

☐ **Zlatan Akšamija**, Associate Professor

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**JOHN AND MARCIA PRICE  
COLLEGE OF ENGINEERING**  
THE UNIVERSITY OF UTAH

☐ **Education**

- 12/05-10/09 **Ph.D. in Electrical Engineering**, University of Illinois at Urbana-Champaign  
*w/ Computational Science and Engineering (CSE) Graduate Option*
- 08/03-12/05 **M.S. in Electrical Engineering**, University of Illinois at Urbana-Champaign
- 08/99-05/03 **B.S. in Computer Engineering**, University of Illinois at Urbana-Champaign  
*Highest Honors (Summa Cum Laude), Minor in Mathematics*

☐ **Professional Appointments**

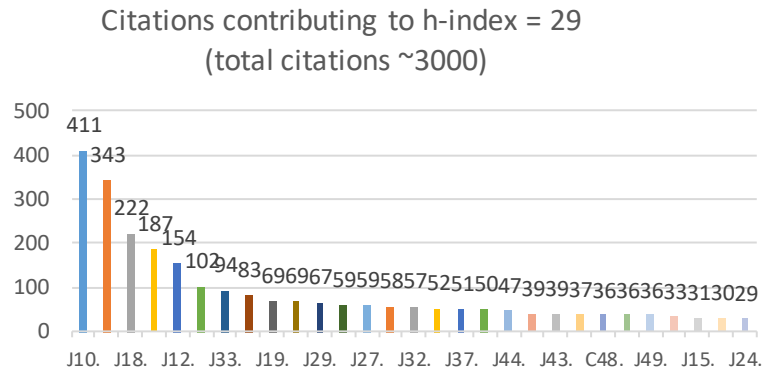
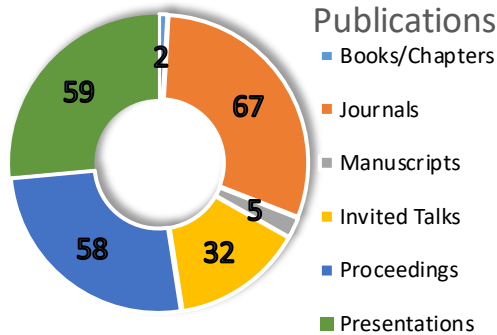
- 2022- **Associate Professor**, Department of Materials Science and Engineering  
University of Utah, Salt Lake City, UT
- 2019-2021 **Associate Professor**
- 2013-2019 **Assistant Professor**, Department of Electrical and Computer Engineering  
University of Massachusetts Amherst  
Media: [https://eurekalert.org/pub\\_releases/2019-07/uoma-htc071019.php](https://eurekalert.org/pub_releases/2019-07/uoma-htc071019.php)  
<http://www.umass.edu/newsoffice/article/zlatan-aksamija-and-graduate-students>  
<https://engineering.umass.edu/news/multi-university-team-receives-2-million-nsf-grant>  
<https://www.mghpcc.org/exploring-thermoelectric-behavior-at-the-nanoscale/>
- 2011-2013 **NSF Transformative Computational Science using CyberInfrastructure (CITraCS) Postdoctoral Fellowship**, Project: "*Computational Nanoscience for Energy-Efficient Electronic and Thermoelectric Materials and Devices*"  
Mentor: Irena Knezevic, University of Wisconsin-Madison
- 2009-2011 **Computing Innovation Postdoctoral Fellowship (CIFellow), Computing Research Association (CRA)**, Project: "*Nanostructured Semiconductor Thermoelectrics*"  
Mentor: Irena Knezevic, University of Wisconsin-Madison  
Media: <http://perspective.engr.wisc.edu/2011/10/nanoscale-silicon-a-really-cool-hot-spot/>
- 2005-2009 **Department of Energy Computational Science Graduate Fellow (CSGF)**  
ECE Department, University of Illinois at Urbana/Champaign  
Dissertation: "*Simulation of Thermal Effects in Semiconductor Materials and Devices*",  
Advisor: Umberto Ravaioli, Media: <http://www.ece.illinois.edu/mediacenter/article.asp?id=386>
- Spring '09 **DOE CSGF Practicum**, Argonne National Lab (MCS), Los Alamos National Lab, T-7  
Project: "*Parallel Simulation of Carbon Nanotubes*", Supervisor: P. Fischer
- Summer '07 Project: "*Wavelets in Multigrid Algorithms*", Supervisor: B. Philip
- 2004-2005 **Research Assistant**, ECE@University of Illinois at Urbana-Champaign  
Thesis: "*Monte Carlo simulation of Joule heating in nanoscale silicon MOSFETs*"  
Advisor: Umberto Ravaioli, Computational Electronics, Beckman Institute

☐ **Honors, Fellowships, and Awards**

- 2022 UPSTEM faculty fellowship, University of Utah
- 2019 Senior Member of the IEEE
- 2016 Lilly Fellowship for Teaching Excellence, University of Massachusetts Amherst
- 2014 IEEE Nano Conference Best Paper award
- 2011-2014 CI TraCS Postdoctoral Fellowship, National Science Foundation
- 2009-2011 Computing Innovation Fellowship (CIFellows), Computing Research Association
- 2008 Gregory Stillman Semiconductor Graduate Research Award, University of Illinois
- 2007 First Place Outstanding Paper Award, IEEE Electro/Information Conference
- 1999-2005 James Honors Scholar, George M. Pullman Scholar, Micron Technology Fellowship

☐ **Research Interests:** Computational Nanoscience, Transport in Semiconductor Nanostructures

- R1. **2D materials:** Graphene, TMDC heterostructures for device and energy applications  
 R2. **Nanoscale heat transfer:** phonon transport in nanostructures, thermal rectification  
 R3. **Novel thermoelectrics:** nanostructured and organic materials for energy harvesting and cooling  
 R5. **Coupled Electro-thermal simulation:** electron-phonon interaction/dissipation in nanoelectronics  
 R6. **Materials informatics:** simulation and data-driven discovery of new materials and devices



☐ **Journal Publications** (underline denotes my advisees, double for graduate, single for undergraduate)

- J70. M. Duhandžic, M. Lu-Diaz, S. Samanta, D. Venkataraman, and **Z. Akšamija**, "Carrier screening controls transport at high doping concentrations in conjugated polymers," submitted (2023)
- J69. C. J. Foss, **Z. Akšamija**, "Machine learning enables robust prediction of thermal boundary conductance of 2D substrate interfaces," Applied Physics Letters, vol. 122, 062201, (2023) <https://doi.org/10.1063/5.0142105>
- J68. Sylvester W. Makumi, Daniel Bem, Nicholas Musila, Cameron J. Foss and **Z. Akšamija**, "In-plane thermoelectric properties of graphene/xBN/graphene van der Waals heterostructures," Journal of Physics: Condensed Matter, vol. (2023) <https://doi.org/10.1088/1361-648X/acb89e>
- J67. P. Ci, M. Sun, M. Upadhyaya, H. Song, L. Jin, B. Sun, M. R. Jones, J. W. Ager, **Z. Akšamija**, J. Wu, "Giant isotope effect of thermal conductivity in silicon nanowires," Physical Review Letters, vol. 128, 085901 (2022). <https://doi.org/10.1103/PhysRevLett.128.085901>
- J66. **Z. Akšamija**, M. Duhandžić, "Organic Materials For Electronic and Thermoelectric Applications" B&H Electrical Engineering, Vol. 16, Special Issue, pp. 31-40 (2022). <https://dx.doi.org/10.2478/bhee-2022-0011>
- J65. M. Upadhyaya, M. Lu-Diaz, S. Samanta, M. Abdullah, K. Dusoe, K. R. Kittilstved, D. Venkataraman, **Z. Akšamija**, "Raising dielectric permittivity mitigates dopant-induced disorder in conjugated polymers," Advanced Science, 2101087 (2021). <https://doi.org/10.1002/advs.202101087>
- J64. A. Kommini and **Z. Akšamija**, "High Thermoelectric Power Factor Near Magic Angle in Twisted Bilayer Graphene," 2D Materials, vol. 8, 045022 (2021). <https://doi.org/10.1088/2053-1583/ac161d>
- J63. A. K. Majee and **Z. Akšamija**, "Electronic Transport Across Extended Grain Boundaries in Graphene," Nano Express, vol. 2, 030007 (2021). <https://doi.org/10.1088/2632-959X/ac0597>
- J62. C. J. Foss and **Z. Akšamija**, "Thermal boundary conductance of monolayer beyond-graphene two dimensional materials on SiO<sub>2</sub> and GaN," Nanotechnology, vol. 32, 405206 (2021) [Focus on 2D Materials for Microelectronic Devices and Nanoscale Heat Dissipation] <https://doi.org/10.1088/1361-6528/ac0d7d>
- J61. C. J. Foss and **Z. Akšamija**, "Effects of Alloying on In-plane and Through-plane Phonon Transport in Transition Metal Dichalcogenide Monolayers," Physical Review Materials, vol. 4, 124006 (2020). <https://doi.org/10.1103/PhysRevMaterials.4.124006>
- J60. A. Kommini and **Z. Akšamija**, "Anisotropic Thermoelectric Power Factor of 2D Materials with Periodic Potential Barriers: The Wigner-Rode Formalism," Physical Review Applied, vol. 14, 034037 (2020). <https://doi.org/10.1103/PhysRevApplied.14.034037>

- J59. A. K. Majee, C. J. Foss, and **Z. Akšamija**, “Electrical and electro-thermal properties of few-layered 2D devices,” *Journal of Computational Electronics* (2020). <https://doi.org/10.1007/s10825-020-01579-2>
- J58. A. K. Majee, Z. Hemmat, C. J. Foss, A. Salehi-Khojin, and **Z. Akšamija**, “Current Rerouting Improves Heat Removal in Few Layer WSe<sub>2</sub> Devices,” *ACS Applied Materials & Interfaces*, vol. 12, 14323-14330 (2020). <https://doi.org/10.1021/acsami.9b22039>
- J57. A. Kommini and **Z. Akšamija**, “Materials selection rules for optimum power factor in 2-dimensional thermoelectrics,” *Journal of Physics: Materials*, vol. 3, 015005 (2019). <https://doi.org/10.1088/2515-7639/ab4600>
- J56. C. J. Boyle, M. Upadhyaya, P. Wang, L. Renna, Lj. Korugic-Karasz, M. Barnes, **Z. Akšamija**, D. Venkataraman, “Tuning charge transport dynamics via clustering of doping in organic semiconductor thin films,” *Nature Communications*, vol. 10, 2827 (2019). <https://doi.org/10.1038/s41467-019-10567-5>
- J55. (invited review) A. K. Majee, A. Kommini, and **Z. Akšamija**, “Electronic and thermoelectric transport properties of 2D and 3D semiconductor heterostructures,” *Annalen der Physik (Berlin)*, 1800510 (2019). <https://doi.org/10.1002/andp.201800510>
- J54. C. Henkel, R. Zierold, A. Kommini, C. Thomason, **Z. Akšamija**, and R. H. Blick, “Resonant Tunneling Induced Enhancement of Electron Field Emission by Ultra-Thin Coatings,” *Scientific Reports*, vol. 9, 6840 (2019). <https://doi.org/10.1038/s41598-019-43149-y>
- J53. C. J. Foss and **Z. Akšamija**, “Quantifying thermal boundary conductance of 2D-3D interfaces”, *2D Materials*, vol. 6, 025019 (2019). <https://doi.org/10.1088/2053-1583/ab04bf>
- J52. M. Upadhyaya, C. J. Boyle, D. Venkataraman, and **Z. Akšamija**, “Thermoelectric Properties of Disordered Organic Materials,” *Scientific Reports*, vol. 9, 5820 (2019). <https://doi.org/10.1038/s41598-019-42265-z>
- **Recognition:** top 100 in Materials Science: <https://www.nature.com/collections/ecjehiebic>
- J51. A. Akšamija, **Z. Akšamija**, D. Brown, C. Counihan, M. Upadhyaya, “Thermoelectric Materials in Facade Systems”, *Frontiers in Energy Research*, vol. 7, 6 (2019). <https://doi.org/10.3389/fenrg.2019.00006>
- J50. (invited review) M. Mohamed, K. Raleva, D. Vasileska, U. Ravaioli, and **Z. Akšamija**, “Phonon dynamics and heat transfer in semiconductor devices”, *IEEE Nanotechnology Magazine*, special August issue on “Semiconductor Nanotechnology Shaping Our Century,” (2019). <https://doi.org/10.1109/MNANO.2019.2916114>
- J49. P. Yasaei, Z. Hemmat, C. J. Foss, J. Li, L. Hong, A. Behranginia, L. Majidi, R. F. Klie, M. Barsoum, **Z. Akšamija**, A. Salehi-Khojin, “Enhanced Thermal Boundary Conductance in Few-Layer Ti<sub>3</sub>C<sub>2</sub> MXene with Encapsulation”, *Advanced Materials*, 1801629 (2018). <https://doi.org/10.1002/adma.201801629>
- J48. A. K. Majee and **Z. Akšamija**, “Dynamical Thermal Conductivity of Graphene in the Hydrodynamic Regime”, *Physical Review B*, vol. 98, 024303 (2018). <https://doi.org/10.1103/PhysRevB.98.024303>
- J47. A. Behranginia, Z. Hemmat, A. K. Majee, C. J. Foss, P. Yasaei, **Z. Akšamija**, and A. Salehi-Khojin, “Power Dissipation of WSe<sub>2</sub> Field Effect Transistors Probed by Low-Frequency Raman Thermometry”, *ACS Applied Materials & Interfaces*, vol. 10, 24892–24898 (2018). <https://doi.org/10.1021/acsami.8b04724>
- J46. A. Kommini and **Z. Akšamija**, “Thermoelectric Properties of Periodic Quantum Structures in the Wigner-Rode Formalism”, *Journal of Physics: Condensed Matter*, vol. 30, 044004 (2017). <https://doi.org/10.1088/1361-648X/aaa110>
- J45. A. K. Majee, C. J. Foss, and **Z. Akšamija**, “Impact of Mismatch Angle on the Conductance of Grain Boundaries and Interfaces in Graphene and MoS<sub>2</sub>”, *Scientific Reports (Nature)*, vol. 7, 16597 (2017). <https://doi.org/10.1038/s41598-017-16744-0>
- J44. P. Yasaei, C. J. Foss, K. Karis, A. Behranginia, A. El-Ghandour, A. Fathizadeh, A. K. Majee, C. Foster, F. Khalili-Araghi, **Z. Akšamija**, A. Salehi-Khojin, “Interfacial Thermal Transport in Monolayer Graphene- and MoS<sub>2</sub>-Based Devices”, *Advanced Materials Interfaces*, vol. 4, 1700334 (2017). <https://doi.org/10.1002/admi.201700334>

- J43. G. C. Correa, C. J. Foss and Z. Akšamija, "Interface Thermal Conductance Between van der Waals Monolayers and Amorphous Substrates", *Nanotechnology*, vol. 28, 135402 (2017).  
<https://doi.org/10.1088/1361-6528/aaa5e3d>
- **Recognition:** Highlights of 2017 in *Energy at the Nanoscale*  
<http://iopscience.iop.org/journal/0957-4484/page/Highlights%202017>
- J42. A. Behranginia, P. Yasaei, A. K. Majee, V. K. Sangwan, F. Long, C. J. Foss, T. Foroozan, S. Fuladi, M. R. Hantehzadeh, R. Shahbazian-Yasar, M. C. Hersam, Z. Akšamija, A. Salehi-Khojin, "Direct-Grown Graphene and Molybdenum Disulfide Lateral Heterostructures for Highly-Packed All-Two-Dimensional Electronic Circuitry", *Small*, vol. 13, 1604301 (2017). <https://dx.doi.org/10.1002/sml.201604301>
- J41. H. Kim, J. Park, Z. Akšamija, M. Arbulu, and R. H. Blick, "Ultra-nanocrystalline diamond membranes for detection of high-mass proteins", *Physical Review Applied*, vol. 6, 064031 (2016).  
<https://doi.org/10.1103/PhysRevApplied.6.064031>
- J40. C. J. Foss and Z. Akšamija, "Strain Engineering of the Lattice Thermal Transport in Ultrathin Si and Ge Nanomembranes", *Journal of Applied Physics*, vol. 120, 225104 (2016).  
<http://dx.doi.org/10.1063/1.4971269>
- J39. M. Upadhyaya, Z. Akšamija, "Non-diffusive Lattice Thermal Transport in Si-Ge Alloy Nanowires", *Physical Review B*, vol. 94, 174303 (2016). <http://dx.doi.org/10.1103/PhysRevB.94.174303>
- J38. S. N. Khatami and Z. Akšamija, "Lattice Thermal Transport in Binary Si-Sn, Ge-Sn and Ternary Si-Ge-Sn Group IV Alloys", *Physical Review Applied*, vol. 6, 014015 (2016).  
<http://dx.doi.org/10.1103/PhysRevApplied.6.014015>
- J37. A. K. Majee and Z. Akšamija, "Length Divergence of the Lattice Thermal Conductivity in Suspended Graphene Ribbons", *Physical Review B*, vol. 93, 235423 (2016).  
<http://dx.doi.org/10.1103/PhysRevB.93.235423>
- J36. A. Kommini, Z. Akšamija, "Low-temperature Enhancement of the Thermoelectric Seebeck Coefficient in Gated 2D Semiconductor Nanomembranes", *Journal of Computational Electronics*, vol. 15, 27-33 (special issue on Electro-thermal and Thermoelectric Phenomena, 2016).  
<http://dx.doi.org/10.1007/s10825-015-0782-1>
- J35. D. P. Schroeder, Z. Akšamija, A. Rath, P. M. Voyles, M. G. Lagally, and M. A. Eriksson, "Thermal Resistance of Stacked Silicon Nanomembrane Interfaces", *Physical Review Letters*, vol. 115, 256101(2015). <http://dx.doi.org/10.1103/PhysRevLett.115.256101>
- J34. M. Mohamed, Z. Akšamija, and U. Ravaioli, "Coupled Electron and Thermal Transport Simulation of Self-heating Effects in Junctionless MOSFETs", *Journal of Physics: Conference Series*, vol. 647, 012026 (2015)
- J33. A. K. Majee, P. Yasaei, A. Fathizadeh, R. Hantizadeh, D. Estrada, C. Foster, Z. Akšamija, F. Khalili, A. Salehi, "Bimodal Phonon Scattering in Graphene Grain Boundaries", *Nano Letters*, vol. 15, 4532, (2015). <http://dx.doi.org/10.1021/acs.nanolett.5b01100>
- **Press:** <http://www.sciencedaily.com/releases/2015/06/150616190726.htm>
- J32. L. N. Maurer, Z. Akšamija, and I. Knezevic, "Phonon Transport in Nanostructures with Rough Correlated Boundaries", *Applied Physics Letters*, vol. 106, 133108 (2015)  
<http://dx.doi.org/10.1063/1.4916962>
- J31. M. Upadhyaya, N. S. Khatami, and Z. Akšamija, "Engineering Thermal Transport in SiGe-based Nanostructures for Thermoelectric Applications", *Journal of Materials Research (special issue on Materials for Thermoelectrics II)*, vol. 30, pp. 2649 (2015). <http://dx.doi.org/10.1557/jmr.2015.202>
- J30. Z. Akšamija, "Lattice Thermal Transport in Si-based Nanocomposites for Thermoelectric Applications", *Journal of Electronic Materials*, vol. 44, 1644 (2015). <http://dx.doi.org/10.1007/s11664-014-3505-7>
- J29. K.-H. Park, Z. Akšamija, M. Mohamed, and U. Ravaioli, "Phonon Scattering due to van der Waals Forces in the Lattice Thermal Conductivity of Bi<sub>2</sub>Te<sub>3</sub> Thin Films", *Journal of Applied Physics*, vol. 117, 015103 (2014). <http://dx.doi.org/10.1063/1.4905294>



- J28. M. Mohamed, **Z. Akšamija**, W. Vitale, F. Hassan, and U. Ravaioli, "A conjoined electron and thermal transport study of thermal degradation induced during normal operation of multigate transistors", *IEEE Transactions on Electron Devices*, vol. 61, 976 (2014).  
<http://dx.doi.org/10.1109/TED.2014.2306422>
- J27. S. Mei, L. N. Maurer, **Z. Akšamija**, and I. Knezevic, "Phonon Transport in Micron-sized graphene nanoribbons based on full-dispersion Monte Carlo simulation", *Journal of Applied Physics*, vol. 116, 164307 (2014). <http://dx.doi.org/10.1063/1.4899235>
- J26. **Z. Akšamija** and I. Knezevic, "Thermal Transport in Large-area Polycrystalline Graphene", *Physical Review B*, vol. 90, 035419 (2014). <http://dx.doi.org/10.1103/PhysRevB.90.035419>
- J25. **Z. Akšamija** and I. Knezevic, "Thermal Conductivity of  $Si_{1-x}Ge_x/Si_{1-y}Ge_y$  Superlattices: Competition Between Interfacial and Internal Scattering", *Physical Review B* 88, 155315 (2013).  
<http://dx.doi.org/10.1103/PhysRevB.88.155318>
- J24. J. Park, **Z. Akšamija**, and R. Blick, "Phonon Assisted Field Emission in Silicon Nanomembranes for Time-of-flight Mass Spectroscopy of Proteins", *Nano Letters*, vol. 13, 2698 (2013).  
<http://dx.doi.org/10.1021/nl400873m>
- J23. M.-H. Bae, Z. Li, **Z. Akšamija**, P. Martin, F. Xiong, Z.-Y. Ong, I. Knezevic, and E. Pop, "Ballistic to Diffusive Crossover of Heat Flow in Graphene Ribbons", *Nature Communications*, vol. 4, 1734 (2013).  
<http://dx.doi.org/10.1038/ncomms2755>
- J22. W. Peng, **Z. Akšamija**, S. A. Scott, J. J. Endres, D. E. Savage, I. Knezevic, M. A. Eriksson, and M. G. Lagally, "Probing Semiconductor Surface Electronic Structure with Charge Transport in Nanomembranes", *Nature Communications*, vol. 4, 1339 (2013).  
<http://dx.doi.org/10.1038/ncomms2350>
- J21. **Z. Akšamija** and I. Knezevic, "Thermal Transport in Graphene Nanoribbons on  $SiO_2$ ", *Physical Review B*, vol. 86, 165426 (2012). <http://dx.doi.org/10.1103/PhysRevB.86.165426>
- J20. Y. Shi, **Z. Akšamija**, and I. Knezevic, "Self-Consistent Thermal Simulation of GaAs/Al<sub>0.45</sub>Ga<sub>0.55</sub>As Quantum Cascade Lasers", *Journal of Computational Electronics*, vol. 11, 144 (2012).
- J19. C. Ni, **Z. Akšamija**, J. Y. Murthy, and U. Ravaioli, "Coupled Electro-Thermal Simulation of MOSFETs", *Journal of Computational Electronics*, vol. 11, 93 (2012).
- J18. **Z. Akšamija** and I. Knezevic, "Lattice Thermal Conductivity of Graphene Nanoribbons: Anisotropy and Edge Roughness Scattering", *Applied Physics Letters*, vol. 98, 141919 (2011).  
<http://dx.doi.org/10.1063/1.3569721>  
• reprinted in *Virtual Journal of Nanoscale Science & Technology (VJNano)*, April 25, 2011
- J17. **Z. Akšamija** and I. Knezevic, "Anisotropy and Edge Roughness Scattering in the Lattice Thermal Conductivity of Graphene Nanoribbons", *ECS Transactions*, vol. 35, 195 (2011).
- J16. **Z. Akšamija** and I. Knezevic, "Thermoelectric Properties of Silicon-On-Insulator Nanostructures", *ECS Transactions*, vol. 35 (5), 267 (2011).
- J15. H. J. Ryu, **Z. Akšamija**, D. M. Paskiewicz, S. A. Scott, M. G. Lagally, I. Knezevic, and M. A. Eriksson, "Quantitative Determination of Contributions to the Thermoelectric Power Factor in Si Nanostructures", *Physical Review Letters*, vol. 105, 256601 (2010).  
<http://dx.doi.org/10.1103/PhysRevLett.105.256601>
- J14. **Z. Akšamija** and I. Knezevic, "Thermoelectric Properties of Silicon Nanostructures", *Journal of Computational Electronics*, vol. 9, pp. 173-179 (2010). <https://doi.org/10.1007/s10825-010-0339-2>
- J13. **Z. Akšamija** and I. Knezevic, "Anisotropy and Boundary Scattering in the Lattice Thermal Conductivity of Ultrathin Silicon Nanomembranes", *Physical Review B*, vol. 82, 045319 (2010).  
<http://dx.doi.org/10.1103/PhysRevB.82.045319>  
• **Paper recognition:** *Virtual Journal of Nanoscale Science & Technology*, August 9, 2010.
- J12. P. Martin, **Z. Akšamija**, E. Pop, and U. Ravaioli, "Prediction of Reduced Thermal Conductivity in Nano-Engineered Rough Ge and GaAs Nanowires," *Nano Letters*, vol. 10, 1120 (2010).  
<http://dx.doi.org/10.1021/nl902720v>

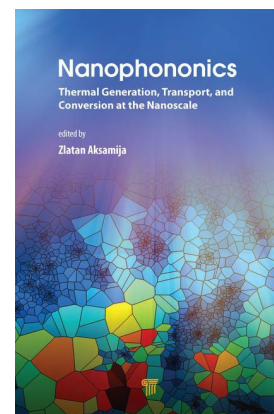
- J11. **Z. Akšamija**, U. Ravaioli, "Anharmonic Decay of *g*-process Longitudinal Optical Phonons in Silicon", Applied Physics Letters, vol. 96, 091911 (2010). <http://dx.doi.org/10.1063/1.3350894>
- J10. P. M. Martin, **Z. Akšamija**, and E. Pop, "Impact of Phonon Surface Roughness Scattering on Thermal Conductivity of Thin Si Nanowires", Physical Review Letters, vol. 102, 125503 (2009). <http://dx.doi.org/10.1103/PhysRevLett.102.125503>
- **Paper recognition: Editor's Suggestion** in Physical Review Letters and reprinted in the *Virtual Journal of Nanoscale Science & Technology (VJNano)*, April 13, 2009
- J9. **Z. Akšamija** and U. Ravaioli, "Energy Conservation in Collisional Broadening Over a Sequence of Scattering Events in Semiclassical Monte Carlo Simulation", Journal of Applied Physics, vol. 105, 083722 (2009). <http://dx.doi.org/10.1063/1.3116544>
- J8. **Z. Akšamija**, U. Ravaioli, "Anharmonic Decay of Non-Equilibrium Phonons in Silicon", Journal of Physics: Conference Series, vol. 193, 012033 (2009).
- J7. P. M. Martin, **Z. Akšamija**, E. Pop, U. Ravaioli, "Prediction of Reduced Thermal Conductivity in Nano-Engineered Rough Semiconductor Nanowires," Journal of Physics: Conference Series, vol. 193, 012010 (2009).
- J6. M. Mohamed, **Z. Akšamija**, A. Godoy, P. Martin, H.-S. Hahm, W. Lee, K.-I. Lee, and U. Ravaioli, "Size Effects and Performance Assessment in Nanoscale Multigate MOSFET Structures", Journal of Computational and Theoretical Nanoscience, vol. 6, pp. 1927-1936 (2009).
- J5. **Z. Akšamija** and U. Ravaioli, "Efficient Numerical Solution for the 3-D Semiconductor Poisson Equation", Computer Modeling in Engineering and Sciences, vol. 37, pp. 45-65 (2009).
- J4. **Z. Akšamija** and U. Ravaioli, "Boltzmann Transport Simulation of Single-Walled Carbon Nanotubes", Journal of Computational Electronics, vol. 7, pp. 315-318 (2008).
- J3. **Z. Akšamija** and U. Ravaioli, "Emission and Absorption of Phonons in Silicon", Physica Status Solidi (C), vol. 5, pp. 90-93 (2008).
- J2. **Z. Akšamija** and U. Ravaioli, "Joule Heating and Phonon Transport in Si MOSFETs", Journal of Computational Electronics, vol. 5, pp. 431-434 (2006).
- J1. **Z. Akšamija** and U. Ravaioli, "Meshless Solution of the Semiconductor Poisson Equation", Journal of Computational Electronics, vol. 5, pp. 459-462 (2006).

#### ☐ Manuscripts in Preparation

- M5. S. Klein and **Z. Akšamija**, "Electro-thermal properties of 2D field-effect devices," in preparation (2023)
- M4. **Z. Akšamija**, "Thermal rectification in graded Si-Ge superlattices," in preparation (2023)
- M3. S. Makumi and **Z. Akšamija**, "Impact of substrate surface roughness on heat transfer to two-dimensional materials," in preparation (2023)
- M2. V. Dusetty and **Z. Akšamija**, "Improved Thermoelectric Figure-of-Merit in Bulk and Thin-film Group IV Si-Sn Alloys", in preparation (2023)
- M1. A. Kommini and **Z. Akšamija**, "Phonon-drag Contribution to Thermoelectric Power Factor in Two-dimensional Materials", in preparation (2023)

#### ☐ Books and Book Chapters

- B2. **Z. Akšamija**, "Nanophononics: Thermal Generation, Transport, and Conversion at the Nanoscale," Pan Stanford Publishing (2017) [publisher link](#)
- I edited this book and authored 4 of the 8 chapters
- B1. M. Upadhyaya and **Z. Akšamija**, "Thermal Conductivity of Semiconductor Nanostructures and Alloys" in Handbook of Materials Modeling, 2<sup>nd</sup> Ed., "Applications: Current and Emerging Materials (Volume II)", ed. Davide Donadio, Springer (2018) [https://doi.org/10.1007/978-3-319-50257-1\\_16-1](https://doi.org/10.1007/978-3-319-50257-1_16-1)



## □ Invited Presentations and Seminars

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- I33. *"Numerical Simulation of Electronic and Thermoelectric Properties in Doped Conjugated Polymers,"* Materials Research Society (MRS) Fall Meeting 2023, Boston, MA, Dec. 2023
- I32. *"Machine Learning Enables Robust Prediction of Heat Transfer at 2D-3D interfaces,"* Society of Engineering Science (SES) Annual Technical Meeting 2023, University of Minnesota, Oct. 8-11, 2023
- I31. *"Electro-Thermal Transport in 2D Materials and Across Their Interfaces,"* ACS Rocky Mountain Regional Meeting, University of Wyoming, Laramie WY, Sept. 15-17, 2023
- I30. *"Machine Learning for Thermal Management of Nanoelectronics,"* University of Wisconsin Madison Computing in Engineering Forum (Sept. 21, 2022)
- I29. *"Electro-Thermal Transport in Nanoscale and 2D Electronic Materials,"* University of Utah MSE graduate seminar, virtual (May 2021).
- I28. *"Thermoelectric Transport in Nanostructured Materials: the Wigner-Boltzmann Approach,"* International Wigner Workshop, Seoul, Korea (May 2021).
- I27. CECAM Workshop on *"Quantum Transport: From Nanoscopic to Microscopic Modelling,"* ETH Zurich, Switzerland (June 15-18, 2022, postponed from 2020 due to COVID-19 pandemic)
- I26. *"Thermal transport in 2D materials from first principles: the role of interface and substrate,"* 237th ECS Meeting, Montreal, Canada (May 10-15, 2020)
- I25. *"Self-heating in Advanced CMOS-Compatible and 2-dimensional Semiconductor Devices,"* SOI Symposium, 237<sup>th</sup> ECS Meeting, Montreal, Canada (May 10-15, 2020)
- I24. *"Nanophononics: dissipation and thermoelectric energy conversion in nanoscale devices,"* DESY-PIER graduate student workshop, University of Hamburg, Germany (Sept. 24, 2019)
- I23. *"Thermal Effects in Semiconductors and Nano-Devices,"* International Workshop on Computational Nanotechnology (IWCN), Evanston, IL (May 19-24, 2019)
- I22. *"Electronic and Thermoelectric Transport in 2-Dimensional Materials and Heterostructures,"* IEEE Nanotechnology Materials and Devices Conference (NMDC), Portland, OR (Oct. 14-17, 2018)
- I21. *"Extrinsic and collective effects on thermal transport in 2D/3D alloys and nanostructures,"* to be presented at a Special Session on Thermal Effects in the IEEE Nanotechnology Materials and Devices Conference (NMDC), Portland, OR (Oct. 14-17, 2018)
- I20. *"Frequency-dependent Thermal Conductivity of Graphene in the Hydrodynamic Regime,"* with A. K. Majee, IEEE Nano Conference, Pittsburgh, PA (July 25-28, 2017). Proceedings paper available at: <https://doi.org/10.1109/NANO.2017.8117364>
- I19. *"Phonon Transport in 2-dimensional Materials and Alloys,"* Tutorial/Workshop at the IEEE Nano Conference, Pittsburgh, PA (July 25<sup>th</sup>, 2017).
- I18. *"Thermal Transport in 2-dimensional Materials,"* Workshop at the International Institute for Physics, Federal University of Rio Grande do Norte, Natal, Brazil (November 7<sup>th</sup>, 2016).
- I17. *"Numerical Simulation of Thermal Transport in Semiconductor Nanostructures,"* High Performance Computing Day at University of Massachusetts Dartmouth (May 17<sup>th</sup>, 2016).
- I16. *"Phonons, Phonons Everywhere: Thermal Transport in Semiconductor Nanostructures,"* EE Graduate Seminar, University of Notre Dame, IN (Feb. 20<sup>th</sup>, 2015).
- I15. *"Phonons, Phonons Everywhere: Thermal Transport in Semiconductor Nanostructures,"* ECE Graduate Seminar, University of Connecticut (Sept. 27<sup>th</sup>, 2014).
- I14. *"Phonons, Phonons Everywhere: Thermal Transport in Semiconductor Nanostructures,"* ECE Graduate Seminar, University of Illinois at Urbana/Champaign (Sept. 11<sup>th</sup>, 2014).
- I13. *"Anisotropic Phonon Transport in SiGe and Graphene Nanostructures,"* S3TEC seminar, Massachusetts Institute of Technology (March 4<sup>th</sup>, 2014).
- I12. *"Thermal Transport in Semiconductor Nanostructures,"* Condensed Matter Physics Seminar, University of Massachusetts Amherst (Feb. 27<sup>th</sup>, 2014).
- I11. *"Semiconductor Nanostructures for Efficient Thermo-electric Energy Conversion,"* Electrical Engineering Seminar, University of Massachusetts Amherst (March. 27<sup>th</sup>, 2013).

110. "Semiconductor Nanostructures for Efficient Thermo-electric Energy Conversion", Mechanical Engineering Seminar, Georgia Institute of Technology, Atlanta, GA (Feb. 5<sup>th</sup>, 2013).
19. "Phonon Transport in Silicon and Graphene Nanostructures", 14th International Conference on Phonon Scattering in Condensed Matter, Ann Arbor, MI (July 8-12, 2012).
18. "Numerical Simulation of Thermal Transport in Nanostructured Semiconductor Devices", Invited Workshop at the Phonon School, International Workshop on Computational Electronics, Madison, WI (May 22-25, 2012).
17. "Semiconductor Nanostructures for Efficient Thermo-electric Energy Conversion", International Conference on Materials, Energy and Environment (IMCEE), Toledo, OH (May 9-11, 2012).
16. "Semiconductor Nanostructures for Efficient Thermo-electric Energy Conversion", Mechanical Engineering Seminar, University of Pennsylvania (Feb. 6<sup>th</sup>, 2012).
15. "Thermoelectric Properties of Silicon-On-Insulator (SOI) Nanostructures", International Symposium on SOI Technology (ECS-SOI), 219th Electro-Chemical Society Meeting (ECS-219), Montreal, Canada (May 1-6, 2011).
14. "Nanostructured Semiconductor Thermoelectrics", Network for Computational Nanotechnology, University of Illinois at Urbana/Champaign (December 2, 2010).
13. "Thermoelectric Properties of Semiconductor Nanostructures", ECE Departmental Seminar, University of Illinois at Chicago (November 5, 2010).
12. "Computational Design of Semiconductor Nanostructures for Optoelectronic, Electronic, and Thermoelectric Applications," IEEE NANO (www.ieeenano2010.org), Modeling and Simulation Section, Seoul, Korea (August 17-20, 2010).
11. "Detailed Analysis of Electro-thermal Effects in Nanoscale MOSFETs", International Microwave Symposium (IMS'08), Atlanta, GA (June 15-20, 2008).

#### ☐ Patents

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- R. Blick, J. Rodriguez, H. Kim, Z. Akšamija, W. Hansen, C. Heyn, "Mass Spectrometer Detector Using Optically Active Membranes", **U.S. patent P140174US01**, filed July 30<sup>th</sup>, 2014
- Z. Akšamija and R. Blick, "Folded Multi-layered 2-D van der Waals Materials as Efficient Thermoelectric Converters, and Methods Thereof", **U.S. patent application UOMA-042US**, filed Oct. 14<sup>th</sup>, 2016, *Patent Pending*
- A. Akšamija and **Z. Akšamija**, Façade System for Thermally Conditioning Buildings, U.S. Patent Application No.: 63/226,442, Filed July 28, 2021, *Patent Pending*

#### ☐ Grants

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| 2023-2026 | NSF Award 2302879, <b>DMR/CDS&amp;E</b> : "Coupled Electro-Thermal Transport in Two-Dimensional Materials and Heterostructures," (PI: Z. Akšamija), 3 years, \$312,589   |
| 2022-2025 | NSF Award 2101127, <b>DMR/EPM</b> , "Methods to Mitigate Dopant-Induced Disorder in Organic Electronic Materials," (PI: D. Venkataraman), 3 years, \$530,000 (my share: \$230,000)                                     |
| 2019-2022 | NSF Award 1902352, <b>DMR/CDS&amp;E</b> : "Simulation- and Data-driven Search for Cross-dimensional Materials Interfaces to Enhance Heat Transfer," (PI: Z. Akšamija), 3 years, \$330,000                              |
| 2015-2019 | NSF Award 1542864, <b>EFRI 2-DARE</b> : Thermal Transport in 2D Materials for Next-Generation Nanoelectronics: From Fundamentals to Devices, 4-year \$1,999,966.00 total. I am the sole UMass PI, (my share \$358,018) |
| 2017      | UMass Instructional Innovation Fellow, \$500   |
| 2016-2017 | Lilly Teaching Fellowship, Center for Teaching and Faculty Development, \$14,000   |
| 2016-     | NVIDIA Academic Hardware Grant, 2x Tesla K40 GPGPU cards, \$8,000  |
| 2015      | Flex Grant for Faculty Development, Massachusetts Society of Professors, \$500   |
| 2015-2016 | <b>XSEDE Allocation TG-DMR150122</b> , "First principles calculations of electronic and vibrational structure of TMDCs and their alloys" (PI: Z. Akšamija), 50,000 SUs   |



- 2015-2016 NSF Award 1449418, **CI TraCS Research Starter Grant**, 1 year, \$50,000 award to purchase a computational cluster (PI: Z. Akšamija), installed Jan. '16 at the MGHPC
- 2011-2014 NSF Award 1122690, **Transformative Computational Science using Cyber Infrastructure (CI TraCS)**, "Computational nanoscience for energy-efficient electronic and thermoelectric materials and devices," 3 years, \$240,000 (PI: Z. Akšamija)
- 2009-2011 NSF Award 1019343, Computing Research Association Sub-Award CIF-A-146: **Computing Innovation Postdoctoral Fellowship** (CIFellows) "Nanostructured Semiconductor Thermoelectrics" 2-year, \$247,500 (PI: Z. Akšamija)

**□ Refereed Conferences with Full Proceedings Papers** (student advisees underlined)

- C58. A. Akšamija, **Z. Akšamija**, C. Counihan, D. Brown, and M. Upadhyaya, "Thermoelectric Facades: Simulation of Heating and Cooling Potential for Novel Intelligent Facades," Façade Tectonics 2020 World Congress, Los Angeles, CA (March 25-26, 2020). <https://facadetectonics.org/publications/>
- C57. A. Kommini and **Z. Akšamija**, "Improving thermoelectric power factor in 2D single-layer MoS<sub>2</sub> using periodic potentials", IEEE Nano Conference, Cork, Ireland (July 23-27, 2018), proceedings available through IEEEXplore: <https://doi.org/10.1109/NANO.2018.8626285>
- C56. A. Akšamija, **Z. Akšamija**, C. Counihan, D. Brown, and M. Upadhyaya, "Experimental Study on Integration of Thermoelectric Materials in Exterior Walls for Heating and Cooling in High-Performance Buildings", 5<sup>th</sup> Building Enclosure Science and Technology (BEST5) Conference, Philadelphia, PA (April 15-18, 2018)
- C55. A. Akšamija, **Z. Akšamija**, C. Counihan, D. Brown, and M. Upadhyaya, "Thermoelectric Materials in Exterior Walls," Façade Tectonics 2018 World Congress, Los Angeles, CA (March 12-13, 2018). Full paper: <https://facadetectonics.org/publications/> Vol. 1, pg. 171
- C54. A. Kommini and **Z. Akšamija**, "Thermoelectric Properties of Periodic Quantum Structures in the Wigner-Rode Formalism", 20<sup>th</sup> International Conference on Electron Dynamics in Semiconductors, Optoelectronics and Nanostructures (EDISON'20), Buffalo, NY (July 16-21, 2017).
- C53. (invited) S. Mei, C. J. Foss, L. N. Maurer, O. Jonasson, **Z. Akšamija** and I. Knezevic, "Boundaries, interfaces, point defects, and strain as impediments to thermal transport in nanostructures", IEEE International Reliability Physics Symposium (IRPS), Monterrey, CA (April 2-6, 2017). Full paper: <http://ieeexplore.ieee.org/document/7936333/>
- C52. A. Kommini and **Z. Akšamija**, "Low-temperature Enhancement of the Thermoelectric Seebeck Coefficient in Semiconductor Nanoribbons", International Workshop on Computational Electronics (IWCE), Lafayette, IN (Sept. 2<sup>nd</sup>-Sept. 5<sup>th</sup>, 2015).
- C51. S. Mei, **Z. Akšamija**, and I. Knezevic, "Thermal Conductivity Tensor of In<sub>x</sub>Ga<sub>1-x</sub>As/In<sub>x</sub>Al<sub>1-x</sub>As Superlattices and Applications to Quantum Cascade Lasers", International Workshop on Computational Electronics (IWCE), Lafayette, IN (Sept. 2<sup>nd</sup>-Sept. 5<sup>th</sup>, 2015).
- C50. A. Kommini, G. P. Szakmany, A. O. Orlov, G. H. Bernstein, W. Porod, and **Z. Akšamija**, "Size Dependence of the Seebeck Coefficient for Single-Metal Thermocouples", International Workshop on Computational Electronics (IWCE), Lafayette, IN (Sept. 2<sup>nd</sup>-Sept. 5<sup>th</sup>, 2015).
- C49. M. Mohamed, **Z. Akšamija**, and U. Ravaioli, "Coupled Electron and Thermal Transport Simulation of Self-heating Effects in Junctionless MOSFETs", 19<sup>th</sup> Conference on Electron Dynamics in Semiconductors, Optoelectronics and Nanostructures (EDISON19), Salamanca, Spain (June 29-July 2<sup>nd</sup>, 2015).
- C48. E. Bury, B. Kaczer, J. Mitard, N. Collaert, S. N. Khatami, **Z. Akšamija**, D. Vasileska, K. Raleva, L. Witters, G. Hellings, D. Linten, G. Groeseneken, and A. Thean, "Characterization of Self-Heating in High Mobility Ge FinFET pMOS devices," VLSI Symposium (Technology Track), Kyoto, Japan (June 16-18, 2015).
- C47. **Z. Akšamija**, "Full-band Monte Carlo simulation of Phonon Transport in Semiconductor Nanostructures", Computational Heat Transfer, Rutgers, NJ (May 25-29, 2015).
- C46. M. Upadhyaya and **Z. Akšamija**, "Phonon Transport in SiGe Alloy-based Nanocomposites and Nanowires for Thermoelectric Applications", 2014 Materials Research Society (MRS) Fall Meeting, Boston, MA (Dec. 6<sup>th</sup>, 2014). Full paper in MRS Proceedings: <https://doi.org/10.1557/opl.2015.270>

- C45. **Z. Akšamija**, “Full-band Monte Carlo simulation of Phonon Transport in Semiconductor Nanostructures”, IEEE Nano Conference, Toronto CA (August 18-22, 2014). Full proceedings available at [ieeexplore.com: http://dx.doi.org/10.1109/NANO.2014.6968118](http://dx.doi.org/10.1109/NANO.2014.6968118)
- Paper Recognition: Best Paper Award finalist
- C44. **Z. Akšamija**, “Phonon Transport in Si-Ge-based Nanocomposites and Nanowires for Thermoelectric Applications”, International Thermoelectric Conference (ITC), Nashville, TN (July 6-10 2014).
- C43. **Z. Akšamija**, “Full-band Monte Carlo simulation of Phonon Transport in Semiconductor Nanostructures”, International Workshop on Computational Electronics (IWCE), Paris, France (June 2-8, 2014).
- C42. M. Y. Mohamed, **Z. Akšamija**, F. Ishmail, and U. Ravaioli, “Self-heating Effects in Nanowire Depletion Mode Junctionless Transistor”, International Workshop on Computational Electronics (IWCE), Paris, France (June 2-8, 2014).
- C41. K.-h. Park, **Z. Akšamija**, and U. Ravaioli, “Improved Accuracy on Empirical Lattice Thermal Conductivity Model of  $\text{Bi}_2\text{Te}_3$ ”, International Workshop on Computational Electronics (IWCE), Paris, France (June 2-8, 2014).
- C40. **Z. Akšamija** and I. Knezevic, “Thermal Transport in SiGe Alloy-based Nanostructures for Thermoelectric Applications”, 2013 International Semiconductor Device Research Symposium (ISDRS’13), Bethesda, MA (Dec. 10-13, 2013).
- C39. M. Y. Mohamed, **Z. Akšamija**, F. Ishmail, and U. Ravaioli, “A Unified Multiphysics Approach to Understanding the Influence of Temperature Variation on the Performance of Junctionless Transistor with Narrow Cross-sections”, 2013 International Semiconductor Device Research Symposium (ISDRS’13), Bethesda, MA (Dec. 10-13 2013).
- C38. K.-h. Park, **Z. Akšamija**, and U. Ravaioli, “Phonon Scattering due to van der Waals Forces in the Lattice Thermal Conductivity of  $\text{Bi}_2\text{Te}_3$  Thin Films,” 2013 International Semiconductor Device Research Symposium (ISDRS’13), Bethesda, MA (Dec. 10-13 2013).
- C37. **Z. Akšamija**, “Semiconductor Nanostructures for Efficient Thermoelectric Energy Conversion”, American Vacuum Society (AVS) 59<sup>th</sup> International Symposium, Tampa, FL (October 28-November 2, 2012).
- C36. **Z. Akšamija** and I. Knezevic, “Thermal Transport in Suspended and Supported Graphene Nanoribbons”, 49th Annual Technical Meeting of the Society of Engineering Science, Atlanta, GA (October 10-12, 2012).
- C35. M. Mohamed, **Z. Akšamija**, W. Vitale, F. Hassan, and U. Ravaioli, “Interplay Between the Electrical and Thermal Transport of Silicon Nanoscale MOSFETs”, International Conference on Simulation of Semiconductor Processes and Devices (SISPAD’12), Denver, CO (September 2012).
- C34. **Z. Akšamija** and I. Knezevic, “Thermal Transport in Suspended and Supported Graphene Nanoribbons”, International Conference on Simulation of Semiconductor Processes and Devices (SISPAD’12), Denver, CO (September 2012).
- C33. Y. B. Shi, **Z. Akšamija**, and I. Knezevic, “Thermal Simulation of GaAs-based Midinfrared Quantum Cascade Lasers”, NUSOD12 Conference, Shanghai, China (August 2012).
- C32. **Z. Akšamija** and I. Knezevic, “Reduced Thermal Conductivity in SiGe Alloy-based Superlattices for Thermoelectric Applications”, 14th International Conference on Phonon Scattering in Condensed Matter (PHONONS 2012), Ann Arbor, MI (July 2012).
- C31. Y. B. Shi, **Z. Akšamija**, and I. Knezevic, “Thermal Modeling of GaAs/ $\text{Al}_{0.45}\text{Ga}_{0.55}\text{As}$  Quantum Cascade Lasers”, 15<sup>th</sup> International Workshop on Computational Electronics (IWCE), Madison, WI (May 2012).
- C30. J. Park, H. Shin, H. Kim, **Z. Akšamija**, and R. Blick, “Phonon assisted field emission from Silicon nanomembrane for time-of-flight mass spectrometry”, American Society for Mass Spectrometry (ASMS) Meeting, Vancouver, BC (May 2012).
- C29. **Z. Akšamija**, E. Ramayya, and I. Knezevic, “Modeling of Thermal Conductivity and Thermoelectric Power Factor in Ultrathin SOI Nanomembranes and Silicon Nanowires”, International Semiconductor Research Symposium (ISDRS), University of Maryland, College Park, MD (Dec. 7-9, 2011)

- C28. **Z. Akšamija**, E. B. Ramayya, and I. Knezevic, "On-chip Energy Harvesting and Active Cooling Using Silicon-based Nanostructured Thermoelectrics", 2011 Sub-threshold Microelectronics Conference, MIT Lincoln Lab, Lexington, MA (September 26-27, 2011).
- C27. **Z. Akšamija** and I. Knezevic, "Anisotropy of Lattice Thermal Conductivity in Edge-Disordered Graphene Nanoribbons", IEEE Nano, Portland, WA (August 15-18, 2011).
- C26. **Z. Akšamija** and I. Knezevic, "Interface Scattering in the Lattice Thermal Conductivity of Si/SiGe Superlattices", IEEE Nano, Portland, WA (August 15-18, 2011).
- C25. M. Mohamed, W. Vitale, **Z. Akšamija**, F. Ismail, and U. Ravaioli, "Coupled Electro-thermal Modeling of Self-Heating in SOI Nanowire", 17th International Conference on Electron Dynamics in Semiconductors, Optoelectronics and Nanostructures (EDISON-17), Santa Barbara, CA (August 8-12, 2011).
- C24. **Z. Akšamija**, E. B. Ramayya, and I. Knezevic, "Thermal and thermoelectric properties of SOI nanomembranes, Si nanowires, and Si/Ge superlattices", 17th International Conference on Electron Dynamics in Semiconductors, Optoelectronics and Nanostructures (EDISON-17), Santa Barbara, CA (August 8-12, 2011).
- C23. **Z. Akšamija** and I. Knezevic, "Anisotropy and Edge Roughness Scattering in the Lattice Thermal Conductivity of Graphene Nanoribbons", Electro-Chemical Society Meeting (ECS-219), Montreal, Canada (May 1-6, 2011).
- C22. **Z. Akšamija** and I. Knezevic, "Anisotropy and Edge Roughness Scattering in the Lattice Thermal Conductivity of Graphene Nanoribbons", 38th Conference on the Physics and Chemistry of Surfaces and Interfaces (PCSI-38), San Diego (January 16-20, 2011).
- C21. **Z. Akšamija** and I. Knezevic, "Interface Scattering in the Lattice Thermal Conductivity of Si/SiGe Superlattices", 38th Conference on the Physics and Chemistry of Surfaces and Interfaces (PCSI-38), San Diego (January 16-20, 2011).
- C20. **Z. Akšamija**, I. Knezevic, "Phonon Transport and Thermoelectric Properties of Silicon Nanomembranes and Nanoribbons", International Workshop on Computational Electronics (IWCE-14), Pisa, Italy (October 27-29, 2010).
- C19. D. Vasileska, K. Raleva, A. Hossain, S. M. Goodnick, **Z. Akšamija**, and I. Knezevic, "Thermal Modeling of Nanodevices", International Workshop on Computational Electronics (IWCE-14), Pisa, Italy (October 27-29, 2010).
- C18. **Z. Akšamija** and I. Knezevic, "Thermoelectric Properties of Silicon Nanostructures", IEEE NANO, Modeling and Simulation Section, Seoul, S. Korea (August 17-20, 2010).
- C17. **Z. Akšamija** and I. Knezevic, "Thermoelectric Properties of Silicon Nanostructures", Silicon Nanoelectronics Workshop (SiNW'10) Honolulu, HI (June 2010).
- C16. M. Mohamed, H.-S. Hahm, A. Godoy, **Z. Akšamija**, and U. Ravaioli, "3D Multi Subband Monte Carlo Analysis of SOI Multigate Devices", Silicon Nanoelectronics Workshop (SiNW'10), Honolulu, HI (June 2010).
- C15. M. Mohamed, **Z. Akšamija**, and U. Ravaioli, "Electro-thermal Study of Nanoscale SOI Multi-gate MOSFETs", Silicon Nanoelectronics Workshop (SiNW'10), Honolulu, HI (June 2010).
- C14. **Z. Akšamija** and I. Knezevic, "Anisotropy and Boundary Scattering in the Lattice Thermal Conductivity of Silicon-on-Insulator Nanomembranes", 37th Conference on the Physics and Chemistry of Surfaces and Interfaces (PCSI-37), Santa Fe, NM (January 2010).
- C13. **Z. Akšamija**, H.-J. Ryu, D. M. Paskiewicz, S. A. Scott, M. G. Lagally, M. A. Eriksson, and I. Knezevic, "Hole Thermopower in Gated Silicon Nanoribbons", 37th Conference on the Physics and Chemistry of Surfaces and Interfaces (PCSI-37), Santa Fe (January 2010).
- C12. **Z. Akšamija**, U. Ravaioli, "Anharmonic Decay of Non-Equilibrium Intervalley Phonons in Silicon," 16<sup>th</sup> International Conference on Electron Dynamics in Semiconductors, Optoelectronics and Nanostructures (EDISON16), Montpellier, France (August 2009).
- C11. P. Martin, **Z. Akšamija**, E. Pop, U. Ravaioli, "Prediction of Reduced Thermal Conductivity in Nano-Engineered Rough Semiconductor Nanowires," 16<sup>th</sup> International Conference on Electron Dynamics in

- Semiconductors, Optoelectronics and Nanostructures (EDISON16), Montpellier, France (August 2009).
- C10. C. Ni, **Z. Akšamija**, J. Y. Murthy, and U. Ravaioli, “*Coupled Electro-Thermal Simulation of MOSFETs*”, Proceedings of the IPACK2009, presented at the ASME InterPACK, San Francisco, CA (July 2009), proceedings available on ASME Digital Library: [www.asme.org](http://www.asme.org)
- C9. **Z. Akšamija**, and U. Ravaioli, “*Parallel Implementation of Boltzmann Transport Simulation of Single-Walled Carbon Nanotubes*”, International Workshop on Computational Electronics (IWCE) Beijing, China (May 2009), proceedings available on IEEEXplore.com.
- C8. **Z. Akšamija**, and U. Ravaioli, “*Phonon Emission Spectra in Silicon*”, International Semiconductor Device Research Symposium (ISDRS), Washington D.C. (Dec. 2007), [www.IEEEXplore.com](http://www.IEEEXplore.com)
- C7. **Z. Akšamija**, and U. Ravaioli, “*Boltzmann Transport Simulation of Single-Walled Carbon Nanotubes (SWNT)*”, International Workshop on Computational Electronics (IWCE) Amherst, MA (October 2007), proceedings available on [www.iwce.org](http://www.iwce.org)
- C6. **Z. Akšamija**, and U. Ravaioli, “*Phonon Emission and Absorption in Silicon*”, International Workshop on Computational Electronics (IWCE) Amherst, MA (October 2007), proceedings available on [www.iwce.org](http://www.iwce.org)
- C5. **Z. Akšamija**, and U. Ravaioli, “*Energy Conservation in Collisional Broadening*”, Simulation of Semiconductor Processes And Devices (SISPAD), Vienna, Austria (September 2007), proceedings available on [www.sispad.org](http://www.sispad.org)
- C4. **Z. Akšamija**, and U. Ravaioli, “*Phonon Emission and Absorption in Silicon*”, Hot Carriers in Semiconductors (HCIS'07), Osaka, Japan (July 2007).
- C3. **Z. Akšamija**, and U. Ravaioli, “*Self-Heating and Phonon Emission in Si MOSFETs*”, Electro-Information Technology (EIT-07), Chicago, IL (May 2007), proceedings available on IEEEXplore.com.
- Paper recognition: Outstanding Paper and IEEE Region 4 First Place Award
- C2. **Z. Akšamija**, and U. Ravaioli, “*Joule Heating and Phonon Transport in Si MOSFETs*”, International Workshop on Computational Electronics (IWCE) Vienna, Austria (May 2006), proceedings available on [www.iwce.org](http://www.iwce.org).
- C1. **Z. Akšamija**, and U. Ravaioli, “*Meshless Solution for the 3-D Semiconductor Poisson Equation*”, International Workshop on Computational Electronics (IWCE), Vienna, Austria (May 2006), proceedings available on [www.iwce.org](http://www.iwce.org).

#### ☐ **Refereed Conference and Workshop Presentations (refereed abstract only)**

- P59. M. Duhandzic, Michael Lu-Díaz, S. Sumanta, D. Venkataraman, and **Z. Akšamija**, “*Carrier Screening of Dopant Coulomb Interactions in Organic Electronics*”, American Physical Society (APS) March Meeting, Las Vegas, NV (March 2023).
- P58. Michael Lu-Díaz, M. Duhandzic, **Z. Akšamija**, D. Venkataraman, “*Correlating Charge Transport with Intrinsic Energetic Disorder, Paracrystallinity and Carrier-Dopant Distance in Doped Conjugated Polymers*”, Materials Research Society Fall Meeting, Boston, MA (Dec. 2022)
- P57. C. J. Foss, A. K. Majee, and **Z. Akšamija**, “*Coupled Electro-thermal Simulation of 2D FETs*”, International Conference on Simulation of Semiconductor Processes and Devices (SISPAD'12), Dallas, TX (September 2021).
- P56. C. J. Foss and **Z. Akšamija**, “*Thermal boundary conductance of buckled group IV, V, and III-V two-dimensional materials*”, American Physical Society (APS) March Meeting 2021, virtual
- P55. A. Qureshi and **Z. Akšamija**, “*A hybrid model for thermal transport in Si nanostructures from first principles*”, American Physical Society (APS) March Meeting 2021, virtual
- P54. M. Upadhyaya, C. Boyle, M. Lu-Díaz, D. Venkataraman, and **Z. Akšamija**, “*Coulombic Interactions and Charge Transport Dynamics in Organic Thermoelectrics*”, Materials Research Society (MRS) Fall 2020 virtual meeting.
- P53. C. J. Foss, and **Z. Akšamija**, “*Thermal Boundary Conductance of Buckled Group IV, V, and III-V Two-Dimensional Materials*”, Materials Research Society (MRS) Fall 2020 virtual meeting.

- P52. A. K. Majee, C. J. Foss, and **Z. Akšamija**, “*Electron-Phonon Coupling Enhances Thermal Boundary Conductance of 2D-3D Interfaces*,” Materials Research Society (MRS) Fall 2020 virtual meeting.
- P51. M. Upadhyaya, C. Boyle, M. Lu-Diaz, D. Venkataraman, and **Z. Akšamija**, “*Effect of Coulombic Interactions and Dopant Distribution on Charge Transport Dynamics in Polymer Thermoelectrics*,” Virtual Conference on Thermoelectrics (July 21-23, 2020)
- P50. C. J. Foss and **Z. Akšamija**, “Thermal boundary conductance of beyond graphene two dimensional materials,” American Physical Society (APS) March Meeting, Denver, CO (March 2-6, 2020).
- P49. M. Upadhyaya, C. Boyle, M. Lu-Diaz, D. Venkataraman, and **Z. Akšamija**, “*Effect of Doping Distribution on Charge Transport Dynamics in Polymer Thermoelectrics*,” Materials Research Society (MRS) Fall Meeting, Boston, MA (Dec. 1-6, 2019).
- P48. M. Lu-Díaz, C. Boyle, M. Upadhyaya, **Z. Akšamija**, D. Venkataraman, “*Effect of Dopant Clustering on Thermoelectric Properties of Polymer Films*,” Materials Research Society (MRS) Fall Meeting, Boston, MA (Dec. 1-6, 2019).
- P47. A. K. Majee and **Z. Akšamija**, “*Joule Heating and Its Impact on Thermal Management in Few-Layer WSe<sub>2</sub>*,” Materials Research Society (MRS) Fall Meeting, Boston, MA (Dec. 1-6, 2019).
- P46. A. Kommini and **Z. Akšamija**, “*Wigner-Boltzmann Transport Simulation for Improving the Thermoelectric Power Factor in 2D Materials*,” 3<sup>rd</sup> International Wigner Workshop, Evanston, IL (May 19-20, 2019).
- P45. C. J. Foss and **Z. Akšamija**, “Quantifying thermal boundary conductance of 2D-3D interfaces,” American Physical Society (APS) March Meeting, Boston, MA (March 4-8, 2019).
- P44. A. Kommini and **Z. Akšamija**, “*Materials selection rules for optimum power factor in 2-dimensional thermoelectrics*,” American Physical Society (APS) March Meeting, Boston, MA (March 4-8, 2019).
- P43. M. Upadhyaya and **Z. Akšamija**, “Effect of Disorder on the Thermoelectric Properties of Semiconducting Polymers,” Materials Research Society (MRS) Fall Meeting, Boston, MA (Nov. 30-Dec. 4, 2018)
- P42. A. Kommini and **Z. Akšamija**, “*Improving the Thermoelectric Power Factor in 2D Materials Using Periodic Potential Barriers*,” Materials Research Society (MRS) Fall Meeting, Boston, MA (Nov. 30-Dec. 4, 2018)
- P41. M. Upadhyaya and **Z. Akšamija**, “*Thermoelectric Properties of Disordered Organic Polymers*,” International Conference on Thermoelectrics (ICT), Caen, France (July 2-7, 2018).
- P40. V. Dusetty and **Z. Akšamija**, “*Improved Thermoelectric Figure-of-Merit in Bulk and Nanostructured Si-Sn Alloys*,” 60<sup>th</sup> Electronic Materials Conference (EMC-60), University of California, Santa Barbara (Jun. 27-29, 2018).
- P39. C. J. Foss and **Z. Akšamija**, “*Quantifying the thermal boundary conductance of 2D-substrate interfaces*”, 76<sup>th</sup> Device Research Conference (DRC), University of California, Santa Barbara (Jun. 24-27, 2018).
- P38. A. K. Majee, C. J. Foss, A. Kommini, and **Z. Akšamija** “*Thermal and Electronic Transport Dynamics at 2D Interfaces*”, Gordon Research Conference: Two Dimensional Electronics Beyond Graphene, Stonehill College, Easton, MA (Jun. 3-8, 2018)
- P37. M. Upadhyaya and **Z. Akšamija**, “*Effects of Disorder on Thermoelectric Properties of Semiconducting Polymers*”, High Performance Computing (HPC) Day, University of Massachusetts Dartmouth (May 18<sup>th</sup>, 2018)
- P36. C. J. Foss and **Z. Akšamija**, “*Effects of Alloying on In-Plane and Cross-Plane Phonon Transport in Transition Metal Dichalcogenide Monolayers*”, Materials Research Society (MRS) Fall Meeting, Boston MA (Nov. 27-Dec. 1, 2017).
- P35. A. Kommini and **Z. Akšamija**, “*Improving the Thermoelectric Power Factor of Semiconductor Quantum Structures*”, International Conference on Thermoelectrics (ICT), Pasadena, CA (July 31-August 3, 2017).
- P34. A. Kommini and **Z. Akšamija**, “*Towards a Higher Power Factor in 2D Materials: Role of Inelastic Scattering Mechanisms*”, International Conference on Thermoelectrics (ICT), Pasadena, CA (July 31-August 3, 2017).



- P33. A. Kommini and **Z. Akšamija**, “*Thermoelectric Properties of Periodic Quantum Structures in the Wigner-Rode Formalism*”, High Performance Computing Day at University of Massachusetts Dartmouth (May 15<sup>th</sup>, 2017)
- P32. A. K. Majee and **Z. Akšamija**, “*Dynamical Thermal Conductivity in Single-Crystalline Graphene Ribbons*”, Materials Research Society (MRS) Meeting, Phoenix, AZ (April 17-21, 2017).  
 • Recognition: “Best Poster” Award Finalist
- P31. M. Upadhyaya and **Z. Akšamija**, “*Phonon Transport Dynamics in Si-Ge Nanowires and Nanocomposites*”, Materials Research Society (MRS) Meeting, Phoenix, AZ (April 17-21, 2017).
- P30. M. Upadhyaya and **Z. Akšamija**, “*Super-Diffusive Phonons: A Monte Carlo Study of the Levy Walk Phonon Transport Dynamics in SiGe Alloy Nanowires*”, Electronic Materials Conference, University of Delaware (June 22-24<sup>th</sup>, 2016)
- P29. **Z. Akšamija** and A. K. Majee, “*Impact of Mismatch Angle on Electronic and Thermal Transport Across Grain Boundaries and Interfaces in 2-dimensional Materials*”, Gordon Research Conference: Two Dimensional Electronics Beyond Graphene, Mount Holyoke College, South Hadley, MA (June 5-June 10<sup>th</sup>, 2016)
- P28. C. J. Foss and **Z. Akšamija**, “*Calculation of lattice vibrations in 2D materials using HPC Accelerated Quantum-Espresso*”, High Performance Computing Day, University of Massachusetts Dartmouth (May 17<sup>th</sup>, 2016)
- P27. G. C. Correa and **Z. Akšamija**, “*Flexural Phonon Contribution to Thermal Transport in Graphene Supported on Silicon Dioxide*”, Materials Research Society (MRS) Fall Meeting, Boston, MA (Nov. 30-Dec. 4, 2015)
- P26. P. Yasaei, A. Fathizadeh\*, A. Majee\*, D. Estrada, C. Foster, **Z. Akšamija**, F. Khalili, A. Salehi, “*Thermal Transport Across Individual Graphene Grain Boundaries*”, Materials Research Society (MRS) Fall Meeting, Boston, MA (Nov. 30-Dec. 4, 2015)
- P25. A. Kommini and **Z. Akšamija**, “*Low-temperature Enhancement of the Thermoelectric Seebeck Coefficient in Semiconductor Nanoribbons*”, International Conference on Thermoelectrics (ICT-15), Dresden Germany (June 28-July 2<sup>nd</sup>, 2015)
- P24. A. K. Majee and **Z. Akšamija**, “*Size Divergence of Thermal Conductivity in Graphene*”, 2015 Materials Research Society (MRS) Spring Meeting, San Francisco, CA (Apr. 7-10, 2015)
- P23. D. P. Schroeder, **Z. Akšamija**, A. Rath, P. M. Voyles, M. G. Lagally, and M. A. Eriksson, “*Thermal Resistance of Mechanically Transferred Single-Crystal Silicon Nanomembrane Interfaces*”, 2014 Materials Research Society (MRS) Fall Meeting, Boston, MA (Dec. 6<sup>th</sup>, 2014).
- P22. **Z. Akšamija**, “*Phonon Thermal Transport in SiGe-based Nanocomposites for Thermoelectric Applications*”, American Physical Society March Meeting, Denver, CO (March 7<sup>th</sup>, 2014).
- P21. D. P. Schroeder, **Z. Akšamija**, M. G. Lagally, and M. A. Eriksson, “*Measurements of the Interfacial Thermal Resistance Between Silicon Crystals with and without Intervening Molecular Films*”, 2013 Materials Research Society (MRS) Fall Meeting, Boston, MA (December 2-6, 2013).
- P20. L. Maurer, **Z. Akšamija**, E. Ramayya, A. Davoody, and I. Knezevic, “*Phonon Surface Scattering in Monte Carlo Simulations*” 2013 American Physical Society (APS) March Meeting, Baltimore, MD (2013).
- P19. **Z. Akšamija** and I. Knezevic, “*Reduced Thermal Conductivity in SiGe Alloy-based Superlattices for Thermoelectric Applications*”, 2012 Materials Research Society (MRS) Fall Meeting, Boston, MA (November 2012).
- P18. D. P. Schroeder, **Z. Akšamija**, M. G. Lagally, and M. A. Eriksson, “*Thermal Resistance of Transferred Si-nanomembrane Interfaces*”, 2012 Materials Research Society (MRS) Meeting, Boston, MA (November 2012).
- P17. **Z. Akšamija** and I. Knezevic, “*Simulation of Thermal Transport in Semiconductor Nanostructures on Heterogeneous Systems*”, XSEDE12 Conference, Chicago, IL (July 2012).
- P16. **Z. Akšamija** and I. Knezevic, “*Thermal Conductivity in SiGe Alloy-based Superlattices for Thermoelectric Applications*”, 6th International Silicon-Germanium Technology and Device Meeting (ISTDM 2012), Berkeley, CA (June 2012).

- P15. **Z. Akšamija** and I. Knezevic, "Thermal transport in graphene-based nanostructures", American Physical Society (APS) Meeting, Boston, MA (March 2012).
- P14. **Z. Akšamija** and I. Knezevic, "Thermal Transport in Suspended and Supported Graphene Nanoribbons", Poster Session at the Expanding Cross-Disciplinary Dialogue in the Postdoctoral Community NSF Workshop, Washington, DC (April 2012).
- P13. D. P. Schroeder, A. M. Kiefer, D. M. Paskiewicz, **Z. Akšamija**, I. Knezevic, M. G. Lagally, and M. A. Eriksson, "Phonon Transport across Si Nanomembrane Interfaces: Structure and Thermal Conductivity", MRS Fall Meeting, Boston, MA (Nov. 28-Dec. 2, 2011)
- P12. **Z. Akšamija** and I. Knezevic, "Interface Scattering in the Lattice Thermal Conductivity of Si/SiGe Superlattices", American Physical Society (APS) Meeting, Dallas, TX (March 2011).
- P11. **Z. Akšamija** and I. Knezevic, "Anisotropy and Edge Roughness Scattering in the Lattice Thermal Conductivity of Graphene Nanoribbons", American Physical Society (APS) Meeting, Dallas, TX (March 2011).
- P10. **Z. Akšamija** and I. Knezevic, "Modeling Thermal Conductivity of SOI Nanomembranes", International Conference on Computational & Experimental Engineering and Sciences (ICCES'10), Las Vegas, NV (March 2010).
- P9. **Z. Akšamija** and I. Knezevic, "Anisotropy and Boundary Scattering in the Lattice Thermal Conductivity of Silicon-on-Insulator Nanomembranes", American Physical Society (APS) Meeting, Portland, OR (March 2010).
- P8. D. Vasileska, K. Raleva, A. Hossain, S. M. Goodnick, **Z. Akšamija** and I. Knezevic, "Thermal Modeling of Nanodevices", Workshop on Emerging Device and Packaging Technologies, Arizona State University, Tempe, AZ (November 2010).
- P7. **Z. Akšamija** and U. Ravaioli, "Parallel Simulation of Single-Walled Carbon Nanotubes", Scientific Discovery through Advanced Computing (SciDAC), San Diego, CA (June 2009).
- P6. **Z. Akšamija** and U. Ravaioli, "Parallel Simulation of Single-Walled Carbon Nanotubes", DOE CSGF Fellows Conference, Washington, DC (June 2008).
- P5. **Z. Akšamija** and B. Philip, "Wavelets in Multigrid Algorithms", Graduate Student Research Symposium, Los Alamos National Lab, Los Alamos, NM (July 2007).
- P4. **Z. Akšamija** and U. Ravaioli, "Electron-phonon interaction in semiconductor materials and devices", Understanding Complex Systems Conference, Urbana, IL (May 2007).
- P3. **Z. Akšamija** and U. Ravaioli, "Joule Heating and Phonon Transport in Silicon", Graduate Research Symposium, Beckman Institute, Urbana, IL (October 2006).
- P2. **Z. Akšamija** and U. Ravaioli, "Meshless Methods for Nanoscale Semiconductor Modeling", CNST Nanotechnology Workshop, University of Illinois, Urbana, IL (May 2006).
- P1. **Z. Akšamija** and F. Kamalabadi, "A Multi-Channel De-noising Approach to Tomographic reconstruction", Undergraduate Research Symposium, University of Illinois, (May 2003).

#### ☐ Advising (total 4 PhD, 7 MS) and Mentoring (7 undergraduate)

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1. Ph.D. Dissertation Advisor and Doctoral Committee Chair for:
  1. Meenakshi Upadhyaya (*entered Fall '14, RQE Summer '17, Proposal May '19, Defended Feb.'21*)
    - First employment: senior engineer at Marvel Semiconductors, Burlington VT
    - 2015 David H. Navon Scholarship, 2019 Outstanding TA
  2. Arnab K. Majee (*entered Fall '16, RQE Fall '18, proposal June'20, Defended Dec.'20*)
    - First employment: postdoctoral researcher at U. New Mexico and Sandia Natl' Lab
    - 2017 David H. Navon Scholarship
  3. Adithya Kommini (*entered Spring '17, RQE May '18, Proposal May '19, Defended Mar.'21*)
    - First employment: SFL Scientific, Boston MA
    - 2017 Outstanding TA award
  4. Cameron Foss (*entered Summer '18, RQE Spring '21*)
    - 2019 David H. Navon Scholarship
  5. Muhamed Duhandzic (*entered Spring 2022*)

6. Sylvester Wambua Makumi (*entered Fall 2022*)
2. M.S. Thesis Advisor and Committee Chair for:
  1. Aidan Belanger (MS in MSE expected Spring 2024)
  2. Samantha Klein (MSEE expected Summer 2022)
  3. Aliya Qureshi (*MSEE defended Spring 2020, now at GlobalFoundries*)
  4. Venkatakrisna Dusetty (*MSEE defended Spring 2020, now at Intel*)
  5. Cameron Foss (*MSEE completed April 2018, currently PhD with me*)
  6. Adithya Kommini (*MSEE completed Fall 2016, followed by PhD with me*)
  7. Nazanin Khatami (*MSEE completed Summer 2016, now PhD w/ E. Baker at UMass MIE*)
  8. Arnab Majee (*MSEE completed Summer 2016, followed by PhD with me*)
3. Undergraduate Research or Honors Thesis Advisor for
  1. Cameron Foss (*BlueWaters Intern Summer'14 through Spring'15, currently PhD with me*)
  2. Gabriella Correa (*Honors Thesis AY14-15, NSF REU Fall'15, iREU Summer'16, currently PhD student and DOE fellow in MSE at Cornell University*)
  3. Haoxian Lin (*NSF REU summer'17, now PhD student at Boston University*)
  4. Matthew Bolognese (*Honors Thesis Fall'17-Spring'18, now employed at Lincoln Labs*)
  5. Lakshay Gautam (*Physics junior at UIUC, BlueWaters Intern Summer'18—Spring '19*)
  6. Peter Pawelski (*XSEDE EMPOWER intern Summer'19-Spring'20, Senior Honors Thesis AY 2021*)
  7. Aidan Belanger (*Honors Thesis AY 2022*)
  8. Andrew Tolton (*UG research 2022-*)
4. (16) Doctoral Committee Member for: James Kestyn, Brendan Gavin, Jiajun Shi, Emily Smith (*UMass Chemistry*), Linden Allison (*UMass Chemistry*), Poya Yasaei (*Mech. E. at U. Illinois at Chicago*), Sadid Muneer (*ECE at U. Connecticut*), Kihoon Park (*ECE at U. Illinois Urbana/Champaign*), Zahra Hemmat (*ECE at U. Illinois Chicago*), Michael Lu-Diaz (*UMass Chemistry*), Sylvester Makumi (*Physics, Kenyatta University, Kenya*), Subhayan Sumanta (*UMass Chemistry*), Braegan Spring, Stefanie Haugg (*University of Hamburg*), Seth Jackson (*University of Utah, Chemistry*)
5. (6) M.S. Thesis Committee Member for: Nathan Rock (*Utah MSE*), Braegan Spring, Mark Buckler, Sachin Bhat, Sourabh Kulkarni, Zongya Chen
6. (10) Research Qualifying Exam (RQE) committee member/chair: Seth Jackson (*Utah Chemistry*), Hongtao Wang, James Kestin, Sudarshan Srinivasan, Shikang Xu, Jiajun Shi, Mingyu Li, Keqiang Wu, Sachin Bhat, Xiang Li

#### ☐ Teaching and Educational Outreach

- MSE2160: “*Fundamentals of Materials Science and Engineering*,” required for sophomores in MSE/MechE
  - Course Survey average 4.7 (Sp'22)
- ECE244: “*Modern Physics and Materials for Electrical Engineers*,” required for sophomores in EE
  - SRTI score on Overall Rating: 4.3 (Sp'19)
- ECE609: “*Semiconductor Materials and Devices*”, graduate core PhD course
  - SRTI score on Overall Rating: 4.9 (Sp'16), 4.8 (Sp'17), 4.9 (Sp'18), 4.6 (Sp'19)
- ECE344: “*Semiconductor Materials and Devices*”, required for juniors in EE
  - SRTI score on Overall Rating: 3.9 (Fa'15), 4.1 (Fa'16), 4.7 (Fa'17), 5.0 (Fa'18)
- ECE614: “*Computational Electronics*”, (Spring 2015)
- ECE618: “*Fundamentals of Solid-State Electronics*”, (Spring 2014)
- ECE597/697EN: “*NanoEnergy*”, (Fall 2013 and 2014)
  - new special topics course on Energy Transport and Conversion at the Nanoscale
- Summer Engineering Institute (SENGI) workshop on thermoelectric energy for ~60 high school students, July 2017-2019
- **Z. Akšamija** and U. Ravaioli, “*Boltzmann Transport Simulator for CNTs*,” NCN supported NanoHUB.org interactive on-line simulation tool >15,000 simulations, >1000 users, <http://www.nanohub.org/resources/4073>
- **Z. Akšamija**, “*Parallel Numerical Simulation of Transport in Carbon Nanotubes*”, BlueWaters/Shodor Undergraduate Petascale Education Modules (UPEP), <http://www.shodor.org/petascale/materials/UPModules/boltzmannTransport/>

## □ Professional and Honor Societies

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- Eta Kappa Nu IEEE National Honor Society (Alpha chapter)
- Tau Beta Pi Engineering National Honor Society
- American Physical Society (APS)
- Institute of Electrical and Electronics Engineers (IEEE)
- Materials Research Society (MRS)
- International Thermoelectric Society (ITS)
- Bosnian Herzegovinian American Academy of Arts and Sciences (BHAAAS)

## □ Service

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1. President of the *Technical and Natural Sciences* section of the Bosnian Herzegovinian American Academy of Arts and Sciences (BHAAAS)
2. Department ABET accreditation committee, **Chair** (2022-present)
3. Technical Program Committee, **IEEE Nano** conference, Korea 2023
4. Associate Editor, **Frontiers in Nanotechnology**, computational section
5. Technical Program Committee, **International Workshop on Computational Nanotechnology**, Seoul, Korea (May 2021)
6. UMass **Materials Science and Engineering** Committee (developed a new MSE program, 2020-2021)
7. UMass **Energy Transition Institute** Networking Committee (2021)
8. UMass ECE Departmental Faculty Mentor for the **IEEE Student Chapter** (2021-2022)
9. Chair of jury, MS student 3MT competition, **BH Foundation** (2021)
10. **UMass Faculty Senate**, Budget Committee member (Fall 2020-present)
11. Associate Editor & Technical Program Committee, **IEEE Nano**, Macau, China (July 22-26, 2019)
12. Advisory Board, **Journal of Physics: Condensed Matter**
13. Screening Committee for the **DOE Computational Science Graduate Fellowship** (2013-present)
14. Departmental Ph.D. Poster Session Organizer/Committee (AY2019 and 2020), UMass Amherst
15. Track Chair and Associate Editor, 2017 **IEEE Nano** Conference (July 25-28, Pittsburgh, PA).
16. ECE Student Advisory Council (ESAC) faculty mentor (2015—2021)
17. Special Session organizer (8 invited talks on NanoPhonics) at the 2015 **IEEE Nano** Conference (26-30 July Rome, Italy)
18. Proposal evaluator/reviewer for:
  1. **NSF** CDS&E program (2020: 5 proposals)
  2. **NSF** Advanced Cyberinfrastructure (2018: 9 proposals)
  3. **NSF** Condensed Matter and Materials Theory (Spring 2015: 3 proposals, Spring 2016: 5 proposals, CAREER 2017: 1 proposal, 2019: 1 proposal, 2020: 2 proposals)
  4. **NSF** Electrical, Communication, and Cyber Systems (2018 panel: 7 proposals)
  5. **Netherlands Organisation for Scientific Research** (NWO) 2018: 1 proposal, 2020: 1 proposal
  6. **Vienna Science and Technology Fund** WWTF (2016: 1 proposal)
  7. **HRZZ** Croatian Science Foundation (2019: 1 proposal)
  8. **ACS Petroleum Fund** (2021: 1 proposal)
  9. **Deutsche Forschungsgemeinschaft** (DFG, German Science Foundation, 2023: 2 proposals)
19. Scientific Advisory Board Member, Prospero Biosciences LLC (October 2013—present)
20. Departmental Personnel Committee (AY2014 and 2019), University of Massachusetts Amherst
21. Departmental Faculty Search Committee (AY2013), University of Massachusetts Amherst
22. Departmental Seminar Committee (AY2013), University of Massachusetts Amherst
23. Technical Program Committee, 2014 American Society for Engineering Education Northeast Conference (ASEE-NE'14), University of Bridgeport
24. Technical Program Committee, 27th Symposium on Microelectronics Technology and Devices
25. Guest Editor for the Special Issue of the **Journal of Computational Electronics** on "*Simulation of Thermal, Thermoelectric, and Electro-thermal Phenomena in Nanostructures*"
26. Technical Program Committee, 2012 **International Computational Electronics Workshop**
27. Co-organizer of the Focus Sessions on Quantum Transport and Computational Electronics at the March 2011 meeting of the **American Physical Society** (APS'11)

28. **Reviewer (typically ~25 papers per year):** Science Advances, ACS Nano, Advanced Materials, Nano Letters, Nature Communications, Scientific Reports (Nature), Physical Review Letters, Physical Review B, Physical Review Applied, Applied Physics Letters, IEEE Transactions on Nanotechnology, IEEE Transactions on Electron Devices, Journal of Applied Physics, Journal of Computational Electronics, Journal of Electronic Materials, Physics Letters A, Physical Chemistry Chemical Physics, International Journal of Numerical Modeling in Engineering, AIP Advances (**outstanding reviewer 2015**), Superlattices and Microstructures, Journal of Computational Physics, Materials Science and Engineering B, International Journal of Heat and Mass Transfer, International Journal of Thermal Sciences, Semiconductor Science and Technology, Solid State Electronics, Solid State Communications, Physica Status Solidi, Physica B: Condensed Matter, ACS Applied Materials and Interfaces, Journal of Materials Chemistry C, Journal of Physics: Condensed Matter