

Professional Experience

University of Virginia , Charlottesville, VA	Sept 2016- present
Assistant Professor, Electrical Engineering department and Materials Science Department	
Rutgers University , The state University of New Jersey, Piscataway,	Jan 2013 –Aug 2016
Assistant Professor, Mechanical Engineering department	
Massachusetts Institute of Technology , Cambridge, MA	Jan 2010 –Nov 2012
Postdoctoral Associate, Mechanical Engineering Dept., Supervisors: Prof. G. Chen and Prof. M.S. Dresslhaus	

Education

University of California , Santa Cruz, CA	Sept 2005 -Dec 2009
Ph.D., Electrical Engineering, Nanotechnology Thesis title: "Thermoelectric power factor in thin-films and nanostructures" Supervisors: Prof. A. Shakouri	
Sharif University of Technology , Tehran, Iran	Sept 2002 - Dec 2004
M.Sc., Physics, Condensed Matter Thesis title: "Modeling thermionic coolers"	
Sharif University of Technology , Tehran, Iran	Sept 1998 –Sept 2002
B.Sc., Physics	

Research Interests

Electron and phonon transport modeling, materials and device design, fabrication and characterization of energy conversion systems such as thermoelectrics, solar cells, and diffusion cells. Heat management in high power electronics and optoelectronic devices.

AWARDS/ Grants

RIA, UVA, Design and fabrication of layered structures for thermionic cooling and energy conversion (co-PI)	June 2017
NASA, Virginia Space grant, Zero-gap Thermoelectric Materials (Single PI)	Mar 2017
NSF, Career: Nonlinear Solid State Thermal to electrical power generators	Feb 2017
NSF, Equipment Proposal, Laser Flash System for Thermal Conductivity measurements (Single PI)	July 2015
A. Walter Tyson Assistant Professorship Award	April 2015
NSF, Hybrid organic/inorganic nanocomposite thermoelectrics (main PI)	June 2014
Recycled Student Computer Allocation (iMac computer)	Oct 2014

AFOSR YIP, Meta-conductors with invisible dopants (Single PI)	Feb 2014
Aresty Research Assistant and Aresty Summer Assistant grant	Su 14, Fall 14, Su 15
Marotta Controls - Senior Capstone Sponsorship	Sept 2013
NSF AGER minigrants on mentoring undergraduate students on Renewable Energy Technologies	March 2013
MIT Postdoctoral Association Conference Travel Grant, MIT	July 2012
Scenarist and video team member for the "Battle of Phonons" video clip : winner of the "Life at the Frontiers of Energy Research" video contest, DOE	Spring 2011
Best electrical engineering student fellowship, UCSC	Spring 2009
Materials computation center travel grant, University of Illinois, Urbana	May 2009
Iris Ovshinsky Student Travel Award, Division of the Materials Physics, American Physical Society	March 2009
Society of Women Engineers, the Electronics for Imaging Scholarship	2008
Graduate Student Gold Medal winner Materials Research Society	Fall 2007
Graduate Student fellowship, University of California, Santa Cruz	Fall 2005

Awards won by students who worked with Zebarjadi:

Nicholas van dyke, NanoStar summer program award	May 2017
Jesse Dugan and Vivian Lin, NanoStar summer program award	May 2017
Adrian Savovici, Ben Johannesson, David Budzinski, Jack Kelliher, Khang Lam, Dylon Robertson, Charlene Vance, Nolan Barolin, Robert Napoleon, Gregory Smith, Solar water desalination prototype, Excellence in Ingenuity, MAE senior design competition	May 2016
Tara Nietzold & Alex Perotti, an Honorable Mention: STEM , Aresty Annual UR Symposium	April 2015
Group of 7 undergraduate students, Most innovative design, MAE senior design competition	May 2014
Bolin Liao, MRS best poster award, Student Poster Award for thermoelectric symposium at MRS Fall Meeting	Oct, 2012
Howard Young, Dean's Undergraduate Awards, UCSC for micro-diffusion cells project	2007

Selected Media Publicity

Multifunctional Materials Integration: Cooler Chips Mean Smaller Devices: http://enews.seas.virginia.edu/multifunctional-materials-integration-cooler-chips-mean-smaller-devices/	June 2017
Graphene tested as tiny 'coolers' for computer chips http://www.futurity.org/graphene-cooling-electronics-chips-1387222-2/	March 2017
Using Graphene to Cool Electronic Chips http://electronics360.globalspec.com/article/8332/using-graphene-to-cool-electronic-chips	March 2017
How Graphene could cool smartphone, computer & other electronics chips, http://news.rutgers.edu/research-news/how-graphene-could-cool-smartphone-computer-and-other-electronics-chips/20170326#.WOZb-2nyuUk https://phys.org/news/2017-03-graphene-cool-smartphone-electronics-chips.html	March 2017
Paper in nanoscale is selected for inside cover page, Nanoscale, 2016,8, 14686-14686	Aug 2016
Rutgers Research review: Use of Active and Passive Cooling Systems in Conjunction to Enhance Cooling Efficiency in Electric Circuits: http://www.rutgersresearchreview.org/akash_desai_research_s16.html	May 2016

MIT NEWS: ‘Invisible’ particles could enhance thermoelectric devices	Feb 2013
Daily Tech: New Cloaking Method Improves Electron Transport for Electronics, Thermoelectric Devices	Nov 2012
Nature Nanotechnology: Now you don't	Nov 2012
TechConnect: ‘Invisibility’ could be a key to better electronics	Oct 2012
PhysicsWorld: New cloak promises to be invisible to electrons	Oct 2012
MIT NEWS: ‘Invisibility’ could be a key to better electronics	Sept 2012
PRL Synopsis: Nanoparticles in hiding	Sept 2012
New Energy and Fuel, Thermoelectric Gains Performance With Better Materials	April 26 2012
Nanowerk, Thermoelectric nanocomposites switch between heat and electricity in a unique and clean solid-state approach	April 25 2012
Nanotechnology Today, 3D modulation-doping strategy	April 25 2012
PhysOrg, With new design, bulk semiconductor proves it can take the heat	April 25 2012
EurekAlert, With new design, bulk semiconductor proves it can take the heat	April 25 2012
NaturePlanet, With new design, bulk semiconductor proves it can take the heat	April 25 2012
NextBigFuture, Thin-film process boosts bulk alloy's thermoelectric performance	April 25, 2012
SiS: Silicon-Semiconductor, Breaking Conventional Concepts In SiGe Thermoelectrics	April 2012
CSEurope, Breaking conventional concepts in SiGe thermoelectric materials	April 23 2012
Science – The Ramble to the Unknown: Battle Against Phonons	April 15, 2011
Solid State Solar Thermal Energy Conversion Center: Battle Against Phonons	March 27, 2011
Energy Frontier Research Center: Battle Against Phonons	March 25, 2011
Material Research Society, Graduate Student Awards	Fall 2007

TEACHING EXPERIENCE

Electrons and Phonons, Graduate level, cross listed between MSE, ECE and MAE, UVa	Fa 17
Instructor, Solid-State devices for renewable energy applications, UVa , 4 th year UG/G level	Sp 17
Instructor, Introduction to Heat Transfer, Rutgers University , 4 th year UG	Fa 13, Su 14, Sp 15, Sp 16
Instructor, Alternative Energy Systems I, Rutgers University , 4 th year UG	Fa 14, Fa 15
Co-Instructor, Introduction to Renewable energy systems, Byrne seminars, Rutgers , 1 st year UG	Fa 14
Instructor, Alternative Energy Systems, Rutgers University , 4 th year UG	Sp 13, Sp 14
Co-Instructor, Senior labs (radiation lab), 4 th year UG	Sp14, Sp16
Lecturer, Post-doc short courses, thermoelectric transport, MIT	Fa 11
Co-instructor, Renewable Energy Sources, University of California, Santa Cruz , 1 st year UG	Su 09
Guest lecturer, Quantum Electronics, University of California, Santa Cruz, G level	Fa 08
Teaching Assistant-Electromagnetic Fields & Waves, UCSC	Winter 2006
Teaching Assistant-Computational Physics, Sharif University of Technology .	Fall 2004
Teaching Assistant-Physics Laboratory 1, Sharif University of Technology .	Spring 2003

PUBLICATIONS

I. Book/Book Chapter:

1. M. Zebarjadi, Ed., Topics on Energy Challenges and Solar Energy Conversion, Linus Learning, Textbook, 2014.
2. Shakouri, A. and Zebarjadi, M.: In: *Thermal Nanosystems and Nanomaterials*, ed. by Volz, S., Springer Berlin / Heidelberg (2009) DOI: 10.1007/978-3-642-04258-4
3. M. Zebarjadi, G. Chen, Z. Ren, Thermoelectric Materials with modulation doping, invited book chapter, *Advanced Thermoelectrics: Materials, Contacts, Modules, and Systems*, CRC Press / Taylor & Francis (*Submitted*)
4. Y. Lan, X. Wang, C. Wang, and M. Zebarjadi, Organic / Inorganic Hybrid Nanostructured Materials for Thermoelectric Energy Conversion, in *Functional Organic and Hybrid Nanostructured Materials: Fabrication, Properties, and Applications*. Wiley, (*submitted*)

II. Journals:

Submitted/accepted:

1. M. Yao, S Wilson, M Zebarjadi, C Opeil, Experimental determination of phonon thermal conductivity and Lorenz ratio of single crystal bismuth telluride, *submitted*, 2017, arXiv:1704.03029
2. M. Yao, M. Zebarjadi, C. Opeil, Experimental determination of phonon thermal conductivity and Lorenz ratio of single crystal metals: Al, Cu and Zn, *submitted*, 2017, preprint arXiv:1702.07923

Published

3. M. Zebarjadi, Solid State Thermionic Power Generators: an analytical analysis in the nonlinear regime, *Physical Review Applied*, 8, 014008 (2017)
4. Y He, X Pang, B Jiang, C. Feng, YW Harn, Y. Chen, YJ Yoon, S Pan, CH Lu, Y Chang, M. Zebarjadi, Z. Kang, N. Thadhani, J Peng, Z. Lin, Unconventional Route to Uniform Hollow Semiconducting Nanoparticles with Tailorable Dimensions, Compositions, Surface Chemistry and Near-Infrared Absorption, *Angewandte Chemie International Edition*, 10, 1002, (2017), inside cover
5. X Wang, K Esfarjani, M Zebarjadi, First-Principles Calculation of Charge-Transfer at Silicon-Organic Interface, *The Journal of Physical Chemistry*, 121, 29, (2017) also on: arXiv:1610.06247
6. J. Duan, X. Wang, X. Lai, G. Li, K. Watanabe, T. Taniguchi, M. Zebarjadi*, E. Andrei* High Thermoelectric power factor in G/hBN devices, * corresponding authors, *PNAS* 13, 50, 14272-14276, 2016. Also available: arXiv:1607.00583, (2016)
7. M. Zebarjadi, G. Chen, Preface to Special Topic: Thermoelectric Materials, **APL Materials** 4(10),104401, (2016)
8. A. Ziabari, M. Zebarjadi, D. Vashaee, and A. Shakouri, Solid-State Cooling, **Progress In Phys. Rev.**, Invited paper, 79, 9, (2016).
9. X. Wang, M. Zebarjadi and K. Esfarjani, First principles calculations of solid-state thermionic transport in layered van der Waals Heterostructures, **NanoScale** 8, 14695-14704, (2016), DOI: 10.1039/C6NR02436J (available on arXiv:1510.03783), [inside cover page](#)
10. M. Zebarjadi, Heat Management in Thermoelectric Power Generators, **Scientific Reports** 6, 20951, (2016).

11. M. Ibnez, Z. Luo, A. Genc, L. Piveteau, S. Ortega, D. Cadavid, O. Dobrozhan, M. Nachtegaal, M. Zebarjadi, J. Arbiol, M.V. Kovalenko, A. Cabot, High Performance Thermoelectric Nanocomposites from Nanocrystal Building Blocks, **Nature Communications**, 7, 10766, (2016)
12. M. Zebarjadi, W. Shen, An algorithm to reduce combinatorial search in design of invisible dopants, *Computational Materials Science*, 113, Pages 171–177, 2016. Editor's Choice (available also on arXiv :1509.02515)
13. A. Mehdizadeh Dehkordi, M. Zebarjadi, J. He, T. M. Tritt, Thermoelectric Power Factor: Enhancement Mechanisms and Strategies for Higher Performance Thermoelectric Materials, **Materials Science and Engineering: R**, 97, 1-22, 2015.
14. M. Zebarjadi, Thermomagnetic transport theory in anisotropic composite samples, *J. Electronic Mat.* 6, 2015.
15. M. Zebarjadi, Electronic Cooling Using Thermoelectric Devices, **APL**, 106 (20), 203506, 2015.
16. Shen W., Tian T., Liao B., and Zebarjadi M., Combinatorial approach to identify electronically cloaked hollow nanoparticles, **PRB** 90, 075301, 2014.
17. Liao B., Zebarjadi M., Esfarjani K., and Chen G., Isotropic and energy-selective electron cloaks on graphene, **Physical Review B** 88 (15), 155432, 2013.
18. Zebarjadi M., Liao B., Esfarjani K., Dresselhaus MS., and Chen G., Enhancement of thermoelectric power factor by invisible dopants, **Adv. Mat.** 15, 2013. *Highlighted in MIT NEWS, PhysOrg, Mission-tomorrow as well as many scientific websites*
19. Liao B.*, Zebarjadi M.*, Esfarjani K. and Chen G., Cloaking Core-Shell Nanoparticles from Conducting Electrons in Solids, **Physical Review Letters**, 109, 126806 (2012),**equal contribution*. *Highlighted in PRL synopsis, Nature materials as well as many scientific websites*
20. Zebarjadi M., Yang J., Kozinsky B., Dresselhaus M.S., Ren Z.F. and Chen G., Studying phonon mean free path in skutterudites, **Journal of Applied Physics** 112, 044305 (2012).
21. Lukas K., Liu WS., Joshi G., Zebarjadi M., Z. F. Ren, G. Chen, C. P. Opeil, Experimental determination of the Lorentz number, **Physical Review B** 85, 205410, 2012. DOI: 10.1103/PhysRevB.85.205410.
22. Yu B.*, Zebarjadi M.*, Lukas K., Wang H., Wang H., Opeil C., Dresselhaus M.S., Chen G. and Ren Z.F., Enhancement of thermoelectric properties by modulation doping in silicon germanium alloy nanocomposites, **NanoLetters**. 12, 2077 (2012) * *equal contribution*. *Highlighted in News*.
23. Zebarjadi M., Esfarjani K., Dresselhaus M.S., Ren Z.F. and Chen G., Perspectives on Thermoelectrics : from fundamentals to device applications, *invited Review Paper*, **Energy and Environmental Science** 5, 5147-5162 (2012). *Top 10 most downloaded paper of January 2012*.
24. Bahk J. H., Bian Z. X., Zebarjadi M., Santhanam P., Ram R., and Shakouri A., Thermoelectric power factor enhancement by ionized nanoparticle scattering, **Appl. Phys. Lett.** 99, 072118 (2011). *Selected for publication in Vir. J. Nan. Sci. & Tech, Volume 24, Issue 10*.
25. Zebarjadi M., Joshi G., Zhu G.H., Yu B., Minnich A., Lan Y.C., Wang X.W., Dresselhaus M., Ren Z.F. and Chen G., Power Factor Enhancement by Modulation Doping in Bulk Nanocomposites, **Nanoletters**, 11, 2225–2230 (2011). *Highlighted in News*.
26. Zebarjadi M., Esfarjani K., Bian ZX. and Shakouri A., Low-Temperature Thermoelectric Power Factor Enhancement by Controlling Nanoparticle Size Distribution, **Nanoletters**, 11, 225–230 (2011)
27. Zebarjadi M., Esfarjani K., Yang J., Ren ZF., and Chen, G., Effect of filler mass and binding on thermal conductivity of fully filled skutterudites, **Phys. Rev. B** 82, 195207 (2010)
28. Zide JMO., Bahk JH., Singh R., Zebarjadi M. et al, High efficiency semimetal/semiconductor nanocomposite thermoelectric materials, **J. of Appl. Phys.** 108, 123702 (2010). *Selected for*

publication in *Vir. J. Nan. Sci. & Tech*, Volume 23, Issue 1; Top 10 most downloaded paper of Dec 2010 and Jan 2011.

29. Bahk JH., Bian ZX, Zebarjadi M., Zide JMO, Lu H, Xu D., Feser JP., Zeng G., Majumdar A., Shakouri A, Gossard AC and Bowers JE., Thermoelectric figure of merit of $(\text{In}_{0.53}\text{Ga}_{0.47}\text{As})_{0.8}(\text{In}_{0.52}\text{Al}_{0.48}\text{As})_{0.2}$ III-V semiconductor alloys, **Phys. Rev. B** 81, 235209 (2010)
30. Zebarjadi M., Esfarjani K., Shakouri A., Bahk JH., Bian ZX., Zeng G., Bowers JE., Lu H., Zide JMO. and Gossard A., Effect of nano-particle scattering on thermoelectric power factor, **App. Phys. Lett** 94, 202105 (2009). *Selected for publication in Vir. J. Nan. Sci. & Tech, Volume 19, Issue 22.*
31. Zeng G., Bahk JH, Bowers JE, Lu H, Gossard AC, Singer SL, Majumdar A, Bian ZH, Zebarjadi M. and Shakouri A., Thermoelectric power generator module of 16×16 Bi_2Te_3 and 0.6% ErAs: $(\text{InGaAs})_{1-x}(\text{InAlAs})_x$ segmented elements, **Appl. Phys. Lett.** 95, 083503 (2009) *Selected for publication in Vir. J. Nan. Sci. & Tech, Volume 20, Issue 10.*
32. Zebarjadi M., BianZX., Singh R., Shakouri A., Wortman R., Rawat V., and Sands T., Thermoelectric transport in a ZrN/ScN Superlattice, **J. of Electronic Materials** 38, 960 (2009)
33. Zebarjadi M., Esfarjani K., Shakouri A., Bian ZX., Bahk JH., Zeng G., Bowers JE., Lu H., Zide JMO. and Gossard A., Effect of nano-particle scattering on electronic and thermoelectric transport, **J. of Electronic Materials** 38, 954 (2009)
34. Wang X., Ezzahri Y., Bian Z., Zebarjadi M. Shakouri A., Klem J., Patrizi G., Young EW., and Mukherjee SD., Characterization of Single Barrier Microrefrigerators at Cryogenic Temperatures, **J. of Elect. Mat.** 38, 1309 (2009)
35. Bian Z, Zebarjadi M., Singh R., Ezzahri Y., Shakouri A., Zeng G., Bahk JH., Bowers JE., Zide JMO., Gossard AC., Cross-plane Seebeck Coefficient and Lorenz number in Superlattices, **Phys. Rev. B** 76, 205311 (2007)
36. Zebarjadi M., Esfarjani K., and Shakouri A., Nonlinear Peltier effect in semiconductors, **Appl. Phys. Lett.** 91 2785154 (2007)
37. Zebarjadi M., Bulutay C., Esfarjani K., and Shakouri A., Monte Carlo simulation of electron transport in degenerate and inhomogeneous semiconductors, **Appl. Phys. Lett.** 90 092111 (2007)
38. Zebarjadi M., Shakouri A., and Esfarjani K., Thermoelectric transport perpendicular to thin-film heterostructures calculated using the Monte Carlo technique, **Phys. Rev. B** 74 195331 (2006)
39. Esfarjani K., Zebarjadi M. and Kawazoe Y., Thermoelectric properties of a nanocontact made of two-capped single-wall carbon nanotubes calculated within the tight-binding approximation, **Phys. Rev. B** 73 085406 (2006). *Selected for publication in Virtual J. Nan. Sci. & Tech. Volume 13, Issue 7.*

III - Conference Proceedings:

40. Zebarjadi M., Enhancement of thermoelectric power factor at low temperatures, SPIE, 10121, 101210M-1 2017.
41. Zebarjadi M. Heat management in thermoelectric devices, **ASME-PRTEC** 14893, 2016.
42. Zhang X, Jaluria Y., Zebarjadi M., Numerical simulation of a thermosyphon based hybrid solar-thermoelectric power generator, International Center for Heat and Mass Transfer, DOI: [10.1615/ICHMT.2015.IntSympAdvComputHeatTransf.570](https://doi.org/10.1615/ICHMT.2015.IntSympAdvComputHeatTransf.570)
43. Zebarjadi M., Yu B., Dresselhaus MS., Chen G., and Ren ZF., "Fabrication of low cost thermoelectric materials with improved properties using modulation-doping strategy", **ASME Summer heat transfer conference** 2012.
44. Zebarjadi M., and Chen G., "Recent advances in thermoelectrics," **Electron Devices Meeting (IEDM)**, 2011 IEEE International, **invited paper**, 10.1.1-10.1.4, 5-7 Dec. 2011 DOI: 10.1109/IEDM.2011.6131525.

45. Zebarjadi M., Esfarjani K., and Chen G., "Thermal transport in cage-like structures", *AJTEC* 2011-44276 pp. T10039-T10039-5, **ASME/JSME** 2011 8th Thermal Engineering Joint Conference, March 2011, Honolulu, Hawaii, USA.
46. Bahk JH, Bian ZX, Zebarjadi M, Santhanam P, Ram R and Shakouri A, "Thermoelectric power factor enhancement in metal/semiconductor nanocomposites by ionized nanoparticle scattering" *MRS Proceedings*, 1329, 2011, mrss11-1329-i05-05 doi:10.1557/opl.2011.1473.
47. Zeng GH., Bahk JH., Ramu AT., Bowers JE., Lu H., Gossard AC., Bian ZX., Zebarjadi M., and Shakouri A., "6 Watt Segmented Power Generator Modules using Bi₂Te₃ and (InGaAs)_(1-x)(InAlAs)_x Elements Embedded with ErAs Nanoparticles", in *Materials and Devices for Smart Systems III*, edited by Su J., Wang LP., Furuya Y., Trolier McKinstry S. and Leng J. (**Mater. Res. Soc. Symp. Proc.** 1129, 97-102, 2009)
48. Zebarjadi M., Esfarjani K., and Shakouri A., "Enhanced Cooling Power Due to Nonlinear Peltier Effect", in *Thermoelectric Power Generation*, edited by T.P. Hogan, J. Yang, R. Funahashi, and T. Tritt (**Mater. Res. Soc. Symp. Proc.** 1044, 427-434, 2008)

SELECTED PRESENTATIONS

Invited talks

1. Zebarjadi M., "2D Materials for Solid State Thermionic Power Generation", *232nd Meeting of The Electrochemical Society*, October 1-6, 2017, in National Harbor MD, USA.
2. Zebarjadi M. "Solid-state heat engines and coolers", Tutorial, UVa graduate seminars, Sept 17.
3. Zebarjadi M., "Solid State Thermionic Power Generators", Aug 3, *International conference on Thermoelectrics*, ICT 2017, Pasadena, CA.
4. Zebarjadi M., "Thermoelectric transport in 2D layered materials", *IEEE Nano*, Pittsburg, July 2017
5. Zebarjadi M., "Cross-plane and in-plane thermoelectric transport in 2D materials", *Nanoscale Transport Phenomena*, Tokyo, Japan, July 2017
6. Zebarjadi M., "Enhancing thermoelectric power factor at low temperatures", **SPIE. Photonics**, San Francisco, Jan 2017
7. Zebarjadi, M. "Introduction to thermoelectric and thermionic devices", Arpa-e workshop, San Francisco, Dec 2016
8. Zebarjadi M., "Thermoelectric transport in single layer graphene", 3rd Annual Tech Meeting, *Society of Engineering Science*, U. Maryland, Sep 2016
9. Zebarjadi M., "Energy Science and Nanotechnology Lab", **UVa**, ECE department, Sep 2016
10. Zebarjadi M., "Manipulation of electricity and heat at nanoscales", **USC**, EE department, March 2016.
11. Zebarjadi M., "Significance of heat management in thermoelectric module efficiency", **EMN conference**, Orlando, Florida, TM 2016.
12. Zebarjadi M., "Perspectives on thermoelectrics: from materials to device applications", **Temple Univ.**, Apr 15.
13. Zebarjadi M., "Improving Thermoelectric Figure of Merit by Nonconventional Doping Schemes", **MRS** Fall meeting, Boston Dec 2014.

14. Zebarjadi M., "improved thermoelectric efficiency by introducing New Doping Schemes", 6th Forum on new materials, **CIMTEC**, Montecatini Terme, Italy, June 2014
15. Zebarjadi M., "Computational design for low-temperature thermoelectric materials", **APS March Meeting**, Denver 2013.
16. Zebarjadi M., "Challenges in thermoelectric materials design", **Univ. of Massachusetts**, Amherst, Nov13
17. Zebarjadi M., "Design of low temperature thermoelectric materials with high efficiencies", **ASME-AMD Summer Meeting**, Brown University, Providence, RI (July 2013).
18. Zebarjadi M., "New doping schemes to improve thermoelectric properties", Mechanical Eng. Department, **Tokyo University**, Japan (July 2013).
19. Zebarjadi M., "New doping schemes to improve thermoelectric properties", Physics Department, Saito Group, **Tohoku University**, Sendai, Japan (June 2013).
20. Zebarjadi M., "Semi-Classical Models to Design Materials with High Thermoelectric Performance", 27th annual symposium of the laboratory for surface modification, Rutgers University, (March 2013).
21. Zebarjadi M., "Thermoelectric power generators as renewable energy convertor device", Nanotechnology for Clean Energy **IGERT Symposium**, (Sept 2012).
22. Zebarjadi M., "Nanostructure materials for thermoelectric application", **Northeastern University**, Department of Mechanical Engineering (April 2012).
23. Zebarjadi M., "Thermoelectric transport in nanostructures", **Princeton University**, Department of Mechanical Engineering (Feb 2012).
24. Zebarjadi M., "Thermoelectric transport in nanostructures", **University of Pennsylvania**, Department of Mechanical Engineering (Feb 2012).
25. Zebarjadi M., "Materials design for thermoelectric applications", **Georgia Tech**, Department of Materials Science (Feb 2012).
26. Zebarjadi M., "Nanoscale thermoelectric transport in thin-films and bulk materials", **University of Houston**, Department of Mechanical Engineering (Jan 2012).
27. Zebarjadi M., "Materials design for thermoelectric applications", **University of Maryland, Baltimore County**, Department of Applied Physics (Jan 2012).
28. Zebarjadi M., "Nanoscale thermoelectric transport in thin-films and bulk materials", **Rutgers University**, Department of Mechanical Engineering (Jan 2012).
29. Zebarjadi M., Esfarjani K., Shakouri A., "Thermoelectric materials with embedded nanoparticles", Thermoelectric Transport: Progress in First Principles and Other Approaches, and the Interplay with Experiment, **CECAM**, Lausanne, Switzerland, (July 2009)

Other presentations by M. Zebarjadi

30. Zebarjadi M., "Heat management in thermoelectric modules", **ASME first pacific-rim heat transfer conference**, Hawaii, March 2016.
31. Zebarjadi M., "Electronic Cooling Using Thermoelectric Modules", CHT-ASME conference 15.
32. Zebarjadi M., Liao B., Esfarjani K. and Chen G., "Enhancing thermoelectric power factor by using anti-resonance scattering", **Materials Research Society**, Boston, MA, (Nov 2012).

33. Zebarjadi M., Yu B., Joshi G., Ren Z.F. and Chen G. "Fabrication of low-cost thermoelectric materials with high performances using the modulation-doping strategy", **ASME Heat Transfer Conference**, Puerto Rico (July 2012)
34. Zebarjadi M., Tang M., Lukas K., Opeil C., Chen G., and Dresselhaus MS., "Magnetotransport in thermoelectric materials", **ASME Heat Transfer Conference**, Puerto Rico (July 2012)
35. Zebarjadi M., Lukas K., Opeil C., Chen G., and Dresselhaus MS., "Magnetotransport in thermoelectric materials", **American Physical Society**, Boston (March 2012)
36. Zebarjadi M., Esfarjani K., and Chen G., "Thermal transport in cage-like structures", **ASME/JASME Thermal Engineering joint conference**, Honolulu, (March 2011)
37. Zebarjadi M., et al., "Power Factor Enhancement by Modulation Doping in bulk nanocomposites", **American Chemical Society**, Anaheim (March 2011)
38. Zebarjadi M., Esfarjani K., Kozinsky B., Yang J., Ren ZF., and Chen, G., "Thermal transport in cage-like structures", LL2.6, **Material Research Society**, Boston, (Dec 2010)
39. Zebarjadi M., Bian ZX., Esfarjani K., and Shakouri K., "Thermoelectric Power Factor Enhancement in heavily doped nanoparticle samples", **Material Research Society**, San Francisco, (April 2010)
40. Zebarjadi M., Esfarjani K, Bian ZX. and Shakouri K., "Thermoelectric Materials with Embedded Nanoparticles- An effective medium approach", **American Physical Society**, Portland, (March 2010)
41. Zebarjadi M., Ezzahri Y, Wang Xi and Shakouri A., "Monte Carlo simulations of the Cooling behavior of Single Barrier Microrefrigerators at Cryogenic Temperatures", **International Conference on Thermoelectrics**, Freiburg, Germany, (July 2009)
42. Zebarjadi M., Esfarjani K., Shakouri A., Lu H., Zide J., Gossard A., Bahk JH., Zeng G. and Bowers JE., "Studying the power factor of a matrix with high concentration of embedded nanoparticles", **Materials Research Society**, San Francisco, (April 2009)
43. Zebarjadi M., Esfarjani K., Shakouri A., Lu H., Zide J., Gossard A., Bahk JH., Zeng G. and Bowers JE., "Thermoelectric Power of high concentration embedded Nano-particle Samples", **American Physical Society**, Pittsburgh, (March 2009)
44. Zebarjadi M., Esfarjani K., Shakouri A., Lu H., Zide J., Gossard A., Bahk JH., Zeng G. and Bowers JE., "Effect of nano-particles on the electron and thermoelectric transport", **International Conference on Thermoelectrics (ICT 08)**, Corvallis, OR, (August 2008)
45. Zebarjadi M., Bian ZX., Singh R., Shakouri A., Rawat V. and Sands T., "Thermoelectric transport in a ZrN/ScN Superlattice", **ICT 08**, Corvallis, OR, (August 2008)
46. Zebarjadi M., Esfarjani K. and Shakouri A., "Nanoparticle Scattering in Thermoelectric Transport" **Solar Energy: New Materials and Nanostructured Devices for High Efficiency**, Stanford Univ., (June 2008)
47. Zebarjadi M. and Shakouri A., "Monte Carlo Study of thermionic and thermoelectric transport", **4th Annual Graduate research symposium**, UCSC (May 2008)
48. Zebarjadi M., Esfarjani K. and Shakouri A., "Enhanced Cooling Power Due to Nonlinear Peltier Effect", **Materials Research Society Meeting**, Boston, (Fall 2007)
49. Zebarjadi M., Shakouri A. and Esfarjani K., "Non-equilibrium thermoelectric transport in thin film heterostructures", **TMS, Electronic Materials Conference**, Notre Dame, IN, (June 2007)
50. Zebarjadi M., Shakouri A., and Esfarjani K., "Non-equilibrium thermoelectric transport in thin film heterostructures" **American Physical Society (APS) Meeting**, Denver, (March 2007)
51. Zebarjadi M., Bulutay C., Esfarjani K. and Shakouri A., "Monte Carlo simulation of degenerate semiconductors" **APS March meeting** (2007).

52. Zebarjadi M., Bian ZX., Shakouri A., Zeng G. and Bowers JE., "High temperature cross-plane Seebeck coefficient measurement of ErAs:InGaAs/InGaAlAs" **APS March meeting** (2007).
53. Zebarjadi M. and Shakouri A, **NanoBerkeley forum**, Berkeley (July 2007)
54. Zebarjadi M. and Shakouri A., "Monte Carlo Study of thermionic and thermoelectric transport", **3rd Annual Graduate research symposium**, UCSC, (May 2007)

Student/Postdoc presentations

55. Duan J., Lai X., Zebarjadi M., Andrei E., "Graphene Channel for Guiding Charge Carriers", APS March meeting, New Orleans, Louisiana 2017
56. Wang X., Zebarjadi M., Esfarjani K., "Charge transfer at organic-inorganic interfaces", MRS meeting, March 2016.
57. Wang X., Zebarjadi M., Esfarjani K., First Principles Calculations of Thermionic Transport across Gold/Graphene/Phosphorene van der Waals Heterostructures, MRS Meeting, March 2016.
58. Duan JX., Wang G., Zebarjadi M., Andrei EY., "Thermoelectric Transport Measurements of Graphene on hBN" Bulletin of the American Physical Society, March 2016
59. Wang X., Zebarjadi M., Esfarjani K., "Thermoelectric transport across graphene/phosphorene/graphene heterostructures", CHT 15, Rutgers University, May 2015.
60. Zhang X., Jaluria Y., Zebarjadi M., "Numerical simulation of a thermosyphon based hybrid solar energy utilization system", CHT 15, Rutgers University, May 2015.
61. Duan J., Mao J., Jiang Y., Li G., Zebarjadi M., Andrei E., "Transport measurements of van Hove singularity in twisted bilayer graphene", APS March Meeting Abstracts, 2015.
62. Shen W., Tian T., Liao B., Chen G. and Zebarjadi M., "Realization of electron cloaking in hollow nanoparticles", 56th Electronic Materials Conference, Santa Barbara, June 2014.

Presentations by collaborators on our collaborative work:

63. Esfarjani K., Wang X., Zebarjadi M., "First principles calculations of thermionic transport in layered materials", Nanoscale Transport Phenomena, Tokyo, Japan, July 2017
64. Opeil C., Yao M., Wilson S., Zebarjadi M., "Separating Lattice and Electronic Thermal Conductivity Contributions in Bi₂Se₃ and Bi₂Te₃ Single Crystals", **APS**, March 2015.
65. Banan Sadeghian R, Bahk JH, Zebarjadi M, Bian ZX, and Shakouri A, "Calculation of Nonlinear Thermoelectric Coefficients of PbSe using Monte Carlo Method," **ICT 2012**, Aalborg Denmark, (July 2012).
66. Banan Sadeghian R, Bahk JH, Zebarjadi M, Bian ZX, and Shakouri A, "Monte Carlo Simulation of Thermoelectric Effects in PbSe based Heterostructures," **ICT 2012**, Aalborg Denmark, (July 2012).
67. Lukas K., Liu W, Joshi G, Zebarjadi M, Dresselhaus MS, Ren ZF, Chen G, and Opeil C., "Experimental determination of the Lorenz number in Cu_{0.01}Bi₂Te_{2.7}Se_{0.3} and Bi_{0.88}Sb_{0.12}", **American Physical Society**, Boston (March 2012)
68. Feser J., Zebarjadi M., Schroeder J., et al., Electron Dominated Thermal Transport in (Hf, Zr) N-(Sc, Y) N Superlattices, **American Physical Society**, Portland, (March 2010)
69. Bahk JH., Zebarjadi M., Bian ZX., Zeng G., Ramu A., Lu H., Shakouri A., Gossard A., and Bowers JE., Characterization and modeling of the randomly distributed ErAs nanoparticles in InGaAlAs semiconductors for thermoelectric power generation, **American Physical Society**, Pittsburgh, (March 2009)
70. Wortman R., Schroeder J., Burmistrova P., Zebarjadi M., Bian ZX., Shakouri A., and Sands T., Nitride Metal-Semiconductor Superlattices for Solid State Thermionic Energy Conversion, **American Physical Society**, Pittsburgh, (March 2009)

71. Esfarjani K., Zebarjadi M., Shakouri A., Nanostructured materials design for thermoelectric applications, **American Physical Society**, Pittsburgh, (March 2009)
72. Shakouri A, Bian ZX., Singh R, Zebarjadi M., Ezzahri Y., Zhang Y., Vashaee D., Zide JM, Zeng G., Bank JH, Lu H, Klenov DO, LeBeau J, Stemmer S, Gossard AC, Bowers JE, Mayer PM, Ram R, Rawat V, Sands TD, Rüssel, and Narayanamurti V., Thermal, electrical and thermoelectric transport in nanostructured ErAs: InAlAs materials, **Proc. 5th European Conference on Thermoelectrics**, (2008)
73. Bian ZX, Zebarjadi M, Singh R, Shakouri A, Bahk JH, Zeng G, and Bowers JE., Thermoelectric miniband transport in superlattice cross-plane direction, **APS March meeting** (2007).
74. Bian ZX, Zebarjadi M, Shakouri M, Zeng G, Bowers J, High temperature cross-plane Seebeck coefficient measurement of ErAs: InGaAs/InGaAlAs superlattice, **APS March meeting** (2007).

Professional Services:

- **Guest Editor:** Applied Physics Letters- Materials, Focused Issue on Thermoelectrics 2016.
- **Guest Editor:** Proceedings of the ICT, Journal of Electronic Materials, 2016
- **Advisory board** members for the Conference for undergrad women in physics, 2015 Northeast APS Conference
- **Journal referee for:**
 - Scientific Reports, Proceedings of the National Academy of Sciences; Annual Review of Heat Transfer; Journal of the American Chemical Society; Nano Letters; Physical Review Letters; Energy and Environmental Science; Proceeding of National Academy of Sciences; Applied Physics Letters; J. of Electronic Materials; Solid-State Communications, Solid-State Electronics; Journal of Alloys and Compounds; Physica status solidi (a); Microelectronics Journal; Journal of Applied Physics; Chemistry of Materials; Physical Review B.
- **Conference reviewer:** American Society of Mechanical Engineering (ASME), CHT 15
- **Proposal reviewer:** DOE Basic Science (2017), Air Force Research Office (2015), US Army Research Office (ARO, 2012), NSF panel reviewer (Apr 17, Mar 16, June 2014, Jan 2013), NSF ad-hoc review (Feb 16), United States – Israel Binational Science Foundation (BSF, 2015)
- **Judge:**
 - APS Undergraduate Women in Physics conference (Best presentation 2015)
 - Senior Design projects, Mechanical Engineering, Rutgers University (April 2013 and 14)
 - The Mechanical Engineering de Florez Award Competition judge, Passion for Invention and Innovation in Science and Design, MIT (April 2012)
 - Science fair judge, Westlake elementary school, Santa Cruz, (winter 2009)
- **Organizer:**
 - Co-organizer of Micro and Nano Heat Transfer symposium, Advances in Computational Heat Transfer, The International Centre for Heat and Mass Transfer, 2015, Rutgers Univ.
 - Co-organizer of Thermoelectric Focus Session, American Physical Society 2014, Denver
 - Thermoelectric meetings organizer, a series of collaborative meetings between several groups from MIT and Boston College (2010-2011)
- Demonstrated our research activities for Cabrillo College students, talented High School students (COSMOS program), 10th anniversary of the J. Baskin department, BSSF reunion, Cabrillo College faculty members and Girls-in-Engineering programs. The aim was to encourage them to enter research in science and engineering.
- Participated in building a house for low-income families within the “Habitat for Humanity” program.