**, 114902:1-17 (2016).
106. K.W. Harrison, C.D. Corolewski, M.D. McCluskey, J. Lindemuth, S. Ha, and M.G. Norton, [Electronic transport in molybdenum dioxide thin films](#), *J. Mater. Sci.: Mater. Electron.* **26**, 9717-20 (2015).
105. V.M. Poole, C.D. Corolewski, and M.D. McCluskey, [P-type conductivity in annealed strontium titanate](#), *AIP Advances* **5**, 127217:1-4 (2015).
104. N.S. Parmar, C.D. Corolewski, M.D. McCluskey, and K.G. Lynn, [Potassium acceptor doping of ZnO crystals](#), *AIP Advances* **5**, 057107:1-7 (2015).
103. J. Huso, H. Che, D. Thapa, A. Canul, M.D. McCluskey, and L. Bergman, [Phonon dynamics and Urbach energy studies of MgZnO alloys](#), *J. Appl. Phys.* **117**, 125702:1-8 (2015).
102. M.D. McCluskey, C.D. Corolewski, J. Lv, M.C. Tarun, S.T. Teklemichael, E.D. Walter, M.G. Norton, K.W. Harrison, and S. Ha, [Acceptors in ZnO](#), *J. Appl. Phys.* **117**, 112802:1-6 (2015).
101. F.A. Selim, D. Winarski, C.R. Varney, M.C. Tarun, Jianfeng Ji, and M.D. McCluskey, [Generation and characterization of point defects in SrTiO₃ and Y₃Al₅O₁₂](#), *Results in Physics* **5**, 28-31 (2015).
100. S.T. Teklemichael, M.D. McCluskey, G. Buchowicz, O.D. Dubon, and E.E. Haller, [Evidence for a shallow Cu acceptor in Si from infrared spectroscopy and photoconductivity](#), *Phys. Rev. B* **90**, 165204:1-4 (2014).

99. J.M. Philipps, J.E. Stehr, I. Buyanova, M.C. Tarun, M.D. McCluskey, B.K. Meyer, and D.M. Hofmann, [Recharging behavior of nitrogen-centers in ZnO](#), *J. Appl. Phys.* **116**, 063701:1-4 (2014).
98. J. Huso, J.L. Morrison, L. Bergman, and M.D. McCluskey, [Anharmonic resonant Raman modes in \$Mg_{0.2}Zn_{0.8}O\$](#) , *Phys. Rev. B* **87**, 125205:1-5 (2013).
97. E.H. Khan, M.H. Weber, and M.D. McCluskey, [Formation of isolated Zn vacancies in ZnO single crystals by absorption of ultraviolet radiation: A combined study using positron annihilation, photoluminescence, and mass spectroscopy](#), *Phys. Rev. Lett.* **111**, 017401:1-5 (2013).
96. F. Tuomisto, C. Rauch, M.R. Wagner, A. Hoffmann, S. Eisermann, B.K. Meyer, L. Kilanski, M.C. Tarun, and M.D. McCluskey, [Nitrogen and vacancy clusters in ZnO](#), *Journal of Materials Research* **28**, 1977-83 (2013).
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20. M.D. McCluskey, B.D. Riley, A.M. Perenchio, and M. Knoblauch, [Confocal microscopy of water under static pressure](#), *AIP Conf. Proc.* **955**, 1109-12 (2007).*
19. M.D. McCluskey and S.J. Jokela, [Hydrogen donors in zinc oxide](#), in *Proceedings of the NATO Advanced Workshop on Zinc Oxide*, edited by N. Nickel and E. Terukov, *NATO Science Series II* **194**, pp. 125-32 (2005).*
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13. M.D. McCluskey, K.K. Zhuravlev, M. Kneissl, W. Wong, D. Treat, S. Limpijumnong, C.G. Van de Walle, and N.M. Johnson, [Vibrational spectroscopy of GaN:Mg under pressure](#), *MRS Proceedings* **693**, I2.4 (6 pages) (2001).*
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9. D.P. Bour, M. Kneissl, N.M. Johnson, L. Romano, B.S. Krusor, M. McCluskey, W. Götz, and R.D. Bringand, [Characterization of AlGaInN heterostructures and laser diodes](#), *Proc. SPIE* **3284**, DOI: 10.1117/12.304435 (1998).
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7. M.D. McCluskey, [Hydrogen local vibrational modes in compound semiconductors](#), *MRS Proceedings* **513**, 217-28 (1998).*
6. W. Shan, J.W. Ager III, W. Walukiewicz, E.E. Haller, M.D. McCluskey, N.M. Johnson, and D.P. Bour, [Pressure dependence of optical transitions in InGaIn/GaN multiple quantum wells](#), *MRS Proceedings* **537**, G3.15 (6 pages) (1998).*
5. M.D. McCluskey, E.E. Haller, W. Walukiewicz, and P. Becla, [Resonant interaction between local vibrational modes and extended lattice phonons in AlSb](#), *Mat. Sci. Forum* **258-263**, 1247-52 (1997).*
4. E.E. Haller and M.D. McCluskey, [Infrared optical studies of semiconductors at large hydrostatic pressures](#), *MRS Proceedings* **499**, 371-80 (1997).*
3. M.D. McCluskey, L.T. Romano, B.S. Krusor, and D.P. Bour, [Phase separation in InGaIn/GaN multiple quantum wells](#), *MRS Proceedings* **482**, 985-9 (1997).*
2. W. Götz, M.D. McCluskey, N.M. Johnson, and D.P. Bour, [Spectroscopic identification of the acceptor-hydrogen complex in Mg-doped GaN grown by MOCVD](#), *MRS Proceedings* **468**, 117-22 (1997).*

1. M.D. McCluskey, E.E. Haller, J. Walker, and N.M. Johnson, "Local vibrational mode spectroscopy of beryllium-hydrogen and zinc-hydrogen complexes in GaP," *Inst. Phys. Conf. Ser. No. 141*, 287-90 (1995).*

Books

- M.D. McCluskey, *No-Frills Physics: A Concise Guide for Algebra-Based Physics* (CRC Press, Boca Raton, FL, 2019). ISBN 978-1138583870.
- M.D. McCluskey and E.E. Haller, *Dopants and Defects in Semiconductors, 2nd edition* (CRC Press, Boca Raton, FL, 2018). ISBN 978-1138035195.
- M.D. McCluskey, *Physics: A Problem Solving Approach* (Confocal Media, 2015). ISBN 978-0692448915 (out of print).
- M.D. McCluskey, *The Last Weapon: A Novel* (Confocal Media, 2013). ISBN 978-0615823225.
- M.D. McCluskey and E.E. Haller, *Dopants and Defects in Semiconductors* (CRC Press, Boca Raton, FL, 2012). ISBN 978-1439831526.

Book chapters

- M.D. McCluskey, [Vibrational spectroscopy](#), in *Characterisation and Control of Defects in Semiconductors*, ed. F. Tuomisto (IET, United Kingdom, 2019), Ch. 3. ISBN 978-1785616556.
- M.D. McCluskey, [Defects in ZnO](#), in *Defects in Advanced Electronic Materials and Novel Low Dimensional Structures*, ed. I. Buyanova, W. Chen, and J. Stehr (Elsevier, 2018), 1-25. ISBN 978-0081020531.
- M.D. McCluskey, [High pressure IR](#), in *Encyclopedia of Spectroscopy and Spectrometry, 3rd edition*, Vol. 2, ed. J.C. Lindon, G.E. Tranter, and D.W. Koppenaal (Oxford: Elsevier, 2017), 122-125. ISBN 978-0128032244.
- M.D. McCluskey, [Point defects in ZnO](#), in *Semiconductors and Semimetals 91*, ed. C. Jagadish, V. Privitera, and L. Romano (Elsevier, 2015), 279-313. ISBN 978-0128019351.
- S. Jokela and M. McCluskey, "Hydrogen in ZnO," in *Zinc Oxide, the Future material for Electronics: A Comprehensive Review on ZnO Physics and Defects*, ed. F. Selim (Research Signpost, Kerala, India, 2011), 117-140. ISBN 978-8130803920.
- M.D. McCluskey and E.E. Haller, [Vibrational spectroscopy of hydrogen in III-V and II-VI semiconductors](#), in *Semiconductors in Semimetals 61*, ed. N.H. Nickel (Academic Press, 1999), 373-440. ISBN 978-0127521701.

Editing

- Special Topic on Defects in Semiconductors, *Journal of Applied Physics*, guest editors A. Janotti and M.D. McCluskey (2019).
- *Hydrogen in Semiconductors*, edited by N.H. Nickel, M.D. McCluskey, and S.B. Zhang (Mat. Res. Soc. Symp. Proc. **813**, Warrendale, PA, 2004). ISBN 978-1558997639.

PATENTS

- M.D. McCluskey and S.E. Ahmed, Reducing carbon contamination in thin films using laser irradiation
 - Provisional application No. 63/749,317, filed 1/24/2025
- J. Huso, R.S. Lytel, M.D. McCluskey, and V.M. Poole, Spectroscopic microscope with changeable components
 - Filed 6/21/2022, pending
 - Provisional application No. 63/213,895, filed 6/23/2021

- M.D. McCluskey, [Modular scanning confocal optical profile microscopy with digital image processing](#), No. US 10,989,903 B2
 - Filed 2/26/2019, granted 4/27/2021
 - Provisional application No. 62/635,134, filed 2/26/2018
- M.D. McCluskey, [Digital confocal optical profile microscopy](#), No. US 9,891,422 B2
 - Filed 9/05/2013, granted 2/13/2018
 - Provisional application No. 61/700,198, filed 9/12/2012

PRESENTATIONS (past 10 years, oral contributions unless noted)

- “Alternate assignment for the 250 cm⁻¹ Raman mode in β-Ga₂O₃,” MRS Spring Meeting 2025
- “Persistent optical phenomena in oxide semiconductors,” International Workshop on Semiconductor Oxides (IWSO), 2025
- “Fundamentals of semiconductors,” IWSO Semiconductor School, 2025
- “Photoluminescence mapping of gallium oxide surfaces and epilayers,” AVS International Symposium, 2024
- “Photoluminescence mapping of laser-damaged β-Ga₂O₃,” SPIE Laser Damage Meeting, 2024
- “Photoluminescence mapping of defects in semiconductors,” GRC on Defects in Semiconductors, 2024 ([poster](#))
- “Photoluminescence mapping of defects in β-Ga₂O₃,” International Workshop on Gallium Oxide and Related Materials (IWGO), 2024 ([invited](#))
- “Photoluminescence mapping of defects in β-Ga₂O₃ epilayers,” International Conference on Metalorganic Vapor Phase Epitaxy (ICMOVPE), 2024
- “Photoluminescence mapping of defects in β-Ga₂O₃,” MRS Spring Meeting 2024 ([invited](#))
- “Physics of crystal colors,” APS March Meeting, 2024 ([invited](#))
- “Photoluminescence mapping of surface defects on β-Ga₂O₃,” Conference on Electronic Materials and Applications (EMA), 2024
- “Photoluminescence maps of surface defects in β-Ga₂O₃,” Conference on the Physics and Chemistry of Surfaces and Interfaces (PSCI-49, 2024) (poster and talk)
- “Defects in gallium oxide imaged by photoluminescence microscopy,” MRS Fall Meeting 2023
- “Deep UV photoluminescence mapping of gallium oxide,” AVS International Symposium, 2023
- “Using light to study – and change – defects,” ICDS-32, 2023 ([invited](#))
- “Photoluminescence mapping of gallium oxide,” Gallium Oxide Workshop (GOX), 2023 (poster)
- “Photoluminescence mapping of semiconductors and oxides,” PNW-AVS Symposium, 2022 and 2023
- “Persistent photoconductivity in perovskite oxide semiconductors,” APS March Meeting, 2023
- “Persistent optical phenomena in oxide semiconductors,” Photonics West, 2023 ([invited](#))
- “Using light to change hydrogen-related defects in oxide semiconductors,” GRC on Defects in Semiconductors, 2022 ([invited](#))
- “Photoluminescence mapping of light-emitting devices and materials,” Phosphor Safari – The 12th International Symposium for Luminescent Materials, 2022 ([invited](#), virtual)
- “Defects in – and *on* – gallium oxide,” APS March Meeting, 2022 ([invited](#))
- “Defects in gallium oxide, in the bulk and on the surface,” ICDS-31, 2021 (virtual)
- “Defects in gallium oxide,” Physical Behavior of Materials DOE-BES PI Meeting, 2021 ([invited poster](#))

- “Acceptors in gallium oxide,” EMA, APS March Meeting, and MRS Spring Meeting (2021, virtual)
- “Photoluminescence mapping of semiconductors with high spatial resolution,” OSA Optical Sensors and Sensing Congress, Applied Industrial Spectroscopy, 2020 (virtual)
- “Defining insulating regions on TiO₂ thin films by laser heating,” PCSI-47, 2020 (oral and poster)
- “Defects in oxide semiconductors and ternary alloys,” Physical Behavior of Materials DOE-BES PI Meeting, 2019 (invited)
- “Modifying the conductivity of strontium titanate by light exposure,” EMA, 2019 (invited)
- “Compensation and passivation of magnesium acceptors in β -Ga₂O₃,” GRC on Defects in Semiconductors, 2018 (poster)
- “Hydrogen is the prime suspect for persistent photoconductivity in SrTiO₃,” APS March Meeting, 2018
- “Acceptors in oxide semiconductors: The *p*-type quest continues,” ICDS-29, 2017 (invited plenary)
- “Zinc oxide and its alloys,” Physical Behavior of Materials DOE-BES PI Meeting, 2017 (invited poster)
- “Strange conductivity of strontium titanate,” APS March Meeting, 2017 (invited)
- “Evidence for a shallow Cu acceptor in Si,” 7th International Symposium on Advanced Science and Technology of Silicon Materials (JSPS Si Symposium), 2016 (invited)
- “Strange conductivity of strontium titanate,” GRC on Defects in Semiconductors, 2016 (poster)
- “Large persistent photoconductivity in SrTiO₃,” Photonics West, 2016
- “Acceptors in ZnO and SrTiO₃,” ICDS-28, 2015 (invited)
- “Acceptors in ZnO: Nitrogen will not work,” APSNW Meeting, 2015 (invited)
- “Acceptor defects in ZnO and related materials,” Physical Behavior of Materials DOE-BES Contractors Meeting, 2015 (invited poster)

Student/postdoc presentations (past 10 years)

- Julie Miller, “Pressure-induced phase transitions of ZnTe(en)_{0.5},” APS March Meeting, 2025
- Macarena M. Santillan, “Room temperature persistent photoconductivity of KTaO₃,” APS March Meeting, 2024 and 2025; GRC in Defects in Semiconductors, 2024 (poster); Electronic Materials Conference (EMC), 2023 (poster)
- Cassi Remple, “Optical properties of β -Ga₂O₃ due to impurities and electron irradiation,” EMC, 2024
- Cassi Remple, “Photoluminescence Spectroscopy of Cr³⁺ in β -Ga₂O₃ and (Al_{0.1}Ga_{0.9})₂O₃,” Electronic Materials Conference (EMC), 2022 and 2023; U.S. Gallium Oxide Workshop (GOX), 2022 and 2023
- Lauren Barmore, “Photoluminescence of chromium in β -Ga₂O₃ under pressure,” NNSA Stewardship Science Academic Programs Symposium, 2023.
- Chris Pansegrau, “Room-temperature persistent photodarkening in β -Ga₂O₃:Cu,” GRC on Defects in Semiconductors, 2022 (poster)
- Syeed Ahmed, “Localized phase transition of TiO₂ thin films induced by sub-bandgap laser irradiation,” APS March Meeting, 2021 (virtual)
- Chris Pansegrau, “Persistent photoconductivity in barium titanate,” APS March Meeting, 2021 (virtual)
- Cassi Remple, “Fe³⁺ and Cr³⁺ photoluminescence of Fe doped β -Ga₂O₃,” APS March Meeting, 2021 (virtual)
- Jacob Ritter, “Hydrogen passivation of magnesium and calcium doped β -Ga₂O₃,” Photonics West, 2019

- Chris Pansegrau, “Effect of light on hydrogen in TiO₂,” GRC on Defects in Semiconductors, 2018 (poster)
- Jesse Huso, “Local vibrational modes and optical properties of ZnS_{1-x}O_x alloy films,” GRC on Defects in Semiconductors, 2016 (poster)
- Jacob Ritter, “Optical properties of thin film ZnSO,” GRC on Defects in Semiconductors, 2016 (poster)
- Anya Rasmussen, “In₂Se₃ phase transitions at high pressure and high temperature,” APSNW Meeting, 2015
- Xianjun Ye, “Scanning confocal microscopy using CCD and image processing,” APSNW Meeting, 2015
- Caleb Corolewski, “Lithium acceptors and hydrogen in zinc oxide,” APSNW Meeting, 2015
- Violet Poole, “On the role of point defects in the persistent photoconductivity of strontium titanate,” APSNW Meeting, 2015

SEMINARS (past 10 years)

- Naval Research Laboratory (NRL), 2025
- Idaho State University, 2025 (remote)
- University of Idaho, Physics, 2014, 2018, 2021, 2025
- National Institute of Standards and Technology (NIST), 2024
- University of Florida, 2024
- University of Utah, 2024
- University of Oklahoma, 2023
- Oregon State University, 2023
- National Renewable Energy Lab (NREL), 2023
- Wladek Walukiewicz Symposium, UC Berkeley, 2019
- University of California Santa Barbara, Materials, 2018
- University of Utah, 2016
- University of Washington, Physics, 2015

EXTERNAL FUNDING (past 10 years, sole PI unless noted)

- Persistent optical phenomena in oxide semiconductors, NSF, 6/1/24–5/31/27, \$474k
- FuSe: Co-design of germanium oxide-based semiconductors from deposition to devices (PI: May, Drexel University), NSF, 4/1/23–3/31/25, McCluskey: \$24k
- Response of gallium oxide to pressure, temperature, and alloying (PI: McCluskey, co-PI: Bergman), DOE-BES, 6/1/22–5/31/25, \$451k (WSU: \$238k)
- Growth and characterization of photoconductive β-Ga₂O₃ crystals (PI: Voss), DOE-LLNL, 10/1/21–9/30/24, McCluskey: \$300k
- Persistent photoconductivity in titanate semiconductor crystals, NSF-DMR, 5/1/21–4/30/24, \$397k
- Fundamentals of doping and defects in Ga₂O₃ for high breakdown field electronics (PI: Scarpulla, University of Utah), DOD-Air Force, 8/1/21–9/30/24, McCluskey: \$300k
- Conference Grant – International Conference on Defects in Semiconductors, DOE-BES, 7/21/19–7/26/19, \$8k
- Conference Grant – International Conference on Defects in Semiconductors, International Union of Pure and Applied Physics (IUPAP), 7/21/19–7/26/19, €5k

- Defects in gallium oxide (PI: McCluskey, co-PI: Bergman), DOE-BES, 6/1/19–5/31/22, \$450k (WSU: \$263k)
- SBIR Phase II: Spectroscopy and imaging of irregular surfaces using confocal microscopy (PI: Lytel, Senior Personnel: McCluskey, Jokela), NSF, 8/1/18–7/31/20, \$881k
- SBIR Phase I: Spectroscopy and imaging of irregular surfaces using confocal microscopy (PI: Lytel, Senior Personnel: McCluskey, Jokela), NSF, 1/1/17–12/30/17, \$210k
- Acceptor defects in ZnO and related materials (PI: McCluskey, co-PI: Bergman), DOE-BES, 5/1/16–4/30/19, \$407k (WSU: \$263k)
- Persistent photoconductivity in strontium titanate and related oxides, NSF-DMR, 8/16/16–8/15/19, \$399k
- Acceptor defects in ZnO and related materials (PI: McCluskey, co-PI: Bergman), DOE-BES, 6/1/13–5/31/16, \$453k (WSU: \$273k)
- FRG: Structural phase transformations in polymorphic nanostructures (PI: Gu, co-PIs: McCluskey, Zhu), NSF-DMR, 7/1/12–6/30/16, \$610k (WSU: \$495k)
- Tailoring the functionality of ZnO via highly lattice mismatched and lattice matched alloying (PI: Bergman, co-PI: McCluskey), NSF-DMR, 7/1/12–6/30/15, \$432k (WSU: \$169k)

USER ALLOCATIONS

- Response of doped gallium oxide to large pressures, high-pressure beamline 12.2.2, ALS, LBNL, 2021–22
- In₂Se₃ under pressure, from many layers to one, high-pressure beamline 12.2.2, ALS, LBNL, 2019–20
- Pressure induced phase transitions in crystalline and amorphous In₂Se₃, high-pressure beamline 12.2.2, ALS, LBNL, 2014–16
- Pressure-induced phase transitions in indium selenide, *CHESS beamline B2*, 2012
- Phase transformations of In₂Se₃ under pressure, high-pressure beamline 12.2.2, ALS, LBNL, 2012–14
- X-ray diffraction of ZnO, MgZnO, and CdZnO under pressure, high-pressure beamline 12.2.2, ALS, LBNL, 2009–11
- Local vibrational modes of hydrogen in III-V semiconductors, National Center for Supercomputing Applications (NCSA), Startup Allocation 2008–9, Renewal 2009–10
- Zinc oxide: A material for efficient light emission, EMSL/PNNL, 2006–9

COURSES TAUGHT

- Physics 101 (General Physics, algebra-based), 6 semesters
- Physics 102 (General Physics, algebra-based), 3 semesters
- Physics 201 (Physics for Scientists and Engineers, calculus-based), 7 semesters
- Physics 303 (Modern Physics II), 4 semesters
- Physics 410 (Electronics), 4 semesters
- Physics 443 (Optics), 2 semesters
- Physics 463 (Solid State), 6 semesters
- Physics 515 (Optoelectronics Lab), team taught, head instructor 2 semesters
- Physics 563 (Physics of the Solid State), 1 semester
- Physics 581 (Semiconductor Physics), 2 semesters
- Materials Science 571 (Surfaces), team taught, 6 semesters

INSTRUCTIONAL INNOVATIONS

- Hands-on modules for *Physics in Your World* (Phys 150), a required course for elementary education students
- *The Physics of the Titanic*, a lecture that examines the sinking of the *RMS Titanic* from a physicist's point of view
- In-class activities for upper-division and graduate physics courses
- Thermal conductivity hands-on demonstration
- Development of new graduate course (Semiconductor Physics) and textbook
- Problem-solving textbook for algebra-based introductory physics

STUDENT EVALUATIONS

From 2010-2019, average instructor rating was 4.5 out of 5 ($\sigma = 0.3$). Comments from students:

- "Matthew McCluskey is by far one of the best professors I've had here. He is very clear in his teachings and extremely organized. Physics is a difficult topic, and he made it so easy to understand. Great enthusiasm as well."
- "He was very knowledgeable about the material and was able to explain it clearly. He also did a lot of examples/practice problems during the lectures."
- "I hated physics in HS. Detested it. This course showed me physics can be understood if it is taught well. Professor McCluskey did an outstanding job presenting the course and teaching effectively and in an enjoyable way."
- "My favorite professor so far at WSU! Very clear and effective in lecture and was very enthusiastic about the subject!"
- "I love his sense of humor, which is something most profs lack."
- "Course was hard, but also fun to learn about the material. He did a nice job in presenting the information in a way that was easily understandable."

From 1999-2009, average instructor rating was 4.4 out of 5 ($\sigma = 0.2$). Comments from students:

- "He was great, the lectures were entertaining and very informative. I learned a lot during the lectures, and his homework assignments were long, but helpful in mastering the material."
- "WSU has the right idea with instructors like McCluskey. I'm extremely disappointed he's not teaching 202."
- "Class participation during class is GREAT! It keeps students awake and thinking. I encourage more of those kinds of activities."
- "The most organized professor I've seen, bar none. The lecture notes provided were one of the most useful resources I've had for any class."
- "This has been my favorite physics course yet. Everything was straightforward, lectures were well organized, and the homeworks were relevant to class material."

UNDERGRADUATE RESEARCH SUPERVISION

Cody Ingraham (2023–4), Fiona McLary (2021), Leah Snyder (2018–21), Hannah Knaack (2015), Sonal Nanda (2014), Ben Whitfield (2013), Hillary Child (2010), Heather Ploeg (2008–10), Bobbie Riley (2006–8), Martha Roseberry (2007), Katie Epperson (2007), Andrew Ulrich (2005–6), Amy Perenchio (2005), Ben Horton (2004–5), Lance Culnane (2003), Daniel Grover (2001), Tyler Cumby (2001), Brooke Bafus (1999)

DISSERTATIONS (Ph.D. committee chair)

- Cassandra Remple, *Optical spectroscopy of dopants and defects in gallium oxide*, Mat. Sci., 2024
- Lauren Barmore, *Photoluminescence of chromium in gallium oxide under pressure*, Physics, 2023
- Syeed Ahmed, *Light induced effects in oxide semiconductors*, Mat. Sci., 2022
- Christopher Pansegrau, *Optical phenomena in oxide semiconductors*, Physics, 2022
- Yinchuan Yu, *Machine learning in confocal microscopy and spectroscopy*, Physics, 2021
- Jacob Ritter, *Spectroscopy of defects in gallium oxide*, Physics, 2019
- Violet Poole, *Persistent photoconductivity of strontium titanate*, Physics, 2016
- Anya Rasmussen, *Pressure-induced phase transitions of indium selenide*, Physics, 2016
- Samuel Teklemichael, *Defects in ZnO nanocrystals*, Physics, 2012
- Marianne Tarun, *Hydrogen and related defects in oxide semiconductors*, Mat. Sci., 2012
- Jennifer Schei, *Optical imaging of neural and hemodynamic brain activity*, Physics, 2011
- Gabriel Hanna, *Confocal microscopy of fluid argon under pressure*, Physics, 2009
- Win Maw Hlaing Oo, *Infrared spectroscopy of zinc oxide and magnesium nanostructures*, Mat. Sci., 2007
- Slade Jokela, *Stability and structure of hydrogen defects in zinc oxide*, Mat. Sci., 2006
- Kirill Zhuravlev, *Infrared spectroscopy of conjugated organic molecules under high pressure*, Physics, 2004

POSTDOCTORAL SUPERVISION

Christopher Pansegrau (2022–23), Jesse Huso (2016–19), Violet Poole (2016–18), Xianjun Ye (2013–17), Samuel Teklemichael (2012–13), Marianne Tarun (2012–13), Gabriel Hanna (2010), Slade Jokela (2008–9), Win Maw Hlaing Oo (2007–9), Hongying Peng (2001–3)

PRESS CITATIONS / QUOTATIONS (past 10 years)

- *Layered semiconductor shows potential for next-gen data storage*, WSU Insider, 4/28/2025
<https://news.wsu.edu/press-release/2025/04/28/layered-semiconductor-shows-potential-for-next-gen-data-storage>
- *Creating a Microscope*, IREO podcast (Episode 23), 4/20/2022
<https://research.wsu.edu/innovation/ireo-podcast/>
- *Physicist honored for microscope invention, impact on society*, WSU Insider, 2/11/2022
<https://news.wsu.edu/news/2022/02/11/physicist-honored-for-microscope-invention-mentoring-impact-on-society/>
- *WSU startup receives research grant*, WSU Insider, 9/18/2018
<https://news.wsu.edu/2018/09/18/wsu-startup-receives-research-grant/>
- *Writing with Light: An 'Etch A Sketch' Electrical Circuit*, Tech Briefs, 8/3/2017
<http://www.techbriefs.com/component/content/article/1198-ntb/news/news/27358-writing-with-light-an-etch-a-sketch-electric-circuit>
- *WSU physicists write with light, turn crystal into an electrical circuit*, WSU Today, 7/27/2017
<https://news.wsu.edu/2017/07/27/wsu-physicists-write-light-turn-crystal-electrical-circuit/>
- *Building a better microscope*, The Daily Evergreen, 1/17/2017
<https://dailyevergreen.com/6413/news/building-a-better-microscope/>
- *Seeing discoveries through clear eyes*, Moscow/Pullman Daily News, 1/14/2017
- *Need for a better microscope prompts launch of a startup*, WSU Today, 1/12/2017
<https://news.wsu.edu/2017/01/05/need-better-microscope-prompts-launch-startup/#more-153451>
- *Ask Dr. Universe* <https://askdruniverse.wsu.edu/2016/10/31/how-do-cats-land-on-their-feet/>
<https://askdruniverse.wsu.edu/2015/09/28/why-is-space-so-cold/>
<https://askdruniverse.wsu.edu/2015/03/09/drifting-out-to-space/>

VIDEOS

- *WSU Physics Dept. make accidental discovery that could help advance technology*, 2013
<http://www.klewtv.com/news/local/WSU-students-make-accidental-discovery-that-could-help-advance-technology-232665501.html>
- *Accidental discovery dramatically improves electrical conductivity*, 2013
<http://www.youtube.com/watch?v=WlcpzLbSsrY>
- *Ice in oil: A disappearing act*, 2011
<http://youtu.be/SKG46jJyL30>
- *Ice VI*, 2008
<http://www.youtube.com/watch?v=VLuQoNhVv3U>
- *Watermelon versus liquid nitrogen*, 2007
<http://www.youtube.com/watch?v=szBafBoN2nY>