Jamie Phillips

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Education

1998 **Ph.D. in Electrical Engineering**, *University of Michigan, Ann Arbor, MI.*
Thesis: Self-Assembled In(Al,Ga)As/Ga(Al)As Quantum Dots for Intersubband Detectors

1996 **M.S. in Electrical Engineering**, *University of Michigan, Ann Arbor, MI.*

1994 **B.S. in Electrical Engineering**, *University of Michigan, Ann Arbor, MI.*

Professional Experience

2014-present **Arthur F. Thurnau Professor, Dept. of Electrical Engineering and Computer Science**, *University of Michigan, Ann Arbor, MI.*

2019-present **Director, Lurie Nanofabrication Facility**, *University of Michigan, Ann Arbor, MI.*

2013-2019 **Associate Chair of Undergraduate Affairs, Electrical and Computer Engineering Division**, *University of Michigan, Ann Arbor, MI.*

2013-2014 **Professor, Dept. of Electrical Engineering and Computer Science**, *University of Michigan, Ann Arbor, MI.*

2008-2013 **Associate Professor, Dept. of Electrical Engineering and Computer Science**, *University of Michigan, Ann Arbor, MI.*

2002-2008 **Assistant Professor, Dept. of Electrical Engineering and Computer Science**, *University of Michigan, Ann Arbor, MI.*

1999-2001 **Research Scientist**, *Rockwell Science Center, Thousand Oaks, CA.*

1998-1999 **Postdoctoral Researcher**, *Sandia National Laboratories, Albuquerque, NM.*

Honors and Awards

2019 **Staff-Faculty Partnership Award**, *College of Engineering, University of Michigan.*

2017 **IEEE Transactions on Education Theodore E. Batchman Best Paper Award**, *IEEE Education Society.*

2014 **Arthur F. Thurnau Professorship**, *University of Michigan.*

2011 **University Undergraduate Teaching Award**, *University of Michigan.*

2007 **Young Faculty Award**, *DARPA/MTO.*

2007 **Outstanding Achievement Award**, *EECS Department, University of Michigan.*

2003 **CAREER Award**, *National Science Foundation*.

1999 **Paul Rappaport Award**, *IEEE Electron Devices Society*.

1997 **Best Student Paper**, *North American Conference on Molecular Beam Epitaxy*.

External Professional Service

2019-present **ABET Program Evaluator**.

2018-2019 **Electronic Materials Conference**, *Past Chair*.

2016-2017 **Electronic Materials Conference**, *General Chair*.

2014-2015 **Electronic Materials Conference**, *ProgramChair*.

2011-present **Journal of Electronic Materials**, *Associate Editor*.

2014 **International Workshop on ZnO and Related Materials**, *Program Chair*.

2011-2013 **Electronic Materials Conference**, *Secretary*.

2011-2013 **Device Research Conference**, *Program Committee*.

2010-2012 **AVS Michigan Chapter**, *Executive Committee*.

2011 **MRS Fall Meeting**, *Co-Organizer*.

2006-2011 **Electronic Materials Conference**, *Program Committee*.

2005-2010 **J. Electronic Materials**, *Assoc. Editor*, Special Issue III-Nitrides, SiC, and ZnO.

2008 **International Workshop on ZnO and Related Materials**, *Program Committee*.

2007-2008 **American Vacuum Society EMPD**, *Executive Committee*.

University Service

2019-present **Lurie Nanofabrication Facility**, *Director*.

2019-present **ECE Strategic Planning Committee**, *Member*.

2015-2019 **ABET Coordinator**, *EE Program*.

2013-2019 **ECE Division**, *Associate Chair of Undergraduate Affairs*.

2016-2018 **ECE Undergraduate Curriculum Innovation Committee**, *Chair*.

2011-2018 **ECE Undergraduate Academics Committee**, *Chair*.

2013-2016 **ECE Undergraduate Recruiting and Activities Committee**, *Chair*.

2013-2017 **College of Engineering Curriculum Committee**, *Member*.

2011-2017 **Lurie Nanofabrication Facility Council**, *Member*.

2011-2013 **ECE Executive Committee**, *Member*.

2008-2011 **EECS Alumni Society**, *President*.

2006-2011 **ECE Graduate Committee**, *Member*.

2003-2011 **College of Engineering Manufacturing Council**, *Member*.

2002-2007 **EECS Undergraduate Office**, *Academic Advisor*.

2002-2007 **Michigan Nanofabrication Facility Operations Committee**, *Member*.

Professional Membership

- Institute for Electrical and Electronics Engineers (IEEE) Senior Member
- Materials Research Society
- American Society for Engineering Education
- Eta Kappa Nu (Electrical and computer engineering honor society of the IEEE)
- Phi Kappa Phi (Collegiate honor society)
- Tau Beta Pi, Eminent Engineer (Engineering honor society)

Laboratory Expertise

- III-V, II-VI, and oxide material deposition by MBE, MOCVD, PLD
- Materials characterization by XRD, SEM, TEM, AFM, Hall effect, C-V, DLTS, P-E, photoconductive decay, photoluminescence, ellipsometry, reflectance, FTIR, UV-Vis
- Device fabrication processes: photolithography, wet chemistry, CVD, RIE, contacts
- Electrical, optical, and electro-optic device characterization
- Device/circuit modeling using Sentaurus Device, Medici, SPICE, Matlab

Courses Taught

ENGR 100, Introduction to Engineering.

EECS 200, Electrical Engineering Systems Design.

EECS 215, Introduction to Circuits.

EECS 320, Introduction to Semiconductor Devices.

EECS 421, Properties of Transistors.

EECS 429, Semiconductor Optoelectronic Devices.

EECS 529, Semiconductor Lasers and LEDs.

EECS 598, Solar Cell Device Physics.

ECE Camp Electrify, Sense It (Week long high school summer camp).

Doctoral Graduates

2019 **Justin Easley**, *Carrier Transport in Auger-Suppressed Infrared Detector Materials*.

2015 **Alan Teran**, *Spectrum-Dependent Photovoltaic Energy Harvesting*.

2014 **Chihyu Chen**, *ZnTeO and Oxygen Doped II-VI Ternary Alloys for Intermediate Band Solar Cells*.

2014 **Justin Foley**, *Subwavelength Dielectric Grating-based Broadband Reflectors and Narrowband Transmission Filters*.

2013 **Jinyoung Hwang**, *Engineered type-II heterostructure for high efficiency solar cell application*.

2012 **Jeff Siddiqui**, *Investigation of Electrical Instabilities and Interface Change in ZnO Thin Film Transistors*.

2012 **Anne Itsuno**, *Bandgap-Engineered HgCdTe Infrared Detector Structures for Reduced Cooling Requirements*.

2010 **Willie Bowen**, *Thin Film Electronics Based on ZnO and ZnO/MgZnO Heterojunctions*.

2010 **Albert Shihchun Lin**, *Modeling of Solar Cell Efficiency Improvement Using Optical Gratings and Intermediate Absorption Band*.

2009 **Emine Çağin**, *Integration of Functional Oxides With the Semiconductor Zinc Oxide*.

2009 **Weiming Wang**, *Intermediate Band Solar Cells Based on ZnTe:O*.

2009 **Pierre Emelie**, *HgCdTe Auger-suppressed infrared detectors under non-equilibrium operation*.

2006 **Ding-Yuan Chen**, *Ferroelectric thin films for microwave and photonics applications*.

2006 **Kaveh Moazzami**, *Characterization of optoelectronic properties of HgCdTe and ZnO II-VI semiconductors for infrared and ultraviolet detector applications*.

Current Graduate Students

2015-present **Minhyung Ahn**, *Ultrafast Laser Irradiation of Wide Bandgap Semiconductors*.

2016-present **Michael Barrow**, *Guided Mode Resonance for Infrared Narrowband Transmission Filters*.

2019-present **Armando Gil**, *Type-II Superlattices for SWIR Detection*.

2019-present **Rebecca Lentz**, *Type-II Superlattices for SWIR Detection*.

2016-present **Hannah Masten**, *Gallium Oxide Materials and Devices for Power Electronics*.

2014-present **Eun Seong Moon**, *Photovoltaic Energy Harvesting For Low-Power Wireless Sensors*.

Masters Students

2015-2018 **Martin Scherr**, *Infrared Spectral Filters Based on Subwavelength Dielectric Gratings*.

2012-2014 **Connor Field**, *Quantum Dots for Next Generation Solar Cells*.

2010-2012 **Adrian Bayraktaroglu**, *Ferroelectric and semiconducting oxide thin films*.

2010-2012 **Bor-Chau Juang**, *Electronic structure and optical properties of type-II quantym dots*.

2002-2005 **Tim Murphy**, *Epitaxial growth and doping of ZnO by molecular beam epitaxy*.

Undergraduate Students

2019 **Arynn Gallegos**, *Infrared Optoelectronics for Biosensing*, SROP Program.

2015 **Cristina Guillen**, *Parylene Infiltration in GaAs Nanowires*, NNIN REU Program.

2015 **Marshall Versteeg**, *Femtosecond Laser-Induced Doping of SiC*, UM Energy Institute UROP Program.

2015 **Nick Folz**, *Infrared Absorption in Glucose*.

2015 **Ian Raber**, *Indoor Photovoltaic Characterization*, RISE Program.

2014-2015 **Joeson Wong**, *Photovoltaic Energy Harvesting from Indoor Lighting*.

2013 **Arthur Bowman**, *Infrared Filtering Via Sub-Wavelength Gratings for Hyperspectral Imaging*.

2013 **Jiazhen Zheng**, *Photoluminescence of ZnTeO*.

2013 **Kevin Nguy**, *Photoluminescence of Wide Bandgap II-VI Materials*.

2012 **Amy Chiang**, *Admittance spectroscopy of solar cell materials*.

2012 **Katherine Nygren**, *Infrared sub-wavelength gratings for infrared detectors*.

2011 **Connor Field**, *Chemical Bath Deposition of ZnS Thin Films*.

2010-2011 **Tanya Das**, *Modeling of HgCdTe infrared detectors and integrated optical elements*.

2010 **Scott Bakkila**, *Ferroelectric thin films for reconfigurable RF electronics in next generation wireless communications*, NNIN REU Program.

2010 **Michael Tulman**, *Modeling of integrated optical elements for infrared imaging* .

2009 **Du Nguyen**, *Atomic layer deposition of high-k dielectrics for thin film transistors* , NNIN REU Program.

2008 **Michael McCormick**, *Modeling of wire grid polarizers and Fabry-Perot cavities for infrared detection* .

2007 **David Maxwell**, *Pulsed laser deposition of vanadium oxide thin films* .

2005-2006 **Pak-Yuen Chan**, *Pulsed laser deposition of ZnO*.

2006 **George Cramer**, *ZnO thin film transistors*, NNIN REU Program.

2005 **Vinay Alexander**, *Pulsed laser deposition of thin film ferroelectrics*.

2005 **Song Liang Chua**, *Electronic characterization of ZnO thin films* .

2004-2005 **William Luong**, *Pulsed laser deposition of ferroelectric thin films for tunable microwave capacitors*.

2004 **Nicole Staszkiewicz**, *ZnO nanowires*, NNIN REU Program.

2003-2004 **Jeremy Tolbert**, *Capacitance-voltage measurements for material characterization*.

2003 **Nafisa Muzzafar**, *Thin film Mach-Zendher interferometers*.

2003-2004 **Sameer Walavalkar**, *Epitaxial growth simulation, bandstructure calculation*.

2002 **DaHan Liao**, *Optical properties of HgCdTe*.

Sponsored Projects

4/2019-1/2021 **Air Force subcontract from Princeton Infrared Technologies**, *PI*, Modeling and Development of Optimized 2.1um Detection MQW Material.

1/2019-5/2019 **Air Force subcontract from Princeton Infrared Technologies**, *PI*, Multi Quantum Well Avalanche Photodiodes for 2.04um Detection.

3/2019-9/2019 **OSD subcontract from Princeton Infrared Technologies**, *PI*, High Resolution SWIR E-O Seeker.

1/2019-5/2019 **MDA subcontract from Princeton Infrared Technologies**, *PI*, Avalanche Photodiode Design for Low Earth Orbit LADAR System.

9/2018-8/2020 **DSTL/MoD**, *co-PI*, Ultra-Miniature Imager Technical Demonstrator.

6/2018-5/2021 **NSF**, *co-PI*, Design and growth of high entropy oxides with tailored ionic dynamics for memory and computing applications.

6/2018-5/2020 **NIH**, *co-PI*, A 100um Scale Single Unit Neural Recording Probe Using IR-Based Powering and Communication.

11/2017-4/2018 **Air Force subcontract from Princeton Infrared Technologies**, *PI*, Focal Plane Array for Coherent LADAR.

9/2016-8/2019 **Lloyd's Register Foundation**, *PI*, Ultrafast Nanostructuring of Wide Bandgap SiC for Electronics in Harsh Environments.

10/2016-3/2018 **DSTL/MoD**, *co-PI*, Highly Size Constrained Logging Sensor Development.

9/2016-8/2018 **NSF subcontract from Cubeworks**, *PI*, Millimeter-Scale Wireless Sensor Node for Intracranial Pressure Monitoring.

11/2015-10/2018 **MDA**, *PI*, Narrow-Band Spectral Filtering via Silicon Subwavelength Dielectric Gratings.

6/2014-5/2018 **NSF, NIH**, *co-PI*, SCH: INT: Wireless Implantable Electronic Biosensors for Tumor Monitoring.

4/2014-3/2016 **DSTL/MoD**, *co-PI*, Architectural design Study for M3 MM Scale Computing GPS Logger .

2/2012-1/2013 **Toyota**, *PI*, Highly Mismatched Alloys with Intermediate Band for High-Efficiency Solar Energy Conversion.

8/2010-7/2015 **NSF**, *PI*, Materials World Network: Intermediate Band Semiconductor Materials for High Efficiency Solar Energy Conversion.

2/2011-12/2011 **ARO subcontract from EPIR Technologies**, *PI*, High Operating Temperature Detectors and Subwavelength Gratings.

2/2011-12/2011 **ARO subcontract from EPIR Technologies**, *PI*, 8, Sub-Wavelength Gratings for Infrared Spectroscopy.

7/2010-6/2012 **KAUST**, *co-PI*, Energy Efficient Photonic and Spintronic Devices.

1/2010-6/2010 **NASA subcontract from EPIR Technologies**, *PI*, Passively-Cooled Hyperspectral Infrared Detectors.

9/2009-8/2012 **NSF**, *co-PI*, Novel RF/Microwave Switchable Filters Based on Electrostrictive Resonance in Ferroelectric Thin Films.

8/2009-7/2014 **DOE**, *co-PI*, EFRC: Center for Solar and Thermal Energy Conversion (CSTEC).

6/2008-12/2009 **CRLT**, *PI*, Investigating Student Learning (ISL) Grant.

3/2008-8/2011 **ACS-PRF**, *PI*, Intermediate-band optoelectronic transitions in ZnTeO for high-efficiency solar energy.

10/2008-9/2010 **ARO, subcontract from EPIR Technologies**, *PI*, Advanced High Operating Temperature Midwave Infrared Detectors.

1/2008-12/2008 **EPIR Technologies**, *PI*, Approaches for high-performance LWIR detectors based on HgCdTe/Si.

1/2008-6/2008 **MDA, subcontract from EPIR Technologies**, *PI*, High Operating Temperature HgCdTe Detectors for Interceptor Seekers.

7/2007-6/2008 **DARPA**, *PI*, Oxide Electronics for Integrated Microsystems and Displays.

1/2006-4/2006 **ARO, subcontract from EPIR Technologies**, *PI*, Development of low stress ohmic contacts to HgCdTe.

9/2005-7/2006 **DARPA, subcontract from EPIR Technologies**, *PI*, Modeling of Infrared Detectors for High-Speed Room Temperature Imaging.

4/2004-3/2008 **DARPA**, *co-PI*, Center for Optoelectronic Nanostructured Semiconductor Technologies (CONSRT).

9/2004-8/2007 **AFOSR**, *co-PI*, Ultraviolet Electrically Injected Light Sources With Epitaxial ZnO-Based Heterojunctions.

1/2004-12/2004 **Rackham**, *PI*, Epitaxial Growth of CdZnO/MgZnO Heterostructures and Nanostructures.

9/2003-8/2004 **OVPR**, *PI*, Characterization of ZnO Point Defects and Schottky Diodes.

2/2003-1/2008 **NSF**, *PI*, CAREER: Ferroelectric Heterostructure Integration With GaAs Optoelectronic Devices.

5/2002-1/2005 **ONR**, *PI*, Infrared Focal Plane Array Material Science Project - Optical Properties of HgCdTe.

Publications

Books

[1] W. H. Hayt, J. E. Kemmerly, J. D. Phillips, and S. M. Durbin. *Engineering Circuit Analysis, 9th Edition* (McGraw-Hill, 2019).

Book Chapters

[1] J. Phillips, W. Bowen, E. Cagin, and W. Wang. "Electronic and Optoelectronic Devices Based on Semiconducting Zinc Oxide". *Comprehensive Semiconductor Science and Technology*, edited by P. Bhattacharya, R. Fornari, and H. Kamimura, volume 6, 101–127 (Elsevier, 2011).

[2] J. Phillips, A. Stiff-Roberts, and P. Bhattacharya. "Quantum Dot Infrared Detectors". *Handbook of Semiconductor Nanostructures and Nanodevices*, edited by A. A. Balandin and K. L. Wang, volume 4, 195–215 (American Scientific Publishers, 2006).

[3] J. Phillips, A. Stiff-Roberts, and P. Bhattacharya. "Quantum Dot Infrared Photodetector". *Encyclopedia of Nanoscience and Nanotechnology*, edited by H. Nalwa, 131–141 (American Scientific Publishers, 2004).

Patents

[1] J. Foley, J. D. Phillips, and S. Young. "Narrowband transmission filter". *US9945666B2* (2018).

Journal Articles (peer-reviewed archival journals)

[1] M. Ahn, A. Sarracino, A. Ansari, B. Torralva, S. Yalisove, and J. Phillips. "Surface morphology and straight crack generation of ultrafast laser irradiated beta-Ga2O3". *Journal of Applied Physics*, **125**(22), 223,104 (2019).

[2] J. Easley, C. R. Martin, M. H. Ettenberg, and J. Phillips. "InGaAs/GaAsSb Type II Superlattices for SWIR Detection". *Journal of Electronic Materials*, https://doi.org/10.1007/s11,664–019–07,441–x (2019).

[3] H. N. Masten, J. D. Phillips, and R. L. Peterson. "Ternary Alloy Rare-Earth Scandate as Dielectric for b-Ga2O3 MOS Structures". *IEEE Transactions on Electron Devices*, **doi: 10.1109/TED.2019.2911237** (2019).

[4] E. Moon, I. Lee, D. Blaauw, and J. D. Phillips. "High-efficiency photovoltaic modules on a chip for millimeter-scale energy harvesting". *Progress in Photovoltaics: Research and Applications*, **doi:10.1002/pip.3132** (2019).

[5] M. Ahn, R. Cahyadi, J. Wendorf, W. Bowen, B. Torralva, S. Yalisove, and J. Phillips. "Low damage electrical modification of 4H-SiC via ultrafast laser irradiation". *Journal of Applied Physics*, **123**(14), 145,106 (2018).

[6] M. Barrow, M. Scherr, and J. Phillips. "Influence of Subwavelength Grating Asymmetry on Long-Wavelength Infrared Transmittance Filters". *IEEE Photonics Journal*, **10**(6), 2700,808 (2018).

[7] J. Easley, E. Arkun, B. Cui, M. Carmody, L. Peng, M. Grayson, and J. Phillips. "Analysis of Carrier Transport in n-Type Hg1-xCdxTe with Ultra-Low Doping Concentration". *Journal of Electronic Materials*, **47**(10), 5699–5704 (2018).

[8] J. Easley, E. Arkun, M. Carmody, and J. Phillips. "Variable-Field Hall Effect Analysis of HgCdTe Epilayers with Very Low Doping Density". *Journal of Electronic Materials*, **46**(9), 5479–5483 (2017).

[9] E. Moon, D. Blaauw, and J. Phillips. "Infrared Energy Harvesting in Millimeter-Scale GaAs Photovoltaics". *IEEE Transactions on Electron Devices*, **64**(11), 4554 – 4560 (2017).

[10] E. Moon, D. Blaauw, and J. D. Phillips. "Small-Area Si Photovoltaics for Low-Flux Infrared Energy Harvesting". *IEEE Transactions on Electron Devices*, **64**(1), 15–20 (2017).

[11] E. Moon, D. Blaauw, and J. D. Phillips. "Subcutaneous Photovoltaic Infrared Energy Harvesting for Bio-implantable Devices". *IEEE Transactions on Electron Devices*, **64**(5), 2432–2437 (2017).

[12] I. Ramiro, E. Antolin, H. Jinyoung, A. Teran, A. J. Martin, P. G. Linares, J. Millunchick, J. Phillips, A. Marti, and A. Luque. "Three-bandgap absolute quantum efficiency in GaSb/GaAs quantum dot intermediate band solar cells". *IEEE Journal of Photovoltaics*, **7**(2), 508–12 (2017).

[13] I. Ramiro, J. Villa, C. Tablero, E. Antolin, A. Luque, A. Marti, J. Hwang, J. Phillips, A. J. Martin, and J. Millunchick. "Analysis of the intermediate-band absorption properties of type-II GaSb/GaAs quantum-dot photovoltaics". *Physical Review B*, **96**(12), 125,422 (2017).

[14] M. Scherr, M. Barrow, and J. Phillips. "Long-wavelength infrared transmission filters via two-step subwavelength dielectric gratings". *Optics Letters*, **42**(3), 518–521 (2017).

[15] M. DeJarld, A. Teran, M. Luengo-Kovac, L. Yan, E. Moon, S. Beck, C. Guillen, V. Sih, J. Phillips, and J. Mirecki Millunchick. "The effect of doping on low temperature growth of high quality GaAs nanowires on polycrystalline films". *Nanotechnology*, **27**(49), 495,605 (2016).

[16] J. Foley, S. Daly, C. Lenaway, and J. Phillips. "Investigating Student Motivation and Performance in Electrical Engineering and its Subdisciplines". *IEEE Trans. Education*, **59**(4), 241–247 (2016).

[17] I. Ramiro, E. Antolín, J. Hwang, A. Teran, A. J. Martin, P. G. Linares, J. Millunchick, J. Phillips, A. Martí, and A. Luque. "Three-Bandgap Absolute Quantum Efficiency in GaSb/GaAs Quantum Dot Intermediate Band Solar Cells". *IEEE Journal of Photovoltaics*, **7**(2), 508–512 (2016).

[18] S. Sengupta, T. Templeman, C. Chen, E. Moon, M. Shandalov, V. Ezersky, J. Phillips, and Y. Golan. "Chemical epitaxy and interfacial reactivity in solution deposited PbS on ZnTe". *Journal of Materials Chemistry C*, **4**(10), 1996–2002 (2016).

[19] A. S. Teran, E. Moon, W. Lim, G. Kim, I. Lee, D. Blaauw, and J. D. Phillips. "Energy Harvesting for GaAs Photovoltaics Under Low-Flux Indoor Lighting Conditions". *IEEE Transactions on Electron Devices*, **63**(7), 2820–2825 (2016).

[20] J. Foley and J. Phillips. "Normal incidence narrowband transmission filtering capabilities using symmetry protected modes of a dielectric grating". *Optics Letters*, **40**(11), 2637–2640 (2015).

[21] A. Teran, J. Wong, W. Lim, G. Kim, Y. Lee, D. Blaauw, and J. Phillips. "AlGaAs Photovoltaics for Indoor Energy Harvesting in mm-Scale Wireless Sensor Nodes". *IEEE Transactions on Electron Devices*, **62**(7), 2170–2175 (2015).

[22] A. S. Teran, C. Chen, E. Lopez, P. G. Linares, I. Artacho, A. Marti, A. Luque, and J. D. Phillips. "Heterojunction Band Offset Limitations on Open-Circuit Voltage in p-ZnT-ZnSe Solar Cells". *IEEE J. Photovoltaics*, **5**(3), 874–877 (2015). doi:10.1109/JPHOTOV.2015.2411057.

[23] M. J. Abere, C. Chen, D. R. Rittman, M. Kang, R. S. Goldman, J. D. Phillips, B. Torralva, and S. M. Yalisove. "Nanodot formation induced by femtosecond laser irradiation". *Applied Physics Letters*, **105**(16), 163,103 (2014).

[24] E. Antolin, C. Chen, I. Ramiro, J. Foley, E. Lopez, I. Artacho, J. Hwang, A. Teran, E. Hernandez, C. Tablero, A. Marti, J. D. Phillips, and A. Luque. "Intermediate Band to Conduction Band Optical Absorption in ZnTeO". *IEEE Journal of Photovoltaics*, **4**(4), 1091–1094 (2014).

[25] C. Chen, J. Zheng, K. Nguy, F. Naab, and J. Phillips. "Distinguishing Optical Behavior of Oxygen States and Native Deep Level Emission in ZnTe". *Journal of Electronic Materials*, **43**(4), 879–883 (2014).

[26] J. M. Foley, S. M. Young, and J. D. Phillips. "Symmetry-protected mode coupling near normal incidence for narrow-band transmission filtering in a dielectric grating". *Physical Review B*, **89**(16), 165,111 (2014).

[27] J. Hwang, K. Lee, A. Teran, S. Forrest, J. D. Phillips, A. J. Martin, and J. Millunchick. "Multiphoton Sub-Band-Gap Photoconductivity and Critical Transition Temperature in Type-II GaSb Quantum-Dot Intermediate-Band Solar Cells". *Physical Review Applied*, **1**(5), 051,003 (2014).

[28] E. Plis, S. Myers, D. Ramirez, E. P. Smith, D. Rhiger, C. Chen, J. D. Phillips, and S. Krishna. "Dual color longwave InAs/GaSb type-II strained layer superlattice detectors". *Infrared Phys. Techn.*, (0) (2014). doi:http://dx.doi.org/10.1016/j.infrared.2014.09.027.

[29] S. A. Sis, S. Lee, V. Lee, A. K. Bayraktaroglu, J. D. Phillips, and A. Mortazawi. "Intrinsically switchable, high-Q ferroelectricon-silicon composite film bulk acoustic resonators". *Ultrasonics, Ferroelectrics and Frequency Control, IEEE Transactions on*, **61**(2), 231–238 (2014).

[30] L. Zhou, C. Chen, H. Jia, C. Ling, D. Banerjee, J. Phillips, and Y. Wang. "Oxygen Incorporation in ZnTeO Alloys via Molecular Beam Epitaxy". *Journal of Electronic Materials*, **43**(4), 889–893 (2014). doi:10.1007/s11664-013-2960-x.

[31] L. Zhou, C. Chen, H. Jia, C. Ling, D. Banerjee, J. Phillips, and Y. Wang. "Oxygen Incorporation in ZnTeO Alloys via Molecular Beam Epitaxy". *Journal of Electronic Materials*, **43**(4), 889–893 (2014).

[32] C. Chen, S. J. Kim, X. Pan, and J. D. Phillips. "Epitaxial growth of ZnTe on GaSb (100) using in situ ZnCl2 surface clean". *J. Vac. Sci. Technol. B*, **31**(3), 03C118 (2013).

[33] H. Chi, C. Chen, J. D. Phillips, and C. Uher. "Transport properties of ZnTe:N thin films". *Applied Physics Letters*, **103**, 042,108 (2013).

[34] J. Foley, S. Young, and J. Phillips. "Narrowband Mid-Infrared Transmission Filtering of a Single Layer Dielectric Grating". *Applied Physics Letters*, **103**(8), 071,107 (2013).

[35] V. Lee, S. A. Sis, J. D. Phillips, and A. Mortazawi. "Intrinsically Switchable Ferroelectric Contour Mode Resonators". *Microwave Theory and Techniques, IEEE Transactions on*, **61**(8), 2806–2813 (2013).

[36] A. Lin and J. D. Phillips. "Resolving Spectral Overlap Issue of Intermediate Band Solar Cells using Non-uniform Subbandgap State Filling". *Progress in Photovoltaics: Research and Applications*, **DOI: 10.1002/pip.2358** (2013).

[37] A. J. Martin, J. Hwang, E. Marquis, E. P. Smakman, T. W. Saucer, G. V. Rodriguez, A. Hunter, V. Sih, P. M. Koenraad, J. D. Phillips, and J. Mirecki Millunchick. "The disintigration of GaSb/GaAs nanostructures upon capping". *Applied Physics Letters*, **102**, 113,103 (2013).

[38] A. Chen, H. Zhou, Z. Bi, Y. Zhu, Z. Luo, A. Bayraktaroglu, J. Phillips, E.-M. Choi, J. L. MacManus-Driscoll, S. J. Pennycook, J. Narayan, Q. Jia, X. Zhang, and H. Wang. "A New Class of Room-Temperature Multiferroic Thin Films with Bismuth-Based Supercell Structure". *Advanced Materials*, DOI: 10.1002/adma.201203051 (2012).

[39] A. Das, J. Heo, A. Bayraktaroglu, J. Phillips, W. Guo, T. K. Ng, B. Ooi, and P. Bhattacharya. "Room temperature strong coupling effects in a single ZnO nanowire microcavity". *Optics Express*, **20**(11), 11,830–11,837 (2012).

[40] J. Foley, A. Itsuno, T. Das, S. Velicu, and J. Phillips. "Broadband Long-Wavelength Infrared Si/SiO2 Subwavelength Grating Reflector". *Optics Letters*, **111**(9), 1523–1525 (2012).

[41] J. Hwang, A. J. Martin, J. M. Millunchick, and J. D. Phillips. "Thermal emission in type-II GaSb/GaAs quantum dots and prospects for intermediate band solar energy conversion". *Journal of Applied Physics*, **111**(8), 074,514 (2012).

[42] A. M. Itsuno, J. D. Phillips, and S. Velicu. "Design of an Auger-suppressed unipolar HgCdTe NBvN photodetector". *Journal of Electronic Materials*, **41**(10), 2886–2892 (2012).

[43] A. M. Itsuno, J. D. Phillips, and S. Velicu. "Mid-Wave Infrared HgCdTe nBn Photodetector". *Applied Physics Letters*, **100**(17), 161,102 (2012).

[44] S. J. Kim, B. C. Juang, W. Wang, J. R. Jokisaari, C. Chen, J. D. Phillips, and X. Pan. "Evolution of self-assembled Type-II ZnTe/ZnSe nanostructures: Structural and electronic properties". *Journal of Applied Physics*, **111**(9), 093,524 (2012).

[45] J. Siddiqui, J. Phillips, K. Leedy, and B. Bayraktaroglu. "Illumination instabilities in ZnO/HfO2 thin film transistors and influence of grain boundary charge". *Journal of Materials Research*, **27**, 2199–2204 (2012).

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