

XIULIN RUAN — Curriculum Vita (as of 6/8/2017)

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Education

Tsinghua University, B.S. in Engineering Thermophysics, 2000

Tsinghua University, M.S. in Engineering Thermophysics, 2002

Thesis Title: Measurements of Thermal Conductive Properties at the Nanoscale

Advisor: Professor Yuqin Gu

University of Michigan at Ann Arbor, M.S. in Electrical Engineering, 2006

University of Michigan at Ann Arbor, PhD in Mechanical Engineering, 2007

Dissertation Title: Fundamentals of Laser Cooling of Rare-earth-ion Doped Solids and its Enhancement using Nanopowders

Advisor: Professor Massoud Kaviani

Professional Appointments

Professor, School of Mechanical Engineering, Purdue University, August 2017-

Associate Professor, School of Mechanical Engineering, Purdue University, August 2013-July 2017

Assistant Professor, School of Mechanical Engineering, Purdue University, Jan. 2007-August 2013

Visiting Positions

Summer Faculty Fellow at the Air Force Research Laboratory, June-August 2013

Summer Faculty Fellow at the Air Force Research Laboratory, June-August 2011

Summer Faculty Fellow at the Air Force Research Laboratory, May-July 2010

Research Interests

- Multiscale multiphysics simulations of phonon-electron-photon coupled transport processes
- Nanoscale heat conduction
- Nanoscale thermal radiation and nano-photonics
- Thermoelectric nanomaterials: simulation, synthesis and devices
- Photovoltaic nanomaterials: simulation, synthesis, and devices

Honors and Awards

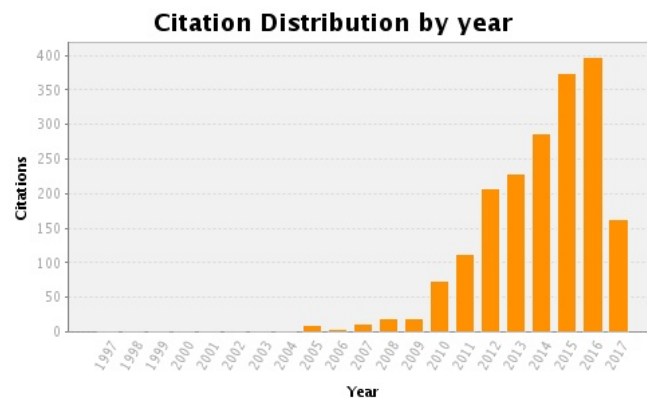
1. University Faculty Scholar of Purdue University, 2017.
2. B.F.S. Schaefer Award, School of Mechanical Engineering, Purdue University, 2017.
3. Outstanding Engineering Graduate Student Mentor Award, School of Mechanical Engineering, Purdue University, 2016.
4. College of Engineering Faculty Early Career Research Award, Purdue University, 2016
5. ASME Heat Transfer Division Best Paper Award, 2015 (with four co-authors)
6. Purdue University Bravo Award, 2014
7. NSF CAREER Award, 2012
8. Seed for Success Award, Purdue University, 2012
9. Air Force Summer Faculty Fellow, 2010, 2011, 2013
10. Best Student Presentation Award (awarded to student Kelly Rickey), the 2012 SPIE Optics and Photonics Conference, San Diego, CA.
11. Best Student Presentation Award, the 2008 Energy Nanotechnology International Conference (awarded to student Bo Qiu), Jacksonville, FL.
12. University of Michigan Rackham Graduate School Predoctoral Fellowship, 2006
13. University of Michigan College of Engineering Outstanding Graduate Student Instructor Award, 2005
14. University of Michigan College of Engineering Distinguished Achievement Award, 2005
15. Department of Mechanical Engineering Fellowship, University of Michigan, January-April 2003
16. Guanghua Scholarship, Tsinghua University, September 2001-July 2002
17. Graduate with Honor of Tsinghua University, July 2000
18. Distinguished Leadership Award, Tsinghua University, September 1999
19. Academic Excellence Scholarship, Tsinghua University, September 1996-July 2000

Journal Publications

Overview:

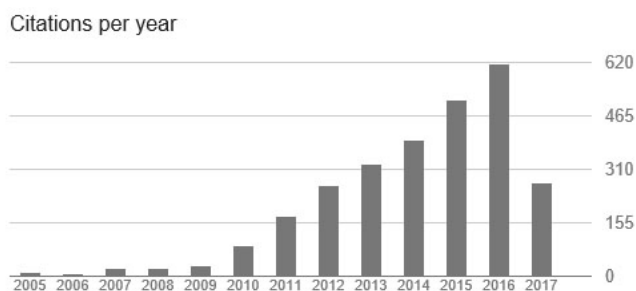
ISI Web of Science citation profile: <http://www.researcherid.com/rid/C-6166-2009>

Total number of citations: 1913; h-index: 24; Average citations per article: 24.



Google Scholar citation profile: <http://scholar.google.com/citations?user=UdzRNdAAAAAJ&hl=en>

Total number of citations: 2742; h-index: 28.



Purdue work (* denotes Dr. Ruan's students or postdoctoral fellows):

1. H. Bao, C. Yan, B.X. Wang, X. Fang, C.Y. Zhao, and X.L. Ruan, "Double-layer nanoparticle-based coatings for efficient terrestrial radiative cooling", *Solar Energy Materials and Solar Cells* 168, 78–84 (2017).
2. T.L. Feng, W.J. Yao, Z.Y. Wang, J.J. Shi, C. Li, B.Y. Cao, and X.L. Ruan, "Spectral analysis of nonequilibrium molecular dynamics: Spectral phonon temperature and local nonequilibrium in thin films and across interfaces", *Phys. Rev. B* 95, 195202 (2017).
3. W.J. Park, X.Y. Li, N. Mandal, X.L. Ruan, and Y.P. Chen, "Compressive mechanical response of graphene foams and their thermal resistance with copper interfaces", *APL Materials* 5, 036102 (2017).
4. Zuyuan Wang, Salar Safarkhani, Guang Lin, and Xiulin Ruan, "Uncertainty quantification of thermal conductivities from equilibrium molecular dynamics simulations", *Int. J. Heat Mass Transfer* 112, 267-278 (2017).
5. Sean Sullivan, Ajit Vallabhaneni, Iskandar Kholmanov, Xiulin Ruan, Jayathi Murthy, and Li Shi, "Optical generation and detection of local nonequilibrium phonons in suspended graphene", *Nano Lett.* 17, 2049–2056 (2017).
6. J. Kaiser, T. Feng, J. Maassen, X. Wang, X. Ruan, and M. Lundstrom, "Thermal transport at the nanoscale: A Fourier's law vs. phonon Boltzmann equation study", *J. Appl. Phys.* 121, 044302 (2017).
7. Zuyuan Wang and Xiulin Ruan, "On the domain size effect of thermal conductivities from equilibrium and nonequilibrium molecular dynamics simulations", *J. Appl. Phys.* 121, 044301 (2017).
8. Biao Xu, Tianli Feng*, Matthias T Agne, Lin Zhou, Xiulin Ruan, G Jeffery Snyder, Yue Wu, "Highly Porous Thermoelectric Nanocomposites with Low Thermal Conductivity and High Figure of Merit from Large-Scale Solution-Synthesized $\text{Bi}_2\text{Te}_{2.5}\text{Se}_{0.5}$ Hollow Nanostructures", *Angewandte Chemie*, 129, 1-7, (2017).
9. Biao Xu, Matthias T Agne, Tianli Feng*, Thomas C Chasapis, Xiulin Ruan, Yilong Zhou, Haimei Zheng, Je-Hyeong Bahk, Mercouri G Kanatzidis, Gerald Jeffrey Snyder, Yue Wu, "Nanocomposites from Solution-Synthesized PbTe-BiSbTe Nanoheterostructure with Unity Figure of Merit at Low-Medium Temperatures (500–600 K)", *Adv. Mater.* 1605140 (2017).
10. Zhifeng Huang*, Xiulin Ruan, "Nanoparticle embedded double-layer coating for daytime radiative cooling", *Int. J. Heat Mass Transfer* **104**, 890-896 (2017).
11. X.Y. Li*, W. Park, Y.P. Chen, and X.L. Ruan, "Effect of particle size and aggregation on thermal conductivity of metal-polymer nanocomposite", *J. Heat Transfer*. 139, 022401 (2017).
12. Z.Y. Wang* and X.L. Ruan, "Phonon spectral energy density analysis of solids: the k point reduction in the first Brillouin zone of FCC crystals and a case study on solid argon", *Computational Materials Science* **121**, 97-105 (2016).
13. Y. Wang*, Z.X. Lu*, and X.L. Ruan, "First principles calculation of lattice thermal conductivity of metals considering phonon-phonon and phonon-electron scattering", *J. Appl. Phys.* **119**, 225109 (2016). <http://dx.doi.org/10.1063/1.4953366>.

14. S Sarbada, Z Huang*, Y.C. Shin, and X.L. Ruan, “Low-reflectance laser-induced surface nanostructures created with a picosecond laser”, *Appl. Phys. A* **122**, 1-10 (2016).
15. A.K. Vallabhaneni*, D. Singh, H. Bao*, J.Y. Murthy, and X.L. Ruan, “Reliability of Raman measurements of thermal conductivity of single-layer graphene due to selective electron-phonon coupling”, *Phys. Rev. B* **93**, 125432 (2016).
16. Z.X. Lu*, Y. Wang*, and X.L. Ruan, “Metal/dielectric thermal interfacial transport considering cross-interface electron-phonon coupling: Theory, two-temperature molecular dynamics, and thermal circuit”, *Phys. Rev. B* **93**, 064302 (2016).
17. Y. Wang*, Z.X. Lu*, A.K. Roy, and X.L. Ruan, “Effect of interlayer on interfacial thermal transport and hot electron cooling in metal-dielectric systems: an electron-phonon coupling perspective”, *J. Appl. Phys.* **119**, 065103 (2016).
18. T.L. Feng* and X.L. Ruan, “Ultra-Low Thermal Conductivity in Graphene Nanomesh”, *Carbon* **101**, 107-113 (2016).
19. H. Bao* and X.L. Ruan, “Absorption Spectra and Electron-Vibration Coupling of Ti: Sapphire From First Principles”, *J. Heat Transfer* **138**, 042702 (2016).
20. T.L. Feng* and X.L. Ruan, “Quantum mechanical prediction of four-phonon scattering rates and reduced thermal conductivity of solids”, *Phys. Rev. B* **93**, 045202 (2016).
21. H.Y. Fang, J.H. Bahk, T.L. Feng*, Z. Cheng, A.M.S. Mohammed, X.W. Wang, X.L. Ruan, A. Shakouri, and Y. Wu, “Thermoelectric properties of solution-synthesized n-type Bi₂Te₃ nanocomposites modulated by Se: An experimental and theoretical study”, *Nano Research* **9**, 117-127 (2016).
22. T.L. Feng*, B. Qiu*, and X.L. Ruan, “Coupling between phonon-phonon and phonon-impurity scattering: A critical revisit of the spectral Matthiessen's rule”, *Phys. Rev. B* **92**, 235206 (2015).
23. W.J. Park, Y.F. Guo, X.Y. Li*, J.N. Hu, L.W. Liu, X.L. Ruan, and Y.P. Chen, “High-Performance Thermal Interface Material Based on Few-Layer Graphene Composite”, *J. Phys. Chem. C* **119**, 26753–26759 (2015).
24. K.M. Rickey*, Q. Nian, G.Q. Zhang, L.L. Chen*, S. Suslov, S.V. Bhat*, Y. Wu, G.J. Cheng, and X.L. Ruan, “Welding of Semiconductor Nanowires by Coupling Laser-Induced Peening and Localized Heating”, *Scientific Reports* **5**, 16052 (2015).
25. Z.Q. Ye, B.Y. Cao, W.J. Yao, T.L. Feng*, and X.L. Ruan, “Spectral phonon thermal properties in graphene nanoribbons”, *Carbon* **93**, 915-923 (2015).
26. J.J. Shi*, Y.L. Dong*, T.S. Fisher, and X.L. Ruan, “Thermal transport across carbon nanotube-graphene covalent and van der Waals junctions”, *J. Appl. Phys.* **118**, 044302 (2015).
27. T.L. Feng*, X.L. Ruan, Z.Q. Ye, and B.Y. Cao, “Spectral phonon mean free path and thermal conductivity accumulation in defected graphene: The effects of defect type and concentration”, *Phys. Rev. B* **91**, 224301 (2015).
28. T.L. Feng* and X.L. Ruan, “Anharmonicity and necessity of phonon eigenvectors in the phonon normal mode analysis”, *J. Appl. Phys.* **117**, 195102 (2015).
29. B. Qiu, Z.T. Tian, A. Vallabhaneni*, B.L. Liao, J.M. Mendoza, O.D. Restrepo, X.L. Ruan, and G. Chen, “First-principles simulation of electron mean-free-path spectra and thermoelectric properties in silicon”, *EPL* **109**, 57006, (2015).
30. Y. Wang*, C.J. Gu*, and X.L. Ruan, “Optimization of the random multilayer structure to break the random-alloy limit of thermal conductivity”, *Appl. Phys. Lett.* **106**, 073104 (2015).
31. Z.Y. Wang*, T.L. Feng*, and X.L. Ruan, “Thermal conductivity and spectral phonon properties of freestanding and supported silicone”, *J. Appl. Phys.* **117**, 084317 (2015).
32. H. Bao*, A. Kumar, Y. Cai, Y. Ji, T.S. Fisher, and X.L. Ruan, Optical Properties of Thin Graphitic Nanopetal Arrays, *Journal of Quantitative Spectroscopy and Radiative Transfer* **158**, 84–90 (2015).
33. Y. Wang*, H.X. Huang*, and X.L. Ruan, "Decomposition of coherent and incoherent phonon conduction in superlattices and random multilayers," *Phys. Rev. B* **90**, 165406 (2014).
34. B.T. Spann, S.V. Bhat*, Q. Nian, K.M. Rickey*, G.J. Cheng, X.L. Ruan, and X.F. Xu, “Enhancing Photo-induced Ultrafast Charge Transfer across Heterojunctions of CdS and Laser-Sintered TiO₂ Nanocrystals,” *Phys. Chem. Chem. Phys.* **16**, 10669-10678 (2014).
35. P. Marepalli, B. Qiu*, X.L. Ruan, and J.Y. Murthy, “Quantifying Uncertainty in Multiscale Heat Conduction Calculations”, *J. Heat Transfer* **136**, 111301 (2014).

36. Y. Wang*, A. Vallabhaneni*, B. Qiu*, and X.L. Ruan, "Two-dimensional thermal transport in graphene: a review of numerical modeling studies", *Nanoscale and Microscale Thermophysical Engineering* **18**, 155–182, (2014). (invited review paper) (Editor's Choice of Ten Significant Articles Published in 2013 and 2014).
37. W. Park, J.N. Hu, L.A. Jauregui, X.L. Ruan, and Y.P. Chen, "Electrical and thermal conductivities of reduced graphene oxide/polystyrene composites", *Appl. Phys. Lett.* **104**, 113101 (2014).
38. T.L. Feng* and X.L. Ruan, "Prediction of spectral phonon mean-free-path and thermal conductivity with applications to thermoelectrics and thermal management: a review", *J. Nanomat.* **2014**, 206370 (2014). (invited review paper)
39. A. Sisto*, X.L. Ruan, and T.S. Fisher, "Ab initio and Finite Element Predictions of Radiative Properties of Nanostructure Arrays: Single-Walled Carbon Nanotube Arrays", *J. Heat Transfer* **136**, 62702 (2014).
40. Y. Wang*, A. Vallabhaneni*, J. Hu, B. Qiu*, Y. Chen and X.L. Ruan, "Phonon Lateral Confinement Enables Thermal Rectification in Asymmetric Single-Material Nanostructures", *Nano Lett.* **14**, 592 (2014).
41. H. Bao*, B. Duvvuri*, M.H. Lou, and X.L. Ruan, "Effects of Randomness and Inclination on the Optical Properties of Multi-walled Carbon Nanotube Arrays", *Journal of Quantitative Spectroscopy and Radiative Transfer* **132**, pp. 22-27 (2014).
42. S. Finefrock; Wang, Yan; Ferguson, John; Ward, James; Fang, Haiyu; Pfluger, Jonathan; Dudis, Doug; Ruan, Xiulin; Wu, Yue, "Measurement of thermal conductivity of PbTe nanocrystal coated glass fibers by the 3ω method", *Nano Letters* **13**, pp 5006–5012 (2013).
43. J. Zuidema, X.L. Ruan, and T.S. Fisher, "Optical Properties of Ordered Carbon Nanotube Arrays Grown in Porous Anodic Alumina Templates", *Optics Express* **21**, 22053-22062 (2013).
44. L.L. Chen*, K.M. Rickey*, Q. Zhao*, C. Robinson*, and X.L. Ruan, "Effects of Nanocrystal Shape and Size on the Temperature Sensitivity in Raman Thermometry", *Appl. Phys. Lett.* **103**, 083107 (2013).
45. H.Y. Fang, T.L. Feng*, H.R. Yang, X.L. Ruan, and Y. Wu, "Synthesis and Thermoelectric Properties of Compositional-Modulated Telluride Nanowire Heterostructures", *Nano Letters* **13**, 2058–2063, 2013.
46. Y.G. Wang, B. Qiu*, A. McGaughey, X.L. Ruan and X.F. Xu, "Mode-Wise Phonon Properties of Bismuth Telluride", *J. Heat Trans.* **135**, 091102, 2013. (selected to receive the 2015 ASME Heat Transfer Division Best Paper Award).
47. A. Vallabhaneni*, X.L. Ruan, J.F. Rhoads, and J.Y. Murthy, "Defect-induced mechanical mode splitting in carbon nanotube resonators", *J. Vibration and Acoustics* **135**, 024504, 2013.
48. C. Muratore, V. Varshney , J.J. Gengler , J.J. Hu , J.E. Bultman, T.M. Smith, P.J. Shamberger, B. Qiu*, X.L. Ruan , A.K. Roy, and A.A. Voevodin, "Cross-plane thermal properties of transition metal dichalcogenides", *Appl. Phys. Lett* **102**, 081604, 2013.
49. A. Vallabhaneni*, B. Qiu*, J.N. Hu, Y.P. Chen, A.K. Roy, and X.L. Ruan, "Interfacial Thermal Conductance Limit and Thermal Rectification across Vertical Carbon Nanotube/Graphene Nanoribbon - Silicon Interfaces", *J. Appl. Phys.* **113**, 064311, 2013.
50. B. Spann, L.L. Chen*, X.L. Ruan, and X.F. Xu, "Energy relaxation in CdSe nanocrystals: the effects of morphology and film preparation", *Optics Express* **21**, A15-A22, 2013.
51. H. Bao*, W.X. Zhang, L.L. Chen*, H.X. Huang*, C. Yang, and X.L. Ruan, "Investigation of the Optical Properties of Disordered Silicon Nanowire Mats", *J. Appl. Phys.*, **112**, 124301, 2012.
52. A. Vallabhaneni*, X.L. Ruan, J.F. Rhoads, and J.Y. Murthy, "A Band-Pass Filter Approach within Molecular Dynamics for the Prediction of Intrinsic Quality Factors of Nano-Resonators", *J. Appl. Phys.*, **112**, 074301, 2012.
53. J.N. Hu, X.L. Ruan, and Y.P. Chen, "Molecular Dynamics Study of Thermal Rectification in Graphene Nanoribbons", *Int. J. Thermophys.* **33**, 986-991, 2012.
54. Y. Wang*, B. Qiu*, and X.L. Ruan, "Edge effect on thermal transport in graphene nanoribbons: A phonon localization mechanism beyond edge roughness scattering", *Appl. Phys. Lett.* **101**, 013101, 2012.

55. Bo Qiu*, Yan Wang*, Qing Zhao*, and Xiulin Ruan, "The effects of diameter and chirality on the thermal transport in free-standing and supported carbon-nanotubes", *Appl. Phys. Lett.*, **100**, 233105, 2012.
56. K. G. S. H. Gunawardana, Kieran Mullen, Jiuning Hu, Yong Chen, and Xiulin Ruan, "Tunable thermal transport and thermal rectification in strained graphene nanoribbons", *Phys. Rev. B*, **85**, 245417, 2012.
57. Y. Wang*, X.L. Ruan, and A.K. Roy, "Two-temperature nonequilibrium molecular dynamics simulation of thermal transport across metal-nonmetal interfaces", *Phys. Rev. B* **85**, 205311, 2012.
58. L.L. Chen*, Q. Zhao*, and X.L. Ruan, "Facile synthesis and morphology dependent Raman spectroscopy of Bi₂Te₃ nanocrystals and nanosheets", *Mat. Lett.*, **82**, 112-115, 2012.
59. H. Bao*, B. Qiu*, Y. Zhang, and X.L. Ruan, "A first-principles molecular dynamics approach for predicting optical phonon lifetimes and far-infrared reflectance of polar materials", *Journal of Quantitative Spectroscopy and Radiative Transfer*, 2012.
60. B. Qiu* and X.L. Ruan, "Reduction of Spectral Phonon Relaxation Times from Suspended to Supported Graphene", *Appl. Phys. Lett.* **100**, 193101, 2012.
61. Y. Wang*, S.Y. Chen*, and X.L. Ruan, "Tunable Thermal Rectification in Graphene Nanoribbons through Defect Engineering: A Molecular Dynamics Study", *Appl. Phys. Lett.* **100**, 163101, 2012.
62. B. Qiu*, H. Bao*, G.Q. Zhang, Y. Wu and X.L. Ruan, "Molecular Dynamics Simulations of Lattice Thermal Conductivity and Spectral Phonon Mean Free Path of PbTe: Bulk and Nanostructures", *Comput. Mater. Sci.* **53**, 278-285, 2012. [Selected as one of the most cited articles published since 2011 in the journal Computational Materials Science.](#)
63. J.N. Hu, Y. Wang*, A. Vallabhaneni*, X.L. Ruan, and Y.P. Chen, "Nonlinear thermal transport and negative differential thermal conductance in graphene nanoribbons," *Appl. Phys. Lett.* **99**, 113101, 2011. [Selected as research highlight in Nature Nanotechnology 6, 609, 2011.](#)
64. G.G. Yadav, G.Q. Zhang, B. Qiu*, J.A. Susoreny, X.L. Ruan, and Y. Wu, "Self-Templated Synthesis and Thermal Conductivity Investigation for Ultrathin Perovskite Oxide Nanowires," *Nanoscale* **3**, 4078, 2011.
65. A. Vallabhaneni*, J.F. Rhoads, J.Y. Murthy, and X.L. Ruan, "Observation of Nonclassical Scaling Laws in the Quality Factors of Cantilevered Carbon Nanotube Resonators," *J. Appl. Phys.*, **110**, 034312, 2011.
66. L.L. Chen*, H. Bao*, T.Z. Tan*, O.L. Prezhdo, and X.L. Ruan, "Shape and Temperature Dependence of Hot Carrier Relaxation Dynamics in Spherical and Elongated CdSe Quantum Dots," *J. Phys. Chem. C* **115**, 11400–11406, 2011.
67. B. Qiu*, L. Sun, and X.L. Ruan, "Lattice thermal conductivity reduction in Bi₂Te₃ quantum wires with smooth and rough surfaces: A molecular dynamics study," *Phys. Rev. B* **83**, 035312, 2011.
68. B. Qiu* and X.L. Ruan, "Thermal conductivity prediction and analysis of few-quintuple Bi₂Te₃ thin films: a molecular dynamics study," *Appl. Phys. Lett.*, **97**, 183107, 2010.
69. J.N. Hu, S. Schiffl, A. Vallabhaneni*, X.L. Ruan, and Y.P. Chen, "Tuning the thermal conductivity of graphene nanoribbons by edge passivation and isotope engineering: A molecular dynamics study", *Appl. Phys. Lett.* **97**, 133107, 2010.
70. H. Bao* and X.L. Ruan, "Enhanced optical absorption in disordered vertical silicon nanowire arrays for photovoltaic applications," *Opt. Lett.* **35**, 3378-3380, 2010.
71. W.Z. Wu*, Z.R. Zheng, and X.L. Ruan, "Luminescence dynamics of Te doped CdS quantum dots at different doping levels," *Nanotechnology* **21**, 265704, 2010.
72. H. Bao*, X.L. Ruan, and T.S. Fisher, "Optical properties of ordered vertical arrays of multiwall carbon nanotubes", *Optics Express* **18**, 6347-6359, 2010.
73. H. Bao* and X.L. Ruan, "Ab initio calculations of thermal radiative properties: the semiconductor GaAs," *Int. J. Heat and Mass Transfer* **53**, 1308–1312, 2010.
74. B. Qiu* and X.L. Ruan, "Molecular dynamics simulations of the thermal conductivity of Bi₂Te₃ using two-body interatomic potentials," *Phys. Rev. B* **80**, 165203, 2009.
75. J.N. Hu, X.L. Ruan and Y.P. Chen, "Thermal Conductivity and Thermal Rectification in Graphene Nanoribbons: a Molecular Dynamics Study", *Nano Lett.* **9**, 2730-2735, 2009.

76. H. Bao*, B.F. Habenicht, O.V. Prezhdo, and X.L. Ruan, Temperature dependence of hot carrier relaxation in a PbSe nanocrystal: an ab initio study, *Phys. Rev. B* **79**, 235306-1-7, 2009.
77. H. Bao*, X.L. Ruan, and M.Kaviany, Theory of the broadening of vibrational spectra induced by lowered symmetry in yttria nanostructures, *Phys. Rev. B* **78**, 125417-1-7, 2008.

Work prior to Purdue:

78. X.L. Ruan and M. Kaviany, Ab Initio Calculations of the Photon-Electron-Phonon Interactions in Laser Cooling of Ion-Doped Solids, *J. Computational and Theoretical Nanoscience* **5**, 221-229, 2008.
79. X.L. Ruan, S.C. Rand, and M. Kaviany, Entropy and Efficiency in Laser Cooling of Solids, *Phys. Rev. B* **75**, 214304-1-9, 2007.
80. X.L. Ruan and M. Kaviany, Advances in Laser Cooling of Solids, *Journal of Heat Transfer – Transactions of the ASME* **129**, 3-10, 2007.
81. X.L. Ruan and M. Kaviany, Enhanced Laser Cooling of Rare-earth-ion-doped Nanocrystalline Powders, *Phys. Rev. B* **73**, 155422-1-15, 2006.
82. X.L. Ruan and M. Kaviany, Enhanced Nonradiative Relaxation and Photoluminescence Quenching in Random, Doped Nanocrystalline Powders, *J. Appl. Phys.* **97**, 104331-1-8, 2005.
83. X.L. Ruan and M. Kaviany, Photon Localization and Electromagnetic Field Enhancement in Laser-Irradiated, Random Porous Media, *Microscale Thermophysical Engineering* **9**, 63-84, 2005.
84. S. Redmond, S.C. Rand, X.L. Ruan, and M. Kaviany, Multiple Scattering and Nonlinear thermal Emission of Yb³⁺,Er³⁺:Y₂O₃ Nanopowders, *J. Appl. Phys.* **95**, 4069-4077, 2004.
85. Y.Q. Gu, X.L. Ruan and L. Han, Imaging of Thermal Conductivity with Sub-micrometer Lateral Resolution Using Scanning Thermal Microscopy, *Int. J. Thermophysics* **23**. 1115-1124, 2002.
86. X.L. Ruan, L. Han and Y.Q. Gu, Study of the Measurement Mechanisms of Scanning Thermal Microscope, *Journal of Engineering Thermophysics*, Vol 23, 2002. (in Chinese)

Refereed Conference Papers (including 4 invited papers)

1. Zuyuan Wang and Xiulin Ruan, "Uncertainties of thermal conductivities from equilibrium molecular dynamics simulations", Technical Paper Publication, IMECE2016-68083, ASME 2016 International Mechanical Engineering Congress & Exposition, Phoenix, AZ, November 2016.
2. Xiangyu Li, Wonjun Park, Yong P. Chen, and Xiulin Ruan, "Thermal interfacial resistance reduction between metal and dielectric materials by inserting intermediate metal layer", Paper No. HT2016-7414, ASME 2016 Summer Heat Transfer Conference, July 2016, Washington DC, USA.
3. Xiangyu Li, Wonjun Park, Yong P. Chen, and Xiulin Ruan, "Effect of particle size and aggregation on thermal conductivity of metal-polymer nanocomposite", Paper No. HT2016-7413, ASME 2016 Summer Heat Transfer Conference, July 2016, Washington DC, USA.
4. Jingjing Shi, Yalin Dong, Timothy Fisher, and Xiulin Ruan, "A network model for the thermal conductivity of pillared-graphene architectures", Paper No. IMECE2014-40170, ASME 2014 Mechanical Engineering Congress & Exposition, November 2014, Montreal, Canada.
5. Hua Bao, Anurag Kumar, Yuannan Cai, Yuzhong Ji, Timothy S. Fisher, and Xiulin Ruan, "Superior Optical Absorption in Graphitic Nano-petal Arrays", 2nd International Workshop on Nano-Micro Thermal Radiation, Shanghai, China, June 2014.
6. Yan Wang and Xiulin Ruan, "Evaluation of Energy Transfer Pathways across General Solid-Solid Interfaces", Paper No. HT2013-17297, ASME 2013 Summer Heat Transfer Conference, July 2013, Minneapolis, MN.
7. Jiuning Hu, Wonjun Park, Xiulin Ruan and Yong P. Chen, "Thermal transport in graphene and graphene-based composites" (invited), *ECS Transactions* **53**, 1, 41-50 (2013).
8. Jiuning Hu, Wonjun Park, Xiulin Ruan and Yong P. Chen, "Thermal Conductivity Measurement of Graphene Composite", 2012 MRS Spring Meeting, Symposium JJ – Nanoscale Thermoelectrics 2012--Materials and Transport Phenomena, *MRS Proceedings* Vol 1456 (2013), doi:0.1557/opl.2013.532
9. Yan Wang and Xiulin Ruan, "Two Temperature Non-Equilibrium Molecular Dynamics Simulation of Thermal Transport Across Metal-Nonmetal Interfaces", paper HT2012-58554, Proceedings of the ASME 2012 Summer Heat Transfer Conference, Puerto Rico, July 2012.

10. William Z Bernstein, Arjun Ramani, Xiulin Ruan, Devarajan Ramanujan, and Karthik Ramani, "Designing-in Sustainability by Linking Engineering Curricula with K-12 Science Projects", paper IDETC/CIE 2012, Proceedings of the ASME 2012 International Design Engineering Technical Conferences (IDETC) and Computers and Information in Engineering Conference (CIE), Chicago, IL, August 2012.
11. Bo Qiu, Hua Bao, Genqiang Zhang, Yue Wu, Xiulin Ruan, "Molecular dynamics simulations of lattice thermal conductivity and spectral phonon mean free path of PbTe: Bulk and nanostructures", paper HT2012-58554, Proceedings of the ASME 2012 Summer Heat Transfer Conference, Puerto Rico, July 2012.
12. Prabhakar Marepalli, Bo Qiu, Xiulin Ruan, and Jayathi Y. Murthy, "Quantifying Uncertainty in Multiscale Heat Conduction Calculations", paper HT2012-58523, Proceedings of the ASME 2012 Summer Heat Transfer Conference, Puerto Rico, July 2012.
13. Liangliang Chen, Hua Bao, Taizhi Tan, Oleg Prezhdo, and Xiulin Ruan, "Study of Interesting Length and Temperature Effect on Ultrafast Electron Relaxation in CdSe Nanorods", paper HT2012-58565, Proceedings of the ASME 2012 Summer Heat Transfer Conference, Puerto Rico, July 2012.
14. Liangliang Chen, Qing Zhao, and Xiulin Ruan, "Size Dependent Raman Spectra of Bismuth Telluride Nanocrystals Synthesized via a One-Step Wet Chemistry Method", paper HT2012-58568, Proceedings of the ASME 2012 Summer Heat Transfer Conference, Puerto Rico, July 2012.
15. Bhagirath Duvvuri, Anurag Kumar, Hua Bao, Haoxiang Huang, Timothy Fisher, and Xiulin Ruan, "Thermal Radiative Properties of Vertical Graphitic Petal Arrays", paper MNHMT2012-75288, Proceedings of the ASME 2012 3rd Micro/Nanoscale Heat & Mass Transfer International Conference, Atlanta, GA, March 2012.
16. Bo Qiu, Yan Wang, Qing Zhao, and Xiulin Ruan, "The Effects Of Diameter And Chirality In The Thermal Transport In Free-Standing And Supported Carbon-Nanotubes", paper MNHMT2012-75323, Proceedings of the ASME 2012 3rd Micro/Nanoscale Heat & Mass Transfer International Conference, Atlanta, GA, March 2012.
17. Yan Wang and Xiulin Ruan, "Two Temperature Non-Equilibrium Molecular Dynamics Simulation of Thermal Transport Across Metal-Nonmetal Interfaces", paper MNHMT2012-75262, Proceedings of the ASME 2012 3rd Micro/Nanoscale Heat & Mass Transfer International Conference, Atlanta, GA, March 2012.
18. Liangliang Chen, Yiwen Chen, and Xiulin Ruan, "Size and Temperature Dependent Phonon Spectra of Spherical CdSe Quantum Dots prepared via a Refined Phosphonic Acid assisted Organometallic Route", ASME paper IMECE2011- 64562, Proceedings of the ASME 2011 Mechanical Engineering Congress & Exposition, Denver, CO, November, 2011.
19. Aaron Sisto, Xiulin Ruan, Timothy Fisher, and Jeffrey Neaton, "Predicting the optical properties of nanostructured metamaterials: Single-walled carbon nanotube arrays", ASME paper IMECE2011-64011, Proceedings of the ASME 2011 Mechanical Engineering Congress & Exposition, Denver, CO, November, 2011.
20. Hua Bao, Bo Qiu, and Xiulin Ruan, "Far Infrared Spectra of Ionic Materials from First Principles Simulations", ASME paper IMECE2011- 63959, Proceedings of the ASME 2011 Mechanical Engineering Congress & Exposition, Denver, CO, November, 2011.
21. Yan Wang and Xiulin Ruan, "Role of Edge Chirality and Isotope Doping in Thermal Transport and Thermal Rectification in Graphene Nanoribbons", ASME paper IMECE2011- 63169, Proceedings of the ASME 2011 Mechanical Engineering Congress & Exposition, Denver, CO, November, 2011.
22. Bo Qiu and Xiulin Ruan, "Mechanism of Thermal Conductivity Reduction From Suspended to Supported Graphene: a Quantitative Spectral Analysis of Phonon Scattering", ASME paper IMECE2011-62963, Proceedings of the ASME 2011 Mechanical Engineering Congress & Exposition, Denver, CO, November, 2011.
23. Yan Wang, and Xiulin Ruan, "Necessary conditions for thermal rectification and negative differential thermal conductance in graphene nanoribbons", MRS Spring Meeting, MRS Proceedings 2011 Vol. 1347: mrss11-1347-bb09-16, San Francisco, CA, April, 2011.

24. Bo Qiu, Yan Wang, and Xiulin Ruan, "Linear and Nonlinear Thermal Transport in Graphene: Molecular Dynamics Simulations", MRS Spring Meeting, MRS Proceedings 2011 Vol. 1347: mrs11-1347-bb10-08, San Francisco, CA, April, 2011.
25. Bo Qiu and Xiulin Ruan, "Thermal Transport in Few-Quintuple Bi_2Te_3 Thin Films and Nanoribbons", ASME paper AJTEC2011-44540, Proceedings of the ASME-JSME 2011 8th Thermal Engineering Joint Conference, Honolulu, Hawaii, March, 2011.
26. Ajit Vallabhaneni, Jiuning Hu, Yong Chen, and Xiulin Ruan, "Thermal Rectification In Graphene And Carbon Nanotube Systems Using Molecular Dynamics Simulations", ASME paper AJTEC2011-44521, Proceedings of the ASME-JSME 2011 8th Thermal Engineering Joint Conference, Honolulu, Hawaii, March, 2011.
27. Ajit Vallabhaneni, Jeff Rhoads, Xiulin Ruan, and Jayathi Murthy, "Unusual scaling observations in the quality factors of cantilevered carbon nanotube resonators", ASME 2010 International Mechanical Engineering Congress & Exposition, Vancouver, Canada, November, 2010.
28. Hua Bao, Xiulin Ruan, and Timothy Fisher, "Thermal radiative properties of multiwalled carbon nanotube arrays", International Heat Transfer Conference, Washington DC, August, 2010.
29. Liangliang Chen, Hua Bao, Oleg Prezhdo, and Xiulin Ruan, "Shape and temperature dependence of hot electron relaxation in CdSe spherical and elongated quantum dots", SPIE Optics and Photonics Conference, San Diego, August, 2010.
30. Hua Bao and Xiulin Ruan, "Enhanced light absorption in disordered silicon nanowire arrays for photovoltaic applications", SPIE Optics and Photonics Conference, San Diego, August, 2010.
31. B. Qiu and X.L. Ruan, "Molecular dynamics simulations of the thermal conductivity of Bi_2Te_3 nanowires," ASME paper IMECE2009-12865, Proceedings of the 2009 International Mechanical Engineering Congress and Exposition, Orlando, Florida, November, 2009.
32. Jiuning Hu, Xiulin Ruan, Zhigang Jiang and Yong P. Chen, "Molecular Dynamics Simulation of Melting and Vacancy Movement in Graphene Nanoribbons", 30-th International Thermal Conductivity Conference (2009)
33. Jiuning Hu, Xiulin Ruan, Zhigang Jiang and Yong P. Chen, "Negative Differential Thermal Conductance in Graphene Nanoribbons: Toward Graphene Thermal Circuits", 2009 TECHCON Conference.
34. H. Bao, B.F. Habenicht, O.V. Prezhdo, and X.L. Ruan, and X.F. Xu, "Suppression of electron-phonon coupling in quantum dot photovoltaic materials towards enhanced efficiency," Proceedings of the 2009 SPIE Optics and Photonics Conference, invited talk, San Diego, California, August 2-6, 2009.
35. H. Bao, B.F. Habenicht, O.V. Prezhdo, and X.L. Ruan, "Temperature dependence of hot carrier relaxation in a PbSe nanocrystal: an ab initio study," ASME paper HT2009_88134, Proceedings of the 2009 ASME Summer Heat Transfer Conference, San Francisco, California, July 19-23, 2009.
36. B. Qiu and X.L. Ruan, "Molecular dynamics simulations of the thermal conductivity of Bi_2Te_3 bulk and nanostructures," ASME paper HT2009-88157, Proceedings of the 2009 ASME Summer Heat Transfer Conference, San Francisco, California, July 19-23, 2009.
37. B. Qiu and X.L. Ruan, "Molecular dynamics simulations of the thermal conductivity of Bi_2Te_3 using two-body interatomic potentials," ASME paper UECTC-RE T5-S6-0406, Proceedings of the 2009 ASME US-EU-China Thermophysics Conference- Renewable Energy, Beijing, China, May 28-30, 2009.
38. H. Bao, B.F. Habenicht, O.V. Prezhdo, and X.L. Ruan, "Temperature dependence of hot carrier relaxation in a PbSe nanocrystal: an ab initio study," ASME paper UECTC-RE T6-S28-0156, Proceedings of the 2009 ASME US-EU-China Thermophysics Conference- Renewable Energy, Beijing, China, May 28-30, 2009.
39. H. Bao and X.L. Ruan, "Radiative Properties of GaAs From First Principles Calculations," ASME paper UECTC-RE T2-S26-0155, Proceedings of the 2009 ASME US-EU-China Thermophysics Conference- Renewable Energy, Beijing, China, May 28-30, 2009.
40. Jiuning Hu, Xiulin Ruan, Zhigang Jiang and Yong P. Chen, "Molecular Dynamics Calculation of Thermal Conductivity of Graphene Nanoribbons", Frontiers of Characterization and Metrology for Nanoelectronics, AIP Conf. Proc., Vol. 1173, 135 (2009)

41. H. Bao and X.L. Ruan, Thermal Radiative Reflectance of Bulk GaAs from First Principle Calculations, ASME paper HT2008-56341, Proceedings of the 2008 ASME Summer Heat Transfer Conference, August 10-14, Jacksonville, FL, USA.
42. B. Qiu, H. Bao, and X.L. Ruan, Multiscale Simulations of Thermoelectric Properties of Bulk PbTe, ASME paper ENIC2008-53040, Proceedings of the 2008 ASME Summer Heat Transfer Conference, August 10-14, Jacksonville, FL, USA.
43. H. Bao and X.L. Ruan, Ab initio Calculations of Optical Properties of Solid State Laser Materials, ASME Paper IMECE2007-43856, Proceedings of the 2007 ASME International Mechanical Engineering Congress and Exposition, November 11-15, 2007, Seattle, Washington, USA.
44. X.L. Ruan, S.C. Rand, and M. Kaviani, Entropy and Efficiency of Laser Cooling of Solids, ASME Paper IMECE2007-43833, Proceedings of the 2007 ASME International Mechanical Engineering Congress and Exposition, November 11-15, 2007, Seattle, Washington, USA.
45. X.L. Ruan, H. Bao, and M. Kaviani, Boundary-Induced Vibrational Spectra Broadening of Nanostructures, ASME Paper IMECE2007-41701, Proceedings of the 2007 ASME International Mechanical Engineering Congress and Exposition, November 11-15, 2007, Seattle, Washington, USA, accepted.
46. X.L. Ruan and M. Kaviani, Enhanced Laser Cooling of Rare-earth-ion-doped Nanocrystalline Powders, ASME Paper IMECE2005-81939, Proceedings of the 2005 ASME International Mechanical Engineering Congress and Exposition, November 5-11, 2005, Orlando, Florida, USA.
47. X.L. Ruan and M. Kaviani, Temperature-Dependent Luminescence Quenching in Random, Nano Porous Media, ASME Paper IMECE2004-60363, Proceedings of the 2004 ASME International Mechanical Engineering Congress and Exposition, November 13-29, 2004, Anaheim, California, USA.
48. X.L. Ruan and M. Kaviani, Dependent Scattering and Field Enhancement in Monochromatic Irradiated, Random Porous Media, ASME Paper HT2003-47233, Proceedings of the 2003 ASME Summer Heat Transfer Conference, July 21-23, 2003, Las Vegas, Nevada, USA.
49. Y.Q. Gu, X.L. Ruan and L. Han, Thermal Conductivity Measurements of Solid Materials on a Microscale, Proceedings of the 6th Asian Thermophysical Properties Conference, 2001.
50. Y.Q. Gu, D.Z. Zhu, L. Han, X.L. Ruan, and X.Y. Sun, Imaging of Thermal Conductivity with Lateral Resolution of Sub-Micrometer using Scanning Thermal Microscopy, Proceedings of the Fourteenth Symposium on Thermophysical Properties, Boulder, Colorado, June 25-30, 2000

Non-refereed Conference Oral or Poster Presentations

(These presentations are based on reviewed abstracts; including 5 invited presentations)

1. Tianli Feng and Xiulin Ruan, "First Principles Based Prediction of Four-Phonon Scattering Rates in Two-Dimensional Materials", Technical Presentation. IMECE2016-67496, ASME 2016 International Mechanical Engineering Congress & Exposition, Phoenix, AZ, November 2016.
2. Tianli Feng and Xiulin Ruan, "Study of Phonon Modal Non-Equilibrium based on Molecular Dynamics", Technical Presentation. IMECE2016-67550, ASME 2016 International Mechanical Engineering Congress & Exposition, Phoenix, AZ, November 2016.
3. Jingjing Shi, Jonghoon Lee, Yalin Dong, Ajit, Roy, Timothy Fisher, and Xiulin Ruan, "Phonon Mode Conversion at Dimensionally-Mismatched Interfaces: Carbon Nanotube-Graphene Junction", Technical Presentation, IMECE2016-67689, ASME 2016 International Mechanical Engineering Congress & Exposition, Phoenix, AZ, November 2016.
4. Jingjing Shi, Jonghoon Lee, Yalin Dong, Ajit, Roy, Timothy Fisher, and Xiulin Ruan, "Decomposition of Thermal Boundary Resistance Across Carbon Nanotube-Graphene Junctions", Technical Presentation. IMECE2016-67889, ASME 2016 International Mechanical Engineering Congress & Exposition, Phoenix, AZ, November 2016.
5. Yan Wang, Zexi Lu, and Xiulin Ruan, "First-principles based monte carlo simulation of electron-phonon coupled thermal transport across metal/dielectric interfaces", Technical Presentation. IMECE2016-67656, ASME 2016 International Mechanical Engineering Congress & Exposition, Phoenix, AZ, November 2016.

6. Tianli Feng and Xiulin Ruan, "Importance of Four-Phonon Scattering in High-Thermal Conductivity Bulk Materials: a First-Principles Study", Technical Presentation IMECE2016-67536, ASME 2016 International Mechanical Engineering Congress & Exposition, Phoenix, AZ, November 2016.
7. Xiulin Ruan, "Phonon Spectroscopy using Predictive Atomic Scale Simulations", 3rd Phononics and Thermal Energy Science (PTES) Conference, Xi'an, China, May 2016.
8. Tianli Feng and Xiulin Ruan, "Importance of Four-Phonon Scattering in Thermal Transport in Strongly Anharmonic Materials", Technical presentation IMECE2015-53575, ASME 2015 International Mechanical Engineering Congress & Exposition, Houston, TX, November 2015.
9. Zexi Lu, Yan Wang, and Xiulin Ruan, "Two-temperature Molecular Dynamics Simulation with Non-local and Regional Electron-phonon Coupling", Technical presentation IMECE2015-53690, ASME 2015 International Mechanical Engineering Congress & Exposition, Houston, TX, November 2015.
10. Yan Wang, Zexi Lu, and Xiulin Ruan, "First-principles calculation of the electronic and lattice thermal conductivity of metals", Technical presentation IMECE2015-53695, ASME 2015 International Mechanical Engineering Congress & Exposition, Houston, TX, November 2015.
11. Yan Wang and Xiulin Ruan, "Monte Carlo enabled spectral Boltzmann transport simulation for electron-phonon coupled thermal transport across metal-dielectric interfaces", Technical presentation IMECE2015-53701, ASME 2015 International Mechanical Engineering Congress & Exposition, Houston, TX, November 2015.
12. Tianli Feng, Bo Qiu, and Xiulin Ruan, "Coupling between Phonon-Phonon and Phonon-Impurity Scattering: A Critical Revisit of Spectral Phonon Matthiessen's Rule", Technical presentation IMECE2015-53777, ASME 2015 International Mechanical Engineering Congress & Exposition, Houston, TX, November 2015.
13. Xiulin Ruan, MRS Spring Meeting, 2015. (Invited talk)
14. Y. Wang, T.L. Feng, Z.X. Lu, J.J. Shi, and X.L. Ruan, "Mode-resolved Boltzmann Transport Simulation of Electron-phonon Coupled Thermal Transport in Metal-dielectric Heterojunctions", Technical presentation IMECE2014-39241, ASME 2014 International Mechanical Engineering Congress & Exposition, Montreal, Canada, November 2014.
15. Y. Wang, H.X. Huang, and X.L. Ruan, "Decomposition of Coherent and Incoherent Phonon Conduction in Superlattices and The Localization of Coherent Phonons in Random Multilayers", Technical presentation IMECE2014-39258, ASME 2014 International Mechanical Engineering Congress & Exposition, Montreal, Canada, November 2014.
16. Ajit Vallabhaneni, Dhruv Singh, Hua Bao, J.Y. Murthy, and X.L. Ruan, "Is Raman spectroscopy reliable for measuring thermal conductivity of single layer graphene?" Technical presentation IMECE2014-39132, ASME 2014 International Mechanical Engineering Congress & Exposition, Montreal, Canada, November 2014.
17. Yan Wang, Rajib Paul, Timothy S. Fisher, and Xiulin Ruan, "Thermal transport in single layer graphene doped with h-BN islands", Technical presentation IMECE2014-39618, ASME 2014 International Mechanical Engineering Congress & Exposition, Montreal, Canada, November 2014.
18. Xiulin Ruan, "Thermal Rectification and Thermal Nonequilibrium in Nanoscale Heat Transfer", Phononics and Thermal Energy Science (PTES) Conference 2014, Shanghai, China, May 2014.
19. A. Vallabhaneni*, Dhruv Singh, X.L. Ruan, and J.Y. Murthy, "A Study of Spatially-Resolved Nonequilibrium In Laser-irradiated Graphene Using Boltzmann Transport Equation", Technical presentation IMECE2013-66095, ASME 2013 International Mechanical Engineering Congress & Exposition, San Diego, CA, November, 2013.
20. S. Finefrock; Y. Wang, D.X. Liang, Yan; H.R. Yang, J.B. Ferguson, J.V. Ward, H.Y. Fang, J.E. Pfluger, D.C. Dudis, X.L. Ruan, Y. Wu, "PbTe nanocrystal coated glass fiber for thermoelectric energy harvesting", 246th National Meeting of the American-Chemical-Society (ACS), Indianapolis, Sept. 8-12, 2013.
21. H.Y. Fang, T.L. Feng*, H.R. Yang, X.L. Ruan, and Y. Wu, "Synthesis and thermoelectric properties of compositional-modulated lead telluride-bismuth telluride nanowire heterostructures", 246th National Meeting of the American-Chemical-Society (ACS), Indianapolis, Sept. 8-12, 2013.

22. B. Spann, L.L. Chen, X.L. Ruan, and X.F. Xu, "Hot-Exciton Dynamics in CdSe Quantum Dot and Quantum Rod Films: Auger-Relaxation and Non-Adiabatic Interactions", HT2013-17091, ASME 2013 Summer Heat Transfer Conference, July 2013, Minneapolis, MN.
23. H. Bao and X.L. Ruan, "Predicting Thermal Radiative Properties of Semiconductors from First Principles", HT2013-17312, ASME 2013 Summer Heat Transfer Conference, July 2013, Minneapolis, MN.
24. K.M. Rickey, Q. Nian, G.Q. Zhang, L.L. Chen, S.V. Bhat, Y. Wu, G.J. Cheng, and X.L. Ruan, "Laser Peen Sintering for Joining of Nanocrystals for High Performance Thin Film Photovoltaics", HT2013-17538, ASME 2013 Summer Heat Transfer Conference, July 2013, Minneapolis, MN.
25. B. Qiu and X.L. Ruan, "A general scaling correction for the effective phonon group velocity in few-layer materials", HT2013-17540, ASME 2013 Summer Heat Transfer Conference, July 2013, Minneapolis, MN.
26. B. Qiu, T.L. Feng, and X.L. Ruan, "Spectral phonon relaxation time and thermal conductivity from tight-binding molecular dynamics", HT2013-17546, ASME 2013 Summer Heat Transfer Conference, July 2013, Minneapolis, MN.
27. L.L. Chen, X.Y. Li, K.M. Rickey, C. Robinson, and X.L. Ruan, "Thermoelectric Properties of Bi₂Te₃ Quantum Dot Compact", HT2013-17551, ASME 2013 Summer Heat Transfer Conference, July 2013, Minneapolis, MN.
28. B. Qiu, Z. Tian, A. Vallabhaneni, B. Liao, J. M. Mendoza, X. Ruan and G. Chen, "*First-principles calculation of the thermoelectric properties of silicon*", MRS Spring Meeting, San Francisco, CA, Apr. 2013.
29. Yan Wang and Xiulin Ruan, "An Evaluation of Energy Transfer Pathways across General Solid-Solid Interfaces", MRS 2013 Spring Meeting, San Francisco, CA, April 2013.
30. Xiulin Ruan, "Determining phonon relaxation time and thermal conductivity from tight-binding molecular dynamics", Technical presentation IMECE2012-89511, ASME 2012 Mechanical Engineering Congress & Exposition, Houston, TX, November, 2012. (invited)
31. Xiulin Ruan and Hua Bao, "Predicting Thermal Radiative Properties from First Principles", Technical presentation IMECE2012-89871, ASME 2012 Mechanical Engineering Congress & Exposition, Houston, TX, November, 2012.
32. Liangliang Chen, Kelly Rickey, and Xiulin Ruan, "Synthesis and Thermoelectric Transport Properties Characterizations of Bi₂Te₃ Compact Made of Ultra-small Nanocrystals", Technical presentation IMECE2012-89872, ASME 2012 Mechanical Engineering Congress & Exposition, Houston, TX, November, 2012.

Published Simulation Tools

1. Tianli Feng and Xiulin Ruan (2016), "Spectral phonon relaxation time calculation tool by using normal mode analysis based on molecular dynamics," <https://nanohub.org/resources/phononlifetime>. (DOI: 10.4231/D3DV1CP7R).
2. Tianli Feng and Xiulin Ruan (2015), "Lorentzian fitting tool for phonon spectral energy density," <https://nanohub.org/resources/lorentzfit>. (DOI: 10.4231/D31R6N21J).
3. Yan Wang, Xin Jin, and Xiulin Ruan (2012), "Two-temperature Non-equilibrium Molecular Dynamics Simulator," <https://nanohub.org/resources/ttmmmd>. (DOI: 10.4231/D3X921H9V).

Short Tutorial Courses:

1. "First-principles based calculations of thermal conductivity" and "First principles calculations of electron-phonon coupling and non-equilibrium in thermal transport", a short tutorial course to be taught at the 3rd Phononics and Thermal Energy Science (PTES) Conference, Xi'an, China, 2016.
2. "Phonon Transport Modeling: Formulation, Implementation, and Applications", a short tutorial course taught at the ASME 2016 International Mechanical Engineering Congress & Exposition, Phoenix, AZ, USA, 2016.
3. "First Principles-Based Predictions of Optical and Infrared Properties", a short tutorial course taught at the 2nd International Workshop on Nano-Micro Thermal Radiation, Shanghai, China, June 2014.

Invited Seminars at Universities or National Labs

1. Xiulin Ruan, "Phonon Spectroscopy and Thermal Transport using Predictive Atomistic Simulation", University of Texas at Austin, November 22, 2016.
2. Xiulin Ruan, "Phonon Spectroscopy and Thermal Transport using Predictive Atomistic Simulation", California Institute of Technology, October 6, 2016.
3. Xiulin Ruan, "Phonon Spectroscopy and Thermal Transport using Predictive Atomistic Simulations", School of Power and Energy Engineering, Huazhong University of Science and Technology, June 7, 2016.
4. Xiulin Ruan, "Engineering Thermal Radiative and Conductive Properties at the Nanoscale: A Multiscale Multiphysics Simulation Approach", Harbin Institute of Technology, June 6, 2016.
5. Xiulin Ruan, "Engineering Thermal Transport at the Nanoscale: Multiscale Multiphysics Simulations", Chinese Academy of Sciences, June 3, 2016.
6. Xiulin Ruan, "Engineering Thermal Transport at the Nanoscale: Multiscale Multiphysics Simulations and Experiments", North China University of Electric Power, June 1, 2016.
7. Xiulin Ruan, "Phonon Spectroscopy and Thermal Transport using Predictive Atomistic Simulation", Department of Engineering Mechanics, Tsinghua University, May 30, 2016.
8. Xiulin Ruan, "Engineering Thermal Transport at the Nanoscale", Department of Mechanical Engineering, National Tsing Hua University, October 17, 2014.
9. Xiulin Ruan, "Engineering Thermal Transport at the Nanoscale", Department of Mechanical Engineering, National Cheng Kung University, October 14, 2014.
10. Xiulin Ruan, "Engineering Thermal Transport at the Nanoscale", Department of Mechanical Engineering, National Taiwan University, October 13, 2014.
11. Xiulin Ruan, "Engineering Thermal Transport at the Nanoscale: A Multiscale Multiphysics Simulation Approach", School of Power and Energy Engineering, Huazhong University of Science and Technology, June 12, 2014.
12. Xiulin Ruan, "Engineering Thermal Transport at the Nanoscale: A Multiscale Multiphysics Simulation Approach", School of Power and Mechanical Engineering, Wuhan University, June 11th, 2014.
13. Xiulin Ruan, "Engineering Thermal Transport at the Nanoscale: A Multiscale Multiphysics Simulation Approach", University of Michigan-Shanghai Jiao Tong University Joint Institute, Shanghai Jiao Tong University, June 10, 2014.
14. Xiulin Ruan, "Engineering Thermal Transport at the Nanoscale: A Multiscale Multiphysics Simulation Approach", Department of Engineering Mechanics, Tsinghua University, June 5, 2014.
15. Xiulin Ruan, "Engineering Thermal Transport at the Nanoscale: A Multiscale Multiphysics Simulation Approach", Aachen Institute for Advanced Study in Computational Engineering Science, RWTH Aachen University, March 18, 2014.
16. Xiulin Ruan, "Thermal Transport in Nanostructures: A Multiscale Multiphysics Simulation Approach", Applied Mathematics Seminar Series, Department of Mathematics, Purdue University, IN, September 27, 2013.
17. Xiulin Ruan, "Electron-Phonon Coupled Thermal and Electrical Transport", Air Force Research Laboratory, Dayton, Ohio, July 31, 2013.
18. Xiulin Ruan, "Thermal Transport in Nanostructures: A Multiscale Multiphysics Simulation Approach", University of Notre Dame, IN, May 11, 2012.
19. Xiulin Ruan, "Thermal Transport in the Nanoscale: A Multiscale Multiphysics Approach", Department of Physics and Astronomy Colloquium, University of Louisville, Kentucky, December 2, 2011.
20. Xiulin Ruan, "Understanding and Control of Thermal Transport in the Nanoscale: A Multiscale Multiphysics Approach", Air Force Research Laboratory, Dayton, Ohio, June 23, 2011.
21. Xiulin Ruan, "Nanoscale Control of Photon and Phonon Transport for Enhanced Solar Energy Harvesting", Department of Mechanical Engineering and Applied Mechanics Colloquium, University of Pennsylvania, February 15, 2011.

22. Xiulin Ruan, “Nanoscale control of thermal transport for enhanced photovoltaic and thermoelectric energy conversion”, Department of Mechanical, Aerospace, and Nuclear Engineering Colloquium, Rensselaer Polytechnic Institute, October 20, 2010.
23. Xiulin Ruan, “Suppression of electron-phonon coupling in quantum dot photovoltaic materials towards enhanced efficiency”, Department of Physics Condensed Matter Seminar, Purdue University, West Lafayette, January 15, 2010.
24. Xiulin Ruan, “Suppression of electron-phonon coupling in quantum dot photovoltaic materials towards enhanced efficiency”, School of Mechanical Engineering Seminar, Georgia Institute of Technology, Atlanta, August 21, 2009.
25. Xiulin Ruan, “Multiscale simulations of energy conversion nanomaterials”, Tsinghua University, Beijing, China, June 2, 2009.

Invited Talks at Conferences

1. Xiulin Ruan, “Phonon Spectroscopy using Predictive Atomistic Simulation”, 3rd Phononics and Thermal Energy Science (PTES) Conference, Xi’an, China, May 2016.
2. Xiulin Ruan, MRS Spring Meeting, April 2015.
3. Xiulin Ruan, “Thermal Rectification and Thermal Nonequilibrium in Nanoscale Heat Transfer”, 2nd Phononics and Thermal Energy Science (PTES) Conference, Shanghai, China, 2014.
4. Jiuning Hu, Wonjun Park, Xiulin Ruan, and Yong Chen, “Thermal Transport in Graphene and Graphene-based Composites”, ECS Meeting, 2013.
5. Xiulin Ruan, “First-principles prediction of thermal conductivity and spectral phonon properties”, ASME IMECE, Houston, TX, 2012.
6. Xiulin Ruan, “Linear and nonlinear heat conduction in graphene”, MRS Spring Meeting, San Francisco, April 2011.
7. Xiulin Ruan, “Enhanced light absorption in disordered silicon nanowire arrays for photovoltaic applications”, International Heat Transfer Conference, Washington DC, August 11, 2010.
8. Xiulin Ruan, “Shape and temperature dependence of hot electron relaxation in PbSe and CdSe spherical and elongated quantum dots”, SPIE Optics and Photonics Conference, San Diego, August 5, 2010.
9. Xiulin Ruan, “Suppression of electron-phonon coupling in quantum dot photovoltaic materials towards enhanced efficiency”, SPIE Optics and Photonics Conference, San Diego, August 2, 2009.

Invited Panel Discussions at Conferences:

1. Xiulin Ruan, “Atomistic Simulations of Thermal Transport across Interfaces”, ASME 2016 International Mechanical Engineering Congress & Exposition, Phoenix, AZ, November 2016.
2. Xiulin Ruan, “Predictive Multiscale Simulation Methods for Thermal Management Applications”, ASME 2016 International Mechanical Engineering Congress & Exposition, Phoenix, AZ, November 2016.

Invited Talks at Workshops

1. Xiulin Ruan, “First Principles-Based Spectral Boltzmann Transport Simulation of Electron-Phonon Coupled Thermal Transport in Metal-Dielectric Heterojunctions”, Seagate-University Conclave, Minneapolis, August 2015.
2. Xiulin Ruan, “Nanomaterials for Thermal Energy Transport and Conversion”, Purdue Day Forum at Applied Materials, Inc., August 2014.
3. Xiulin Ruan, “First-Principles Enabled Simulations of Thermal Conductive and Radiative Properties of Solids”, Energy Conservation and Waste Heat Recovery Workshop, University of California Los Angeles, November 2013.
4. Xiulin Ruan, “Electron-phonon coupled thermal transport in nanoscale electronic devices”, Seagate-University Conclave, Minneapolis, June 2013.
5. Xiulin Ruan, “Thermal Transport in Nanostructures: A Multiscale Multiphysics Simulation Approach”, US-India Nanomaterials for Energy Symposium, Purdue University, April 2012.

6. Xiulin Ruan, “Nanoscale Control of Thermal Transport for Enhanced Solar and Thermoelectric Energy Conversion”, Purdue University – Tsinghua University Workshop on Renewable Energy, Tsinghua University, October 2011.
7. Xiulin Ruan, “Nanoscale Control of Thermal Transport for Enhanced Solar and Thermoelectric Energy Conversion”, Shanghai Jiao Tong University – Purdue University Joint Heat Transfer Seminar, Shanghai Jiao Tong University, June 2011.
8. Xiulin Ruan, “Multiscale Multiphysics Simulations of Energy Nanomaterials”, US-India Nanomaterials for Energy Symposium, JNCASR, August 2010.
9. Xiulin Ruan, “Multiscale Multiphysics Simulations of Energy Conversion Nanomaterials”, US-India Nanomaterials for Energy Symposium, Purdue University, March 2009.

Media Coverage

1. 2014: “Research could bring new devices that control heat flow”, covered by Purdue News Services and numerous other news media:
 - Purdue News Services: <http://www.purdue.edu/newsroom/releases/2014/Q1/research-could-bring-new-devices-that-control-heat-flow.html>.
 - www.hpcwire.com: <http://www.hpcwire.com/off-the-wire/research-bring-new-devices-control-heat-flow/>
 - Phys.org: <http://phys.org/news/2014-01-devices.html>
 - Sciencedaily.com: http://www.sciencedaily.com/releases/2014/01/140128113326.htm?utm_source=dlvr.it&utm_medium=twitter&utm_campaign=inorganicnews
2. 2013: “Retiring Steele cluster kicked off Purdue’s current national prominence in research supercomputing”, covered by Purdue Rosen Center for Advanced Computing: <http://www.rcac.purdue.edu/news/detail.cfm?newsId=623>.
3. 2013: “11 Purdue researchers won NSF early-career awards in 2012”, covered by Purdue News Services and many other news media:
 - Purdue News Services: <http://www.purdue.edu/newsroom/releases/2013/Q3/11-purdue-researchers-won-nsf-early-career-awards-in-2012.html>
 - www.wn.com: http://article.wn.com/view/2013/09/04/11_Purdue_researchers_won_NSF_earlycareer_awards_in_2012_Pur/
 - www.highbeam.com: <http://www.highbeam.com/doc/1P3-3063095051.html>
4. 2011: “Teaming Up To Build 3-D Nanomaterials”, covered by Purdue News Services and many other media, such as:
 - Purdue Newsroom: <http://www.purdue.edu/newsroom/pitn/2011/110812Nanomaterials.html>
 - e! Science News: <http://esciencenews.com/sources/newswise.scinews/2011/08/09/teaming.up.build.3.d.nanomaterials>
 - PR Newswire: <http://www.prnewswire.com/news-releases/teaming-up-to-build-3-d-nanomaterials-127450998.html>

Grants

Summary: \$3.4M total project amount as PI, \$2.93M in share of funding as PI and co-PI. Sponsors include National Science Foundation (NSF), Air Force Office of Scientific Research (AFOSR), DARPA, Office of Naval Research, Cooling Technologies Research Center (CTRC), and Purdue Research Foundation (PRF).

Students and Research Fellows Supervised

PhD dissertations supervised (in the order of graduation date):

Number	Name	Graduation Date	Name of co-chair	Dissertation Title	Current Position
1	Hua Bao	2/12		Nanoscale material design for photovoltaic applications	Associate Professor, University of Michigan and Shanghai Jiao Tong University Joint Institute, Shanghai Jiao Tong University, Shanghai, China
2	Bo Qiu	8/12		Thermal transport in layered materials for thermoelectrics and thermal management	Intel
3	Yalin Dong	5/13	Ashlie Martini	Physically representative Atomistic Modeling of Atomic-Scale Friction	Assistant Professor, University of Akron
4	Liangliang Chen	9/13		High-performance low-cost nanomaterials for solar and thermoelectric applications	Western Digital
5	Xiawa Wu	5/14	Ashlie Martini	Friction in nanomaterials	Sentient Science
6	Ajit Vallabhaneni	8/14	Jayathi Murthy	Energy dissipation and transport in graphene and carbon nanotubes	Postdoctoral fellow at Georgia Institute of Technology
7	Yan Wang	5/16		Thermal transport across CNT-metal junctions	Assistant Professor, University of Nevada at Reno
8	Kelly Rickey	5/16		High-performance low-cost nanomaterials for solar and thermoelectric applications	
9	Zuyuan Wang	12/16		Spectral phonon transport dynamics in bulk and nanomaterials	In progress
10	Tianli Feng	5/17		Spectral phonon transport dynamics in bulk and nanomaterials	In progress
11	Jingjing Shi	8/17	Timothy Fisher	Thermal transport across CNT-graphene junctions	In progress
12	Zexi Lu	5/18		Thermal transport across metal-nonmetal junctions	In progress
13	Xiangyu Li	5/18		Measurement of thermal transport in nanomaterials using MEMS devices	In progress
15	Prabudhya Roy Chowdhury	5/20			In progress

MS thesis supervised (in the order of graduation date):

Num-	Name	Gradua-	Name of	Thesis Title	Current Position
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ber		tion Date	co-chair		
1	Aaron Sisto	7/11	Timothy Fisher	Multiscale simulations of thermal radiative properties of carbon nanotube arrays	PhD student, Stanford University
2	Bhagirath Duvvuri	2/12		Thermal Radiative Properties of Thin Graphitic Arrays and Random Multi-Walled Carbon Nanotube Arrays	Thermal engineer, Cummins
3	Tianli Feng	12/13		Spectral phonon transport dynamics in bulk and nanomaterials	PhD student in our group
4	Taekon Kim	08/14		Optical properties of silicon core/multi-shell nanowire arrays using FDTD and EMA methods	Samsung
5	Eshaan Mathew	05/15		Computational Study of nano- and meso-scale size effects on thermal transport	Energy engineer, Digital Energy
6	Christopher Robinson	05/15		Preparation of bismuth telluride based thermoelectric nanomaterials via low-energy ball milling and their property characterizations	Research Associate, Lux Research Inc.
7	Vignesh Gouthaman	05/15		Thermal transport in thermoelectric nanomaterials	Engineer, TrelleborgVibracoustic
8	Dedeepya Valluripally	12/17			In progress

MS non-thesis students supervised (in the order of graduation date):

Number	Name	Graduation Date	Name of co-chair	Current Position
1	Meng Liu	12/2017		In progress
2	Dung-Yi Chao	12/2017		In progress
3	Rachel McGuinness	12/2019		In progress

Postdoctoral fellows and visiting scholars supervised (in the order of date):

Number	Name	Title	Date	Project Title	Current Position
1	Wenzhi Wu	Postdoctoral Fellow	3/09 – 3/10	Multiscale simulations of thermal radiative properties of carbon nanotube arrays	Associate professor, Heilongjiang University, China
2	Venka-	Postdoctoral	12/11 –	Quantum dot based solar	SRM University, India

	taprasad Bhat	Fellow	06/13	cell devices	
3	Shanglong Xu	Visiting Professor	07/12-06/13	Thermal transport in graphene	University of Electronics Technology, China
4	Zhifeng Huang	Visiting Professor	08/14-08/16	Nanoscale thermal radiation	Associate professor, Wuhan University, China.
5	Jun Qiu	Postdoctoral Fellow	11/16-present	Nanoscale thermal radiation	In progress

Undergraduate students supervised (in the order of date):

Number	Name	Date	Program	Project Title	Current Position
1	Brian Wang	1/08-5/08	ME 497	Molecular dynamics simulations of thermal conductivity	
2	David Wilson	8/08-12/08	ME 497	Synthesis of quantum dots for solar cells	
3	Taizhi Tan	05/10-08/10	SURF	Non-adiabatic molecular dynamics simulations of hot electron relaxation	
4	Yiwen Chen	05/10-08/10	SURF	Synthesis of CdSe nanocrystals for solar applications	Graduate student at Stanford
5	Siyu Chen	5/10-5/11	ME 497, SURF	Thermal rectification using defect engineering of graphene	PhD student at MIT
6	Qing Zhao	8/10-5/12	ME 497, SURF	Synthesis of CdSe, PbTe, and Bi ₂ Te ₃ nanocrystals for solar and thermoelectric applications	PhD student at MIT
7	Karl Tucker	06/11-05/12	ME 497	Synthesis of CdTe nanowires for solar cells	
8	Hao Wu	08/11-05/12	ME 497	Molecular dynamics simulations of thermal conductivity	Graduate student at Stanford
9	Kailu Song	5/12-12/12	SURF	Optical properties of nanomaterials	Graduate student at Cornell University
10	Haoxiang Huang	8/10-5/13	ME 497, SURF	Measurements of optical properties of nanomaterials	Graduate student at Georgia Institute of Technology
11	Jin Xin	5/12-present	ME 497, SURF	Nanoscale simulations of thermal transport	Graduate student at Purdue University
12	Zaid Ahsan	06/13-08/13	Summer Intern	Molecular dynamics simulations of thermal transport in graphene	Undergraduate student at IIT, India
13	Christopher Robinson	05/12-08/14	SURF, independent study	Synthesis of high-performance low-cost thermoelectric materials	MS student in our group
14	Chongjie Gu	10/13-05/15	ME 497	MD simulations of thermal transport	PhD student at MIT
16	Yuanyuan	09/14	Summer	Molecular dynamics simu-	Graduate student at the

	Zhou		Intern	lations of thermal transport in graphene	University of Texas at Austin
17	Chuang Li	11/15-02/16	Undergraduate research intern	Non-equilibrium phonon modal temperatures in NEMD	Undergraduate student at Tsinghua University
18	Jai Singh	10/15-05/16	Undergraduate research	Nanomaterials fabrication and characterizations	
19	Mengxi Zhao	10/15-present	SURF and ME 497	Thermal transport across interfaces	In progress
20	Jiayun Shao	10/15-05/16	Undergraduate research	Molecular dynamics simulations of thermal transport	
21	Jacob M. Faulkner	05/16-present	SURF and undergraduate research	Thermal conductivity of nanocomposites	In progress
22	Yang Zhong	09/16-present	ME 297		In progress
23	Xuan Li	09/16-present			In progress

Awards received by students and postdoctoral fellows supervised by Prof. Ruan:

1. Hua Bao: Bilsland Dissertation Fellowship; Lambert Teaching Fellowship; Purdue Computing Research Institute (CRI) Fellowship; Stevenson Graduate Scholarship
2. Bo Qiu: Ross Fellowship; Best Student Presentation Award at the 2008 ASME Energy Nanotechnology International Conference; Bilsland Dissertation Fellowship; Best Poster Award at the US-India Symposium of Nanomaterials for Energy; ASME Heat Transfer Division Best Paper Award 2015.
3. Aaron Sisto: Chappelle Fellowship; Winkelman Fellowship; Department of Energy (DOE) Computational Science Graduate Fellowship; National Science Foundation (NSF) Graduate Fellowship;
4. Yan Wang: Andrews Fellowship; Bilsland Dissertation Fellowship; College of Engineering Outstanding Graduate Student Research Award
5. Kelly Rickey: Winkelman Fellowship; Best Student Presentation Award (1st Place) at the Nanostructured Thin Films Conference, a conference within the 2012 SPIE Optics and Photonics Conference; Cordier Fellowship; Ingersoll-Rand Fellowship
6. Xiangyu Li: Ross Fellowship
7. Zexi Lu: Ross Fellowship
8. Christopher Robinson: Lozar Fellowship
9. Zuyuan Wang: Lambert Teaching Fellowship, Magoon Award for Excellence in Teaching
10. Tianli Feng: Bilsland Dissertation Fellowship
11. Prabudhya Roy Chowdhury: Ross Fellowship

Teaching and Evaluations

Semester	Course	# RESPONSES/ # IN COURSE	Instructor Evaluation (5.0 scale)	Course Evaluation (5.0 scale)	Department Average Instructor Evaluation (5.0 scale)
S 07	ME 315: Heat and Mass	29/46	4.0	4.1	4.0

	Transfer				
F 07	ME 315: Heat and Mass Transfer	32/45	3.9	3.9	4.0
S 08	ME 697R: Computational Methods for Nanoscale Energy Transport	8/9	4.8	4.8	4.5
F 08	ME 315: Heat and Mass Transfer	26/49	4.0	3.7	4.0
S 09	ME 597F: Nanoscale Energy Transport	15/17	3.9	3.8	4.4
F 09	ME 315: Heat and Mass Transfer	43/56	4.5	4.0	4.0
S 10	ME 697: Computational Methods for Nanoscale Energy Transport	6/7	4.3	4.3	4.5
F 10	ME 315: Heat and Mass Transfer	31/55	4.3	3.8	4.0
S 11	ME 463: Senior Design	11/21	4.0	4.0	4.2
F 11	ME 315: Heat and Mass Transfer	48/72	4.1	3.7	4.0
S 12	ME 697: Computational Methods for Nanoscale Energy Transport	10/12	4.5	4.5	4.5
F 12	ME 315: Heat and Mass Transfer	30/60	4.7	4.3	4.0
S 13	ME 463: Senior Design	12/30	4.5	4.0	4.2
F 13	ME 315 Lab	NA	NA	NA	NA
S 14	ME 697: Computational Methods for Nanoscale Energy Transport	9/16	4.6	4.3	4.5
S 15	ME 463: Senior Design	24/30	4.7	4.5	4.2
F 15	ME 315: Heat and Mass Transfer	53/67	4.7	4.2	4.0
F16	ME 697: Computational Methods for Nanoscale Energy Transport		4.3		4.5

External Professional Leadership and Services

Journal Editorial Board Appointments:

- Associate Editor, *ASME Journal of Electronic Packaging*, 2017-present.
- Editorial Board Member, *Scientific Reports*, a journal published by the Nature Publishing Group, 2012-present.

Professional Society Membership:

- Member, American Society of Mechanical Engineers (ASME), 2004-present
- Member, SPIE, 2009-present
- Member, MRS, 2013-present

Professional Society Committee Appointments:

- Committee Member of ASME K-6 Committee: Heat Transfer in Energy Systems, 2009-present
- Committee Member of ASME K-8 Committee: Theory and Fundamental Research in Heat Transfer, 2009-present

- Committee Member of ASME K-9 Committee: Nanoscale Heat and Mass Transfer, 2012-present

Conference Organizer:

Track Chair or Co-Chair:

1. The ASME 2013 Summer Heat Transfer Conference, Track co-chair, Track 3: Theory and Fundamentals Research, July 2013, Minneapolis, MN.
2. The ASME 2010 IMECE Conference, Track co-chair, Track 14: New Developments in Simulation Methods and Software for Engineering Applications, November 12-17, 2010, Vancouver, Canada.

Topic Chair or Co-Chair:

1. The ASME 2016 IMECE Conference, Topic chair for Topic 10-7 Fundamentals of Phonon and Electron Transport and Coupling, Phoenix, AZ.
2. The ASME 2016 Summer Heat Transfer Conference, Topic co-chair for “Advances in Modeling and Simulation of Nanoscale Heat Conduction”, Washington DC, 2016.
3. The ASME 2015 IMECE Conference, Topic chair for Topic 10-13: Nanoscale Heat Conduction, Houston, TX.
4. The ASME 2015 IMECE Conference, Topic co-chair for Topic 10-12 Fundamentals of Nondiffusive Heat Transport, Houston, TX.
5. The ASME 2015 IMECE Conference, Topic co-chair for Topic 10-14 Nano- and Micro-Scale Heat Transfer in Manufacturing, Houston, TX.
6. The ASME 2015 IMECE Conference, Topic co-chair for Topic 10-28 2D Materials, Graphene& CNT Thermal Characterization & Applications, Houston, TX.
7. The ASME 2013 Summer Heat Transfer Conference, Topic co-chair, Topic 3-1: Heat Transfer Physics: A Symposium in Honor of Professor Massoud Kaviany’s 65th Birthday, July 2013, Minneapolis, MN.
8. The ASME 2013 Summer Heat Transfer Conference, Topic chair, Topic 3-6 Fundamentals of Coupled Energy Conversion and Transport, July 2013, Minneapolis, MN.
9. The ASME 2013 Summer Heat Transfer Conference, Topic co-chair, Topic 1-4 Heat transfer in solar energy systems, July 2013, Minneapolis, MN.
10. The ASME 2010 IMECE Conference, Topic chair for Topic 14-2: Multiphysics Simulations in Micro and Nanosystems, November 12-17, 2010, Vancouver, Canada.
11. The ASME 2010 IMECE Conference, Topic co-chair for Topic 14-3: Emerging Computational Techniques for Multi-scale Simulation, November 12-17, 2010, Vancouver, Canada.
12. The ASME 2010 IMECE Conference, Topic co-chair for Topic 14-4 Computational Clean Energy Symposium, November 12-17, 2010, Vancouver, Canada.

Session Chair or Co-Chair:

1. The ASME 2015 IMECE Conference, session chair for Session 10-14-1 Nano- and Micro-Scale Heat Transfer in Manufacturing
2. The ASME 2015 IMECE Conference, session chair for Session 10-13-3 Simulation methods for nanoscale heat conduction I.
3. The ASME 2015 IMECE Conference, session co-chair for Session 10-12-1 Fundamentals of Nondiffusive Heat Transport.
4. The ASME 2014 IMECE Conference, session co-chair for Session 10-18-3 1D Nano-materials & Systems: CNTs, NWs, Polymers, etc.
5. The ASME 2013 IMECE Conference, session co-chair for Session 9-3-10: Thermal Transport in Nanoscale Devices, November, 2013, San Diego, CA.
6. The ASME 2013 Summer Heat Transfer Conference, session co-chair for Session 3-1-6: Heat Transfer Physics: Thermal Interfacial Transport, July 2013, Minneapolis, MN.
7. The ASME 2013 Summer Heat Transfer Conference, Session Chair, Session 3-1-5: Heat Transfer Physics: Lasers and Photovoltaics, July 2013, Minneapolis, MN.
8. The ASME 2013 Summer Heat Transfer Conference, Session Chair, Session 3-6-1: Electron-Phonon Coupling and Nonequilibrium, July 2013, Minneapolis, MN.
9. The ASME 2012 Summer Heat Transfer Conference, Session co-chair for “Nanoscale Heat Transfer for Energy Applications,” July 2012, Puerto Rico.
10. The ASME 2012 Summer Heat Transfer Conference, Session chair for “Fundamentals of Multi-Scale Modeling of Heat and Mass Transfer,” July 2012, Puerto Rico.

11. The ASME 2012 Summer Heat Transfer Conference, Session co-chair for “Fundamentals of Nanoscale Heat Transport,” July 2012, Puerto Rico.
12. The ASME-JSME 8th Thermal Engineering Joint Conference, Session Chair for “Heat Transfer in Nano and Molecular Scale Systems,” March 13-17, 2011, Honolulu, Hawaii.
13. The ASME 2010 IMECE Conference, Session co-chair for Session 14-4-3 Phonon Transport in Clean Energy, November 12-17, 2010, Vancouver, Canada.
14. The ASME 2010 IMECE Conference, Session co-chair for Session 14-2-1 Multiphysics Simulations in Micro and Nanosystems-I, November 12-17, 2010, Vancouver, Canada.
15. The ASME 2010 IMECE Conference, Session chair for Session 14-2-2 Multiphysics Simulations in Micro and Nanosystems-II, November 12-17, 2010, Vancouver, Canada.
16. The ASME 2009 Summer Heat Transfer Conference, Session co-chair for “Fundamentals of Heat Transfer in Micro-Nano Systems,” July 19-23, 2009, San Francisco, CA.
17. The ASME 2008 Thermal and Thermomechanical Phenomena in Electronic Systems Conference, Session Co-Chair, May 28-31, 2008.

Proposal Reviewer:

- National Science Foundation (NSF) (6 panels) :
 1. Thermal Transport Processes Program, 2008
 2. Energy for Sustainability Program, 2010
 3. Energy for Sustainability Program, 2010
 4. Thermal Transport Processes Program, 2010
 5. Energy for Sustainability Program, 2011
 6. Thermal Transport Processes Program, 2012
 7. Thermal Transport Processes Program, 2015
- Defense Threaten Reduction Agency (DTRA), 2008
- Air Force Office of Scientific Research, AOARD, 2010, 2011

Journal Reviewer (now choose to review ~20 manuscripts per year):

- Applied Optics
- Applied Physics Letters
- Chemical Physics Letters
- EPL
- International Journal of Heat and Mass Transfer
- Journal of Applied Physics
- Journal of Colloidal and Interface Science
- Journal of Energy Research
- Journal of Heat Transfer–Transactions of the ASME
- Journal of Materials Science
- Journal of Physical Chemistry
- Journal of Quantum Electronics
- Nanoscale
- Nano Letters
- Nature Communications
- Optics Express
- Optics Letters
- Optical Materials Express
- Physical Review B
- Physical Review Letters
- Physics Letters A
- PNAS
- Scientific Reports
- Surface Science

Conference Reviewer:

- ASME Summer Heat Transfer Conference (SHTC)
- ASME International Mechanical Engineering Congress and Exposition (IMECE)
- ASME Integration and Packaging (InterPack) Conference
- ASME Energy Nanotechnology International Conference (ENIC)
- ASME-JSME Joint Thermal Engineering Conference
- International Heat Transfer Conference (IHTC)
- MRS Meeting

Internal Service and Leadership Activities

Associate Director for Graduate Recruitment and Admissions, School of Mechanical Engineering, July 2015-present

College of Engineering Global Engineering Programs Council (GEPC), 2014-present

Mechanical Engineering Global Studies & Engagement Committee, 2013-present

Curriculum Committee Member, School of Mechanical Engineering, Purdue University, Sept. 2009-present

Graduate Applications Review Committee member, 2010-present

Mechanical Engineering Faculty Search Committee, 2013-2014

Heat Transfer Faculty Search Committee, 2008, 2009, 2012

Graduate Committee Member, School of Mechanical Engineering, Purdue University, 2007-2009

Heat Transfer Area Exam chair, School of Mechanical Engineering, Purdue University, Feb. 2007-Sept. 2009

Team member, College of Engineering information day, University of Michigan, March & October 2006

Session Chair, the 2005 Engineering Graduate Student Symposium, University of Michigan, October 2005

Team member, Department of Mechanical Engineering new student orientation, August & October 2005

Director, Department of Engineering Mechanics summer internship team, Tsinghua Univ., July-August 2001

President of the class of 2000 graduate students, Dept. of Engr. Mech., Tsinghua Univ., September 2000-July 2001

Vice-President of the Student Union, Dept. of Engr. Mech., Tsinghua Univ., September 1999-July 2000

President of class of 1996, Department of Engr. Mech., Tsinghua Univ., September 1998-July 1999

Graduate Thesis Committee member service (in the order of graduation date)

Number	NAME	DEGREE	GRADUATION DATE	ADVISOR
1	Joseph Kim	MS	2010	Mudawar (ME)
2	Zhen Huang	PhD	2010	Fisher (ME)
3	James Loy	MS	2010	Murthy (ME)
4	John Zuidema	MS	2010	Fisher (ME)
5	Rajan Kharangate	MS	2011	Mudawar (ME)
6	Benjamin Kirk	MS	2011	Xu (ME)
7	Anirudh Udupa	MS	2011	Martini (ME)
8	Yaguo Wang	PhD	2011	Xu (ME)
9	Jianguo Wu	MS	2011	Martini (ME)
10	Yi Zhang	PhD	2011	Cheng (IE)
11	Sung-Min Kim	PhD	2012	Mudawar (ME)
12	Don West	MS	2012	Garimella (ME)
13	Anurag Kumar	PhD	2013	Fisher (ME)
14	Gautam Yadav	PhD	2013	Wu (ChE)
15	Christopher Konishi	PhD	2014	Mudawar (ME)
16	Jiuning Hu	PhD	2015	Chen (Phys)
17	Nikhin Mascarenhas	PhD	2014	Mudawar (ME)
18	Il Chung Park	PhD	2014	Mudawar (ME)
19	Haoran Yang	PhD	2014	Wu (ChE)
20	Xin Zhao	PhD	2014	Shin (ME)

21	Bryan Spann	PhD	2014	Xu (ME)
22	Qiong Nian	PhD	2015	Cheng (IE)
23	Haiyu Fang	PhD	2014	Wu (ChE)
24	Hyoungsoon Lee	PhD	2014	Mudawar (ME)
25	Liang Guo	PhD	2014	Xu (ME)
26	Wonjun Park	PhD	2016	Chen (Phys)
27	Sridhar Sadasivam	PhD	2015	Fisher (ME)
28	Qiaomu Yao	MS	2015	Xu (ME)
29	Shivi Singh	MS	2015	Fisher (ME)
30	Weiyong Zhang	MS	2015	Shin (ME)
31	Seok Kwon	PhD	2015	Qi (ECE)
32	Tzu-ging, Lin	PhD	2016	Yang (Chem)
33	Sarath Ramadurgam	PhD	2016	Yang (Chem)
34	Hyukjoon, Kwon	PhD	2016	Shin (ME)
35	Mithun Srinivasan	MS	2016	Xu (ME)
36	Ruchit Mehta	PhD	2016	Chen (ECE)
37	Todd Kingston	PhD	2017	Garimella (ME)
38	Arpan Kundu	PhD	2017	Fisher (ME)
39	Christopher Katinas	PhD	2018	Shin (ME)
40	Vasudevan Rajagopal Iyer	PhD	2018	Xu (ME)
41	Yuqiang Zeng	PhD	2018	Marconnet (ME)
42	Yijun Ge	PhD	2018	Fisher (ME)
43	Christopher Katinas	PhD	2018	Shin (ME)

Other Service and Outreach Activities

Assistant Coach for U7 soccer team, West Lafayette, IN, August-October, 2013

Consultant for Grade 6 students science project, 2011

Lecturer for Indiana 4-H Youth Career Day, 2008, 2009