Curriculum Vitae
Asegun Henry

Associate Professor
Department of Mechanical Engineering
Massachusetts Institute of Technology
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Research Interests

Novel energy systems concepts that help to mitigate the effects of climate change, including solar energy, energy storage, and transportation. Concepts currently under development include thermal energy grid storage using multi-junction photovoltaics (TEGS-MPV), high temperature concentrated solar power (CSP) using liquid metals, high temperature CSP using molten salt, ceramic/refractory based fluid handling infrastructures, high temperature thermochemical energy conversion and reactor design, methane pyrolysis for hydrogen production, solar fuels, direct contact heat exchangers; Atomistic level modeling to study the fundamental physics of phonon transport in ordered materials, disordered materials, molecules and at interfaces; Molecular dynamics (MD) simulations, supercell lattice dynamics calculations, first principles calculations, density functional theory (DFT), interatomic potentials optimized for describing phonons directly from first principles, Taylor expansion based potentials and neural network potentials.

Education

2006 – 2009

Massachusetts Institute of Technology
Ph.D. in Mechanical Engineering
Thesis committee: Gang Chen (Advisor)
Mildred Dresselhaus, John Lienhard
Ph.D. Thesis: "1D-to-3D Transition of Phonon Heat Conduction in Polyethylene Chains Using Molecular Dynamics Simulations"

2004 – 2006

M.S. in Mechanical Engineering
Thesis Advisor: Gang Chen
Masters Thesis: "Molecular Dynamics Analysis of Spectral Characteristics of Phonon Heat Conduction in Silicon"

2000 – 2004

Florida Agricultural & Mechanical University
B.S. in Mechanical Engineering, *summa cum laude*
Advisor: Makola Abdullah
Research: Developed numerical models for the vibration dynamics of tall buildings during earthquakes.

Professional Experience

July 2018

Massachusetts Institute of Technology, Cambridge MA
Department of Mechanical Engineering
Associate Professor
PI - Atomistic Simulation & Energy (ASE) Research Group
Research topics include: Thermal energy grid storage using ultra-high temperature liquid metal and multi-junction photovoltaics (TEGS-MPV); Methane pyrolysis for CO_2 free hydrogen production; Direct contact heat exchangers using liquid metal; High energy density flow batteries; High temperature ceramic pumps, valves and piping for liquid metals and molten salts; Molecular dynamics (MD) simulations to study phonons and the development of new analysis techniques to elucidate the physics; Phonons and their interactions in disordered materials and at interfaces; Empirical potential development to reproduce DFT forces, for phonon modeling;

2012 – 2018

Georgia Institute of Technology, Atlanta GA
George W. Woodruff School of Mechanical Engineering
School of Materials Science and Engineering
Assistant Professor
PI - Atomistic Simulation & Energy (ASE) Research Group
www.ase.gatech.edu
Research included: Molecular dynamics (MD) simulations to improve understanding of phonon transport; Studying phonon transport and interactions in a variety of material classes including polymers, crystalline solids, amorphous materials, and disordered alloys, as well as their interfaces; Empirical potential parameterization to DFT forces, for thermal transport modeling; Sonification of MD data for improved insight into phonon interactions. High temperature concentrated solar power (CSP) using liquid metal heat transfer and storage fluids; Solar thermochemical reactor design, modeling and optimization; Hydrogen production; High temperature heat transfer using liquid metals in all ceramic infrastructures.

Major Accomplishments

- Developed the first formalism that accurately describes the thermal conductivity associated with phonons across all material classes, termed the Green-Kubo Modal Analysis (GKMA) method.

- Developed the first formalism that determines individual phonon/mode contributions to thermal interface conductance with full inclusion of anharmonicity, termed the Interface Conductance Modal Analysis (ICMA) method.
- Discovered that the presence of an interface fundamentally changes the character of the modes of vibrations in the respective materials in contact.
- Led a $3.6M ARPAE project with > 20 personnel that successfully developed first prototypes and performed detailed cost analyses to demonstrate the feasibility of high temperature CSP using liquid metals.
- Demonstrated the first all ceramic mechanical pump that can pump liquid metal at temperatures of $\geq$ 1350°C
  https://www.youtube.com/watch?v=3XtdfI5ERT0&t
  https://www.youtube.com/watch?v=tjWIKNYkXOo
- Guinness Book of World Records holder for the highest temperature pump: http://www.guinnessworldrecords.com/world-records/441807-highest-operating-temperature-pump
- Demonstrated the first liquid metal circulation loop that operated continuously at $\geq$ 1350°C, which was constructed entirely out of ceramics, including all seals and joints.
- Developed the first scalable high thermal conductivity polymer composite with a thermal conductivity > 100 W m^{-1} K^{-1} and behavior consistent with a simple rule of mixtures.

2011 – 2012

U.S. Department of Energy, Washington, D.C.
Advanced Research Projects Agency – Energy (ARPA-E)
Fellow

Developed new high risk/high reward ideas and concepts for potential funding opportunity announcements. Conducted due diligence, organized and hosted workshops on the agency's emerging ideas – i.e. heat engines with no moving parts as topping cycles for more efficient utility scale energy conversion & advanced spectral splitting optics for higher efficiency concentrated photovoltaics. Several ideas developed went on to seed the $30M Full-Spectrum Optimized Conversion and Utilization of Sunlight (FOCUS) program, which was centered on concentrated solar technologies.

2010 – 2011

Northwestern University, Evanston, IL
Department of Material Science
Chris Wolverton, PI
Visiting Scholar/Postdoctoral Researcher

Used first principles electronic structure calculations (DFT+U) to design and evaluate the thermodynamic properties of ceria alloys ($Ce_{1-x-y}Zr_xTi_yO_{2-\delta}$) for use in solar driven high temperature thermochemical water splitting reactors.

2009 – 2010

Oak Ridge National Laboratory, Oak Ridge, TN
Materials Theory Group
David Singh, PI
Postdoctoral Researcher
Theoretical development and implementation of a fully first principles method for calculating thermal conductivity directly from DFT-MD simulations. First principles prediction of a morphotropic phase boundary in bismuth based perovskite ferroelectrics.

2004 – 2009

Massachusetts Institute of Technology, Cambridge, MA
Department of Mechanical Engineering
NanoEngineering Group
Professor Gang Chen, PI
Graduate Research Assistant
Developed codes for parallel molecular dynamics simulations and lattice dynamics calculations. Conducted detailed analysis of phonon transport (spectral dependence) in bulk silicon. Conducted detailed analyses of phonon transport in one-dimensional conductors, such as polyethylene chains and carbon nanotubes.

Summer 2006

Sandia National Laboratories, Albuquerque, NM
Dr. Steven Plimpton
Graduate Research Assistant
Implemented the adaptive intermolecular empirical bond order potential (AIREBO) for hydrocarbon systems, into the large atomic/molecular massively parallel simulator (LAMMPS).

Summer 2004

Massachusetts Institute of Technology, Cambridge, MA
Department of Mechanical Engineering
NanoEngineering Group
Professor Gang Chen, PI
Research Assistant
Developed code for calculating the thermal conductivity of solid argon using molecular dynamics simulations.

Summer 2003 **Massachusetts Institute of Technology, Cambridge, MA**

Department of Mechanical Engineering
NanoEngineering Group
Professor Gang Chen, PI
Research Assistant
Developed a numerical modeling scheme for experimentally determining the thermoelectric properties of thin films, when direct temperature measurements are not possible.

Summer 2002 **The University of Tokyo, Tokyo Japan**

Research Experiences for Undergraduates in Japan in Advanced Technology (REUJAT)
Professor Makola Abdullah, PI
Research Assistant
Invented, designed and modeled the structural magnetic induction damper (SMID), a new type of passive device for reducing structural vibration during earthquakes while simultaneously storing the energy as electricity.

Summer 2001 **Visteon Automotive, Ypsilanti, MI**

Alternator Division
Intern
Alternator voltage regulator failure analysis test box development. 6th Generation Integrated Regulator Rectifier (IRR) alternator product testing, design, modification and development.

Awards and Honors

2018 WTN World Technology Award – Energy

2018 ASME Bergles-Rohsenow Young Investigator Award in Heat Transfer

2018 FAMU/FSU Mechanical Engineering Rising Star Alumni Award

2017 Georgia Power Professor of Excellence Award

2016 National Science Foundation – CAREER Award

2015-2016 Lockheed Inspirational Young Faculty Award

2010-2011 Ford Foundation Postdoctoral Fellowship

2009-2010 UNCF-MERCK Postdoctoral Fellowship

2005-2009 DOE – Computational Science Graduate Fellowship

2005-2006 MIT Black Graduate Students Association – Community Service Award

2004-2005 MIT – Lemelson Presidential Fellowship

2000-2004 FAMU – Distinguished Scholars Award

2002-2004 FAMU – Pi Tau Sigma Mechanical Engineering Society

2001-2004 FAMU – Tau Beta Pi Engineering Honors Society

Journal Publications

Total Number of Citations: 2203
Google Scholar Profile: https://scholar.google.com/citations?user=YNW0q6EAAAAJ&hl=en

[1] A. Henry and G. Chen, *Spectral Phonon Transport Properties of Silicon Based on Molecular Dynamics Simulations and Lattice Dynamics*, J. Comput. Theor. Nanosci., 5, 141-152 (2008). - [**Over 400 citations – Google Scholar**]

[2] A. Henry and G. Chen, *High Thermal Conductivity of Single Polyethylene Chains Using Molecular Dynamics Simulations*, **Phys. Rev. Lett.**, 101, 235502 (2008). - [**Over 240 citations – Google Scholar**]

[3] A. Henry and G. Chen, *Anomalous heat conduction in polyethylene chains: Theory and molecular dynamics simulations*, Phys. Rev. B, 79, 144305 (2009). - [**Over 125 citations – Google Scholar**]

[4] A. Henry and G. Chen, *Explicit Treatment of Hydrogen in Thermal Simulations of Polyethylene*, J. Nanoscale and Microscale Thermophysical Engineering, 13, 2, 99-108 (2009).

[5] M. S. Dresselhaus, G. Chen, Z. F. Ren, G. Dresselhaus, A. Henry, J.-P. Fleurial, *New Composite Thermoelectric Materials for Energy Harvesting Applications*, JOM, 61, 4, 86 (2009).

[6] S. Shen, A. Henry, J. Tong, R. Zheng, G. Chen, *Polyethylene nanofibres with very high thermal conductivities*, **Nature Nanotechnology**, 5, 251 - 255 (2010) - [**Over 415 citations – Google Scholar**]

[7] V. R. Cooper, A. Henry, S. Takagi, D. J. Singh, *First principles prediction of a morphotropic phase boundary in the $Bi(Zn_{1/2}Ti_{1/2})O_3$–$(Bi_{1/2}Sr_{1/2})(Zn_{1/2}Nb_{1/2})O_3$ alloy*, Appl. Phys. Lett., 98, 122903 (2011).

[8] T. Luo, K. Esfarjani, J. Shiomi, A. Henry, and G. Chen, *Molecular dynamics simulation of thermal energy transport in polydimethylsiloxane*, Journal of Applied Physics, 109, 074321-1-6 (2011).

[9] Z. Tian, K. Esfarjani, J. Shiomi, A. Henry, G. Chen, *On the importance of optical phonons to thermal conductivity in nanostructures*, Applied Physics Letters, 99, 053122-1-3 (2011).

[10] Y. Chalopin, K. Esfarjani, A. Henry, S. Volz, and G. Chen, *Thermal interface conductance in Si/Ge superlattices by equilibrium molecular dynamics*, Phys. Rev. B 85, 195302 (2012).

[11] N. Yang, T. Luo, K. Esfarjani, A. Henry, Z. Tian, J. Shiomi, Y. Chalopin, B. Li, G. Chen, *Thermal Interface Conductance between Aluminum and Silicon by Molecular Dynamics Simulations*, J. Comput. Theor. Nanosci., 12, 2, 168-174 (2014).

[12] V. Singh, T. L. Bougher, A. Weathers, Y. Cai, K. Bi, M. T. Pettes, S. A. McMenamin, W. Lv, D. P. Resler, T. R. Gattuso, D. H. Altman, K. H. Sandhage, L. Shi, A. Henry and B. A. Cola, *High Thermal Conductivity of Chain-Oriented Amorphous Polythiophene*, **Nature Nanotechnology**, 9, 384-390 (2014). [**Over 130 citations – Google Scholar**]

[13] A. Henry, R. Prasher, *The Prospect of Solid State Energy Conversion to Reduce the Cost of Concentrated Solar Power*, **Energy & Environmental Science**, 7, 1819-1828 (2014).

[14] K. Gordiz, D. J. Singh, A. Henry, *Ensemble Averaging vs. Time averaging in Molecular Dynamics Simulations of Thermal Conductivity*, Journal of Applied Physics, 117, 045104 (2015).

[15] K. Gordiz, A. Henry, *A formalism for calculating the modal contributions to thermal interface conductance*, New Journal of Physics, 17, 103002 (2015).

[16] C. Yuan, C. Jarrett, W. Chueh, Y. Kawajiri, A. Henry, *A New Solar Fuels Reactor Concept Based on a Liquid Metal Heat Transfer Fluid: Reactor Design and Efficiency Estimation*, Journal of Solar Energy, 122, 547-561 (2015).

[17] K. Gordiz, A. Henry, *Examining the Effects of Stiffness and Mass Difference on the Thermal Interface Conductance Between Lennard-Jones Solids*, Scientific Reports, 5, 18361 (2015).

[18] Z. Liu, Y. Liu, Y. Chang, H. R. Seyf, A. Henry; A. L. Mattheyses, K. Yehl, Y. Zhang, Z. Huang, K. Salaita, *Nanoscale Optomechanical Actuators for Controlling Mechanotransduction in Living Cells*, **Nature Methods**, 13, 143-146 (2016).

[19] C. Jarrett, W. Chueh, C. Yuan, Y. Kawajiri, K. H. Sandhage, A. Henry, *Critical Limitations on the Efficiency of Two-Step Thermochemical Cycles*, Journal of Solar Energy, 123, 57-73 (2015).

[20] C. Yuan, C. Jarrett, W. Chueh, Y. Kawajiri, A. Henry, *A New Solar Fuels Reactor Concept Based on a Liquid Metal Heat Transfer Fluid: Modeling and Sensitivity Analysis*, Journal of Thermal Engineering, 2, 4, 4, 837-852 (2016).

[21] W. Lv, A. Henry, *Direct Calculation of Modal Contributions to Thermal Conductivity via Green-Kubo Modal Analysis: Crystalline and Amorphous Silicon*, New Journal of Physics, 18, 013028 (2016).

[22] K. Gordiz, A. Henry, *Phonon Transport at Interfaces: Determining the Correct Modes of Vibration*, Journal of Applied Physics, 119, 015101 (2016).

[23] K. Gordiz, A. Henry, *Phonon Transport at Crystalline Si/Ge Interfaces: The Role of Interfacial Modes of Vibration*, Scientific Reports, 6, 23139 (2016).

[24] W. Lv, A. Henry, *Phonon Transport in Amorphous Carbon Using Green-Kubo Modal Analysis*, Applied Physics Letters, 108, 181905 (2016).

[25] K. Gordiz, A. Henry, *Interface Conductance Modal Analysis of Lattice Matched InGaAs/InP*, Applied Physics Letters, 108, 181606 (2016).

[26] H. R. Seyf, A. Henry, Thermophotovoltaics: a potential pathway to high efficiency concentrated solar power, **Energy & Environmental Science**, 9, 2654-2665 (2016).

[27] H. R. Seyf and A. Henry, *A method for distinguishing between propagons, diffusions, and locons*, Journal of Applied Physics, 120, 025101 (2016).

[28] W. Lv, A. Henry, *Non-negligible Contributions to Thermal Conductivity from Locons in Amorphous Silica*, Scientific Reports, 6, 35720 (2016).

[29] W. Lv, A. Henry, *Examining the validity of the phonon gas model in amorphous materials*, Scientific Reports, 6, 37675 (2016).

[30] K. Gordiz and A. Henry, *Phonon Transport at Interfaces Between Different Phases of Silicon and Germanium*, Journal of Applied Physics, 121, 025102, (2017).

[31] M. G. Muraleedharan, D. S. Sundaram, A. Henry, V. Yang, *Thermal conductivity calculation of nano-suspensions using Green–Kubo relations with reduced artificial correlations*, Journal of Physics: Condensed Matter, 29, 155302, (2017).

[32] A. Rohskopf, H. R. Seyf, K. Gordiz, A. Henry, *Empirical Interatomic Potentials Optimized for Phonon Properties*, NPJ Computational Materials, 3, 27, (2017).

[33] W. Lv, R. M. Winters, F. DeAngelis, G. Weinberg, A. Henry, *Understanding Divergent Thermal Conductivity in Single Polythiophene Chains Using Green–Kubo Modal Analysis and Sonification*, Journal of Physical Chemistry, 121, 30, 5586-5596 (2017).

[34] H. R. Seyf, L. Yates, T. L. Bougher, S. Graham, B. A. Cola, T. Detchprohm, M-H. Ji, J. Kim, R. Dupuis, W. Lv, A. Henry, *Rethinking Phonons: The Issue of Disorder* NPJ Computational Materials, 3, 49 (2017).

[35] C. Amy, D. Budenstein, M. Bagepalli, D. England, A. DeAngelis, G. Wilk, C. Jarrett, C. Kelsall, J. Hirschey, B. Capps, A. Chavan, B. Gilleland, Y. Zhang, C. Yuan, W. Chueh, K. Sandhage, Y. Kawajiri, A. Henry, *Pumping Liquid Metal at High Temperatures Up to 1673 kelvin*, **Nature**, 550, 199-203 (2017). [**Most Read Article in Nature: 2/22/18**]

[36] W. Lv, S. Sultana, A. Rohskopf, K. Kalaitzidou, A. Henry, *A Scalable Approach to High Thermal Conductivity Polymer Composites*, Composites Part A, 12, 3, 215-226 (2018).

[37] M. G. Muraleedharan, A. Rohskopf, V. Yang and A. Henry, *Phonon optimized interatomic potential for aluminum*, AIP Advances 7, 125022 (2017).

[38] H. R. Seyf, W. Lv, A. Rohskopf and A. Henry, *The Importance of Phonons with Negative Phase Quotient in Disordered Solids*, Scientific Reports 8, 2627, (2018)

[39] A. DeAngelis, H. R. Seyf, R. Berman, G. Schmidt, D. Moore, A. Henry, *Design of a High Temperature (1,350°C) Solar Receiver Based on a Liquid Metal Heat Transfer Fluid: Sensitivity Analysis*, Solar Energy, 164, 200-209, (2018).

[40] Y. Zhang, Y. Cai, S. H. Hwang, G. Wilk, A. DeAngelis, A. Henry, K. H. Sandhage, *Containment Materials for Liquid Tin at 1350°C as a Heat Transfer Fluid for High Temperature Concentrated Solar Power*, Solar Energy, 164, 47–57 (2018).

[41] G. Wilk, A. DeAngelis, A. Henry, *Estimating the cost of high temperature liquid metal based concentrated solar power*, Journal of Renewable and Sustainable Energy, 10, 023705 (2018).

[42] F. DeAngelis, M. G. Muraleedharan, J. Moon, H. R. Seyf, A. Minnich, A. McGaughey, A. Henry, *Thermal Transport in Disordered Materials*, Nanoscale Microscale Thermophysical Engineering, 1-36 (2018). DOI: 10.1080/15567265.2018.1519004

[43] A. Henry, *A New Take on Electrochemical Heat Engines*, Joule, 2, 9, 1660-1661 (2018).

[44] M. Caccia, M. Tabandeh-Khorshid, G. Itskos, A. R. Strayer, A. S. Caldwell1, S. Pidaparti, S. Singnisai, A. D. Rohskopf, A. M. Schroeder, D. Jarrahbashi, T. Kang, S. Sahoo, N. R. Kadasala, A. Marquez-Rossy, M. H. Anderson, E. Lara-Curzio, D. Ranjan, A. Henry, K. H. Sandhage, *High-Temperature Ceramic/Metal Composites for Heat Exchangers for Concentrated Solar Power*, **Nature**, 562, 406-409 (2018).

[45] A. Giri, S. W. King, W. A. Lanford, A. R. Mei, D. Merril, L. Ross, R. Oviedo, J. Richards, D. H. Olson, J. L. Braun, J. T. Gaskins, F. DeAngelis, A. Henry, and P. E. Hopkins, *Interfacial Defect Vibrations Enhance Thermal Transport in Amorphous Multilayers with Ultrahigh Thermal Boundary Conductance*, Advanced Materials, 30, 44, 1804097 (2018).

[46] C. Amy, H. R. Seyf, M. A. Steiner, D. J. Friedman, A. Henry, *Thermal Energy Grid Storage Using Multijunction Photovoltaics*, Energy & Environmental Science, 12, 1, 334-343 (2018).

[47] M. Kato, A. Henry, S. Graham, D. H. Doan, K. Fushinobu, *Molecular dynamics simulation of oxygen transport characteristics in the electrolyte membrane of PEMFC*, International Journal of Numerical Methods for Heat & Fluid Flow, 28(2), 289-296 (2018).

[48] H. R., Seyf, K. Gordiz, F. DeAngelis, A. Henry, *Using Green-Kubo modal analysis (GKMA) and interface conductance modal analysis (ICMA) to study phonon transport with molecular dynamics*, Journal of Applied Physics, 125, 8, 081101 (2019).

[49] J. T. Gaskins, G. Kotsonis, A. Giri, S. Ju, A. Rohskopf, Y. Wang, T. Bai, E. Sachet, C. T. Shelton, Z. Liu, Z. Cheng, B. M. Foley, S. Graham, T. Luo, A. Henry, M. S. Goorsky, J. Shiomi, J-P. Maria, and P. E. Hopkins, *Thermal Boundary Conductance Across Heteroepitaxial ZnO/GaN Interfaces: Assessment of the Phonon Gas Model*, Nano Letters, 18 (12), 7469-7477 (2018).

Publications in Review

[1] Y. Qiu, F. DeAngelis, Y-L. Hea, A. Henry, Heliostat Field and Receiver Design Considerations for High Temperature (1350°C) Concentrated Solar Power, Solar Energy, In Preparation.

[2] A. Rohskopf, A. Henry, Fast & Accurate Empirical Interatomic Potentials for Describing Thermal Vibrations, Nature Communications, In Preparation.

[3] S. Wyant, K. Gordiz, A. Rohskopf, P. Hopkins, A. Henry, Exceeding the 100% Transmission Limit for Phonons at Interfaces, Nature, In Preparation.

[4] F. DeAngelis, A. Henry, Normal Modes in Amorphous Polymers, Nature Physics, In Preparation.

[5] F. DeAngelis, A. Henry, Green-Kubo Modal Analysis of Amorphous Germanium, Physical Review B, In Preparation

Invited Book Chapters

[1] A. Henry, *Thermal Transport in Polymers*, Invited chapter in the Annual Review of Heat Transfer, Chapter 13, Volume 17 485-520 (2013)

Conference Publications

[1] A. Henry and G. Chen, *Thermal Conductivity of Polyethylene Chains Using Molecular Dynamics Simulations.* published in the Proceedings of the 3rd Energy Nanotechnology International Conference, 2008. Jacksonville, Florida USA.

[2] A. Henry and G. Chen, *Normal Mode Analysis of Single Polyethylene Chains.* published in the Proceedings of the ASME International Mechanical Engineering Congress and Exposition. 2008. Boston, Massachusetts USA.

[3] A. Henry and G. Chen, *Analysis of Heat Conduction in Silicon Using Molecular Dynamics Simulations.* published in the Proceedings of the ASME International Mechanical Engineering Congress and Exposition. 2006. Chicago, Illinois USA.

[4] A. Henry, A. Richardson and M. Abdullah, published in SEMS 2001: International Conference on Structural Engineering, Mechanics and Computation, 2, 887-895 (2001).

Other Publications And Media/Press

[1] G. Chen, S. Shen, A. Henry, J. Tong, *Heat Conducting Polymers*, Materials World Magazine, 18, 23-25 (2010).

[2] G. Chen, S. Shen, J. Tong, A. Henry, *Reinventing the Polymer*, The Chemical Engineer, 827, 28-29 (2010).

[3] Voice of America Video Interview: *Running Sun Power Plant With Molten Metal May Be Cheaper*: https://www.voanews.com/a/sun-power-plant-with-molten-metal-may-be-cheaper/3226155.html

[4] Scientific Computing: *A Scientist is Creating Music from the Periodic Table*: https://www.scientificcomputing.com/blog/2016/02/scientist-creating-music-periodic-table

[5] Science Alert: *A Scientist Is Turning Every Element in The Periodic Table Into Music*: https://www.sciencealert.com/va-scientist-is-turning-every-element-in-the-periodic-table-into-music

[6] Gizmodo: *This Scientist Is Turning Every Element In the Periodic Table Into Music*: https://gizmodo.com/this-scientist-is-turning-every-element-in-the-periodic-1759423993

[7] MIT Technology Review: *Ceramic Pump That Takes the Heat Promises Cheap, Efficient Grid Storage*: https://www.technologyreview.com/s/609093/ceramic-pump-that-takes-the-heat-promises-cheap-efficient-grid-storage/

[8] R&D Magazine: *Ceramic Pump Moves Molten Metal at a Record 1,400 Degrees Celsius*: https://www.rdmag.com/news/2017/10/ceramic-pump-moves-molten-metal-record-1400-degrees-celsius

[9] Phys.org: *Ceramic pump moves molten metal at a record 1,400 degrees Celsius*: https://phys.org/news/2017-10-ceramic-molten-metal-degrees-celsius.html

[10] Technology.org: *Ceramic Pump Moves Molten Metal at a Record 1,400 Degrees Celsius*: https://www.technology.org/2017/10/12/ceramic-pump-moves-molten-metal-at-a-record-1400-degrees-celsius/?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+TechnologyOrg+%28Technology+Org+-+All+News%29

[11] Green Car Congress: *Ceramic pump moves molten metal at a record 1,400 ° C; new avenues for energy storage and hydrogen production*: http://www.greencarcongress.com/2017/10/20171012-gatech.html?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+greencarcongress%2FTrBK+%28Green+Car+Congress%29

[12] ASME Magazine: *Pumping Extremely Hot Metal, Part 1*: https://www.asme.org/engineering-topics/articles/energy/pumping-extremely-hot-metal-part-1

[13] ASME Magazine: *Pumping Extremely Hot Metal, Part 2*: https://www.asme.org/engineering-topics/articles/energy/pumping-extremely-hot-metal-part-2

[14] Guinness Book of World Records holder for the highest temperature pump: http://www.guinnessworldrecords.com/world-records/441807-highest-operating-temperature-pump

[15] British Broadcasting Corporation (BBC) Inside Science Radio Interview: https://www.bbc.co.uk/programmes/b0977v58

[16] MIT News: http://news.mit.edu/2018/liquid-silicon-store-renewable-energy-1206

[17] Popular Mechanics: https://www.popularmechanics.com/technology/infrastructure/a25423378/mit-silicon-sun-in-a-box/

[18] Extreme Tech: https://www.extremetech.com/extreme/281960-mits-sun-in-a-box-could-solve-our-energy-storage-woes

[19] New Atlas: https://newatlas.com/mit-molten-silicon-energy-storage-system/57562/

[20] Anthropocene Magazine: http://www.anthropocenemagazine.org/2018/12/molten-silicon-could-help-store-renewable-energy/

[21] Daily Mail UK: https://www.dailymail.co.uk/sciencetech/article-6469675/Sun-box-power-entire-CITY-using-renewable-energy-stored-vats-molten-silicon.html

[22] Futurism: https://futurism.com/solar-energy-storage

[23] IFL Science: https://www.iflscience.com/technology/sun-in-a-box-could-help-renewables-deliver-energy-on-demand/

[24] Boss Magazine: https://thebossmagazine.com/mit-sun-in-a-box/

[25] The Optical Society of America: https://www.osa-opn.org/home/newsroom/2018/december/putting_the_sun_in_a_box%E2%80%9D_for_energy_storage/

[26] The Engineer News: https://www.theengineer.co.uk/mit-sun-in-a-box/

[27] Fircroft: https://www.fircroft.com/blogs/sun-in-a-box-developed-by-mit-as-an-energy-storage-device-83417143041

[28] Medium: https://medium.com/life-on-the-other-planets-whats-new/sun-in-a-box-scientists-discover-new-ways-to-store-renewable-energy-f7527471b08f

[29] EE News Power Management: http://www.eenewspower.com/news/sun-box-promises-cheaper-renewable-energy-storage

[30] The Week: https://www.theweek.in/news/sci-tech/2018/12/08/MIT-team-develop-tech-to-store-concentrated-solar-power.html

[31] ScienceX: https://sciencex.com/news/2018-12-week-sun-dark-theory-metabolism.html

[32] The Register: https://www.theregister.co.uk/2018/12/08/boffins_build_blazing_battery_bonfire/

[33] Buzz on Earth: https://buzzonearth.com/storing-renewable-energy-with-sun-in-a-box/

[34] Create Digital: https://www.createdigital.org.au/molten-silicon-renewable-energy-storage/

[35] Down to Earth: https://www.downtoearth.org.in/news/science-technology/sun-in-a-box-excess-renewable-energy-can-now-be-stored-more-efficiently-62419

[36] PV Magazine: https://www.pv-magazine.com/2018/12/07/molten-silicon-storage-enough-to-power-city-says-mit/

[37] Smart2Zero: http://www.smart2zero.com/news/sun-box-promises-cheaper-renewable-energy-storage

[38] World Industrial Reporter: https://worldindustrialreporter.com/mit-designs-novel-sun-in-a-box-renewable-storage-system/

[39] Idea Connection: https://www.ideaconnection.com/new-inventions/mit's-sun-in-a-box-stores-energy-as-light-13729.html

[40] Clean Future: https://www.cleanfuture.co.in/2018/12/10/thermal-energy-grid-storage-multi-junction-photovoltaics/

[41] Renew Economy: https://reneweconomy.com.au/mit-team-gains-ground-on-molten-silicon-energy-storage-concept-23077/

[42] Market Scale: https://marketscale.com/industries/software-and-technology/mit-engineers-working-to-design-the-sun-in-a-box/

[43] Cleantechnica: https://cleantechnica.com/2018/12/07/renewables-energy-storage-managing-the-utility-grid-of-the-future/

Conference Presentations

[1] A. Henry, A. Richardson and M. Abdullah, Placement and Elimination of Vibration Controllers in Tall Buildings, Universidad Metropolitana Undergraduate Research Science Symposium, 2000. San Juan Puerto Rico.

[2] A. Henry, A. Richardson and M. Abdullah, Placement and Elimination of Vibration Controllers in Tall Buildings, Undergraduate Students in Technical Research (USTR) competition, NSBE national convention 2001. Indianapolis, IN USA.

[3] A. Henry, M. Abdullah, Structural Magnetic Induction Damper, FAMU Undergraduate Program UROP Technical Research Symposium, 2002. Tallahassee, FL USA -- 1st Place Presentation Award.

[4] A. Henry and M. Abdullah, Structural Magnetic Induction Damper, Japan Society for the Promotion of Science, Symposium on Structural Control and Health Monitoring, 2002. Tokyo, Japan.

[5] Henry and G. Chen, Analysis of Heat Conduction in Silicon Using Molecular Dynamics Simulations. IMECE, 2006. Chicago, IL USA.

[6] A. Henry and G. Chen, Analysis of Heat Conduction Using Molecular Dynamics Simulations. DOE Computational Science Graduate Fellows Conference, 2006. Washington D.C. USA.

[7] A. Henry, G. Chen and S. Plimpton, Molecular Dynamics Simulations of MWCNTs and Polyethylene Chains Using Molecular Dynamics. DOE Computational Science Graduate Fellows Conference, 2007. Washington D.C. USA.

[8] A. Henry and G. Chen, High Thermal Conductivity of Polyethylene Chains Using Molecular Dynamics Simulations. 3rd Energy Nanotechnology International Conference, 2008. Jacksonville, Florida USA.

[9] A. Henry and G. Chen, High Thermal Conductivity of Polyethylene Using Molecular Dynamics Simulations. 6th US-Japan Joint Seminar on Nanoscale Transport Phenomena, 2008. Boston MA USA.

[10] A. Henry and G. Chen, Thermal Conductivity of Single Polyethylene Chains Using Molecular Dynamics Simulations. DOE Computational Science Graduate Fellows Conference, 2008. Washington D.C. USA.

[11] K. Gordiz and A. Henry, Ensemble Averaging vs. Time Sampling for Molecular Dynamics Simulations of Thermal Conductivity, 11th AIAA/ASME Joint Thermophysics and Heat Transfer Conference. 2014. Atlanta, GA USA.

[12] K. Gordiz and A. Henry, Modal Decomposition of Thermal Transport Across Interfaces, 11th AIAA/ASME Joint Thermophysics and Heat Transfer Conference, 2014. Atlanta, GA USA.

[13] C. Jarrett, A. Henry, Screening of Oxides for Solar Driven Thermochemical Water Splitting, 11th AIAA/ASME Joint Thermophysics and Heat Transfer Conference, 2014. Atlanta, GA USA.

[14] A. DeAngelis, A. Henry, Sensitivity Analysis of a High Temperature Liquid Metal Based Solar Receiver, 11th AIAA/ASME Joint Thermophysics and heat Transfer Conference, 2014. Atlanta, GA USA.

[15] W. Lv, A. Henry, Molecular Dynamics Simulations of Thermal Transport in Single Polythiophene Chains, 11th AIAA/ASME Joint Thermophysics and Heat Transfer Conference, 2014. Atlanta, GA USA.

[16] W. Lv, A. Henry, Spectral Phonon Transport Properties from Direct Green-Kubo Thermal Conductivity Decomposition, 11th AIAA/ASME Joint Thermophysics and Heat Transfer Conference, 2014. Atlanta, GA USA.

[17] G. Wilk, A. Henry, Radiation Heat Sink for Heat Dissipation in Liquid Metal Loops, 11th AIAA/ASME Joint Thermophysics and Heat Transfer Conference, 2014. Atlanta, GA USA.

[18] A. Henry, A New Reactor Concept for Two-Step Solar Thermochemical Energy Conversion Using a Liquid Metal Heat Transfer Fluid, ASME Conference on Energy Sustainability, 2014. Boston MA USA.

[19] A. Henry, High Temperature Concentrated Solar Power Using a Liquid Metal Heat Transfer Fluid, ASME Conference on Energy Sustainability, 2014. Boston MA USA.

[20] K. Gordiz, A. Henry, Interface conductance modal analysis, American Physical Society March Meeting, 2015. San Antonio, TX USA

[21] K. Gordiz, A. Henry, A new formalism for calculating modal contributions to thermal interface conductance from molecular dynamics simulations, Materials Research Society Spring Meeting, 2015. San Francisco, CA USA

[22] K. Gordiz, A. Henry, Calculation of modal contributions to thermal transport across Si/Ge and In0.53Ga0.47As/InP interfaces, American Physical Society March Meeting, 2015. San Antonio, TX USA (Poster Presentation)

[23] W. Lv, A. Henry, Thermal Interface Conductance Between Aligned Polyethylene And Graphite, ASME 2015 International Mechanical Engineering Congress and Exposition (IMECE), Houston, Texas, USA.

[24] W. Lv, A. Henry, Thermal Conductivity Decomposition via Direct Green-Kubo Modal Analysis: Crystalline and Amorphous Silicon, ASME 2015 International Mechanical Engineering Congress and Exposition (IMECE), Houston, Texas, USA.

[25] W. Lv, A. Henry, Thermal Conductivity Decomposition via Direct Green-Kubo Modal Analysis: Crystalline and Amorphous Silicon, 2015 MRS Spring Meeting & Exhibit, San Francisco, California, USA.

[26] W. Lv, A. Henry, Direct Green-Kubo Modal Analysis: Crystalline and Amorphous Materials, APS March Meeting, 2015, San Antonio, Texas, USA.

[27] A. Henry, A New Reactor Concept for Two-Step Solar Thermochemical Energy Conversion Using a Liquid Metal Heat Transfer Fluid, ASME Conference on Energy Sustainability, 2014. Boston MA USA.

[28] A. Henry, High Temperature Concentrated Solar Power Using a Liquid Metal Heat Transfer Fluid, ASME Conference on Energy Sustainability, 2014. Boston MA USA.

[29] A. Henry, A Correlation Based Perspective of Phonon Transport, Thermal Transport at the Nanoscale, Telluride Science Research Conference, 2016. Telluride CO USA.

[30] A. Henry, High Temperature Concentrated Solar Power Using Liquid Metal, Solar PACES International Conference, 2016. Abu Dhabi, UAE.

[31] H. R. Seyf, L. Yates, T. Bougher, S. Graham, B. Cola, T. Detchprohm, M-H. Ji, J. Kim, R. Dupuis, W. Lv, A. Henry, Revisiting the theory of disordered alloy thermal conductivity, Bulletin of the American Physical Society, March 2017. New Orleans, LO USA.

[32] H. R. Seyf, A. Henry, "A New Formalism for Quantifying Character of Vibrational Modes in Solids: Distinguishing Between Propagons, Diffusons and Locons", American Physical Society (Poster Presentation), March 2017. New Orleans, LO USA.

[33] H. R. Seyf, A Henry, "Analysis of a Concentrated Solar Thermophotovoltaic System with Thermal Energy Storage", 2nd Thermal and Fluids Engineering Conference (TFEC), April 2017. Las Vegas, NV USA.

[34] H. R. Seyf, A Henry, "Reexamining the Theory of Alloy Thermal Conductivity", 2nd Thermal and Fluids Engineering Conference (TFEC), April 2017. Las Vegas, NV USA.

[35] H. R. Seyf, A Henry, “A New Formalism for Quantifying Character of Vibrational Modes in Solids: Distinguishing Between Propagons, Diffusons and Locons”, 2nd Thermal and Fluids Engineering Conference (TFEC), April 2017. Las Vegas, NV USA.

[36] K. Gordiz, A. Henry, "Investigating the Modal Contributions to the Heat Transfer across Crystalline and Amorphous Si/Ge ", Summer Heat Transfer Conference, 2016. Washington, D.C.

[37] K. Gordiz, A. Henry, "Interface Conductance Modal Analysis across Si-Ge interfaces", 4th International Conference on Computational Methods for Thermal Problems, 2016. Atlanta, GA

[38] K. Gordiz, A. Henry, "Modal Contributions to Heat Conduction across Crystalline and Amorphous Si/Ge Interfaces", American Physical Society March Meeting, 2016. Baltimore, MD

[39] A. Rohskopf and A. Henry, Phonon Optimized Potentials, APS March Meeting, 2017. New Orleans, LA USA.

Invited Talks & Seminars

[1] Northeastern University, Department of Mechanical Engineering *“Phonon Transport in Polyethylene Using Molecular Dynamics Simulations”* – December 2008
[2] Georgia Institute of Technology, Department of Mechanical Engineering *“Phonon Transport in Polyethylene Using Molecular Dynamics Simulations”* – February 2009
[3] Oak Ridge National Laboratories, Division of Computational Science *“Phonon Transport in Polyethylene Using Molecular Dynamics Simulations”* – March 2009
[4] Vanderbilt University, Department of Mechanical Engineering *“Phonon Transport in Polyethylene Using Molecular Dynamics Simulations”* – March 2009
[5] University of California Berkeley, Department of Mechanical Engineering *“Phonon Transport in Polyethylene Using Molecular Dynamics Simulations”* – March 2009
[6] Lawrence Livermore National Laboratories, Quantum Simulation Group *“Phonon Transport in Polyethylene Using Molecular Dynamics Simulations”* – March 2009
[7] Stanford University, Department of Material Science *“Phonon Transport in Polyethylene Using Molecular Dynamics Simulations”* – April 2009
[8] Massachusetts Institute of Technology, Department of Mechanical Engineering (S3TEC) *“Thinking Beyond the Phonon Gas Model”* – December 2014
[9] Materials Research Society Spring Meeting, Nanoscale Heat Transport Track *“Thinking Beyond the Phonon Gas Model”*– April 2015

[10] Society of Engineering Science 2016 symposium on Heat Transfer: From Meso-Scale to Macro-Scale *"Thinking Beyond the Phonon Gas Model"* – October 2016

[11] Stanford University, Department of Mechanical Engineering, *"Heat Transfer from an Atomistic Perspective: New Solutions to Old Problems"* – March 2016

[12] Purdue University, Department of Materials Science and Engineering, *"Heat Transfer from an Atomistic Perspective: New Solutions to Old Problems"* – March 2016

[13] Google X, *"Heat Transfer from an Atomistic Perspective: New Solutions to Old Problems"* – March 2016

[14] University of Colorado Boulder, Department of Mechanical Engineering, *"Rethinking Problems in Thermal Science and Engineering"* – June 2016

[15] Massachusetts Institute of Technology, Department of Mechanical Engineering (S3TEC) *"Rethinking Problems in Thermal Science and Engineering"* – September 2016

[16] University of Florida, Department of Mechanical Engineering *"Rethinking Problems in Thermal Science and Engineering"* – September 2016

[17] Massachusetts Institute of Technology, Department of Mechanical Engineering *"Rethinking Problems in Thermal Science and Engineering"* – February 2016

[18] The 3rd International Conference on Phononics and Thermal Energy Science (PTES2016) *"A Correlation Based Perspective on Phonon Transport"* – May 2016

[19] California Institute of Technology, Department of Mechanical Engineering, *"Thinking Beyond the Phonon Gas Model"*, – February 2017

[20] University of Missouri, Department of Physics, *"Thinking Beyond the Phonon Gas Model"*, – August 2017

[21] Carnegie Mellon University, Department of Mechanical Engineering, *"Rethinking Problems in Thermal Science and Engineering"*, – February 2017

[22] 9th U.S. Japan Joint Seminar on Nanoscale Transport Phenomena, *"Thinking Beyond the Phonon Gas Model"*, – July 2017

[23] Recent Progress in the Physics of Thermal Transport Workshop, Izmir Institute of Technology, *"Thinking Beyond the Phonon Gas Model"*, – July 2017

[24] Gordon Conference on Nano-Mechanical Interfaces, Hong Kong University of Science and Technology, *"Thinking Beyond the Phonon Gas Model"*, – August 2017

[25] ACERS Conference on Electronic and Advanced Materials, *"Rethinking Phonons: The Issue of Disorder"*, – January 2018

[26] American Physical Society March Meeting, *"Rethinking Phonons"*, – March 2018

Patents and Disclosures

[1] A. Henry, "Deposition Prevention By Sweep Gas", US Patent Application No. 62/740,664, 2018 – In Review.

[2] M. Steiner, D. Freidman, A. Henry, "Two-Junction Photovoltaic Devices", U.S Provisional Patent Application No. 62/627,837, 2018 – In Review.

[3] 2017 Utility Patent Application, "Methods for Manufacturing Ceramic and Ceramic Composite Components and Components Made Thereby", In Review.

[4] 2016 Provisional Patent Application 62/374,941 – "All Ceramic Pump and Valve for Circulation of High Temperature Liquid Metals"

[5] 2016 Provisional Patent Application 62/414,878 – "Methane Cracking Using A High Temperature Liquid Tin Based Reactor/Heat Exchanger"

[6] 2016 Provisional Patent Application, "Methods for Manufacturing Ceramic and Ceramic Composite Components and the Components Made Thereby"

[7] 2015 Provisional Patent Application, "High Thermal Conductivity Polymer Composites Made by Automated and Scalable process"

[8] 2014 Utility Patent Application 14/912,219, "Concentrated Solar Thermophotovoltaics with Storage", In Review

[9] 2013 Provisional Patent Application, "Concentrated Solar Thermophotovoltaics with Storage"

[10] 2013 Utility Patent Continuation 13/538,304, "Solar Receivers for Use in Solar-Driven Thermochemical Processes", In Review.

[11] 2012 Utility Patent Application 13/538,304, "Reactor, System and Method for Solid Reactant Based Thermochemical Processes", In Review.

Professional Activities

Editorial Boards:
Scientific Reports (Nature)
Frontiers in Mechanical Engineering: Thermal and Mass Transport

Journal Referee:
2017-present, Nanoscale and Microscale Thermophysical Engineering
2016-present, Energy & Environmental Science
2015-present, Superlattices and Microstructures

2015-present, Energies
2014-present, Nano Letters
2014-present, New Journal of Physics
2014-present, Technology
2014-present, Polymers
2014-present, Solar Energy
2013-present, Journal of Solar Energy Engineering
2013-present, Journal of CO2 Utilization
2012-present, European Physical Journal
2012-present, ASME Journal of Heat Transfer
2011-present, Journal of Physical Chemistry B
2010-present, Computational Materials Science
2010-present, Journal of Applied Physics
2010-present, Journal of Chemical Physics
2010-present, Applied Physics Letters
2010-present, Physical Review Letters
2010-present, Physical Review B

Review Panels:
National Science Foundation – Scalable Nano-Manufacturing
National Science Foundation – Thermal Transport Processes
National Science Foundation – Thermal Transport Processes CAREER
Department of Energy – SunShot CSP
Department of Energy – Advanced Research Projects Agency – Energy
DOE Computational Science Graduate Fellowship

Societal Memberships:
American Society of Mechanical Engineers
ASME K-9 Nanoscale Thermal Transport Committee
American Physical Society
American Ceramic Society
National Society of Black Engineers

Conference/Society Meeting Service:
2012-Present ASME Nanoscale Thermal Transport Division Committee Member
2013 Solar PACES – Thermal Receivers Session Chair
2013-Present Solar PACES – Scientific Committee
2013 IMECE – Nanoparticles and Nanofluids Session Chair
2013 Nanofluids Session Organizer, ASME-IMECE Fall Heat Transfer Meeting
2013 Thermal Receivers Session Organizer, Solar PACES Conference

2014 11th AIAA/ASME Joint Thermophysics and Heat Transfer Conference, Multi-Scale Heat Transfer II
2014 11th AIAA/ASME Joint Thermophysics and Heat Transfer Conference, Multi-Scale Heat Transfer III
2016 Concentrating Solar Power System Design and Analysis I Session Organizer, ASME Energy Sustainability Conference
2016 Nanoscale Thermal Transport Topic Organizer, ASME Summer Heat Transfer Conference
2016-2017 Co-Organizer for the U.S. Japan Joint Seminar on Thermal Transport

Other Service:
2016 Founding Member of HEAT LAB at Georgia Tech
2016 Executive Board Member for the Georgia Tech Community for Active Surfaces and Interfaces
2014 Speaker, Tau Beta Pi Induction Speaker
2014 Poster Judge, Georgia Tech Research and Innovation Conference
2014 Panelist, "Qualifying Exams", Mechanical Engineering Graduate Student Association (MEGA)
2013 Panelist, UNCF Info Session on Obtaining Scholarships and Fellowships
2013-2014, Micro-Nanoscale Engineering Concentration Faculty Advisor, Faculty Advising Committee
2013 Panelist, "How to Work With ARPA-E" Strategic Energy Institute Panel Discussion
2013 Panelist, FACES Seminar "Strategic Starts: Selecting and negotiating the right time to start one's academic appointment"

Funded Projects

Source: Advanced Research Projects Agency – Energy (ARPA-E)
Project Title: High Efficiency Solar Fuels Reactor Concept
Award Size: $3.6M
Performance Period: April 2013-April 2016
Program Manager: Howard Branz
PI: Asegun Henry (Georgia Institute of Technology)
Co-PIs: Kenneth Sandhage (Georgia Institute of Technology), Yoshiaki Kawajiri (Georgia Institute of Technology), William Chueh (Stanford University), Duncan Moore (University of Rochester).

Source: Intel Corp.
Project Title: High Thermal Conductivity Polymer Composites for Improved Heat Dissipation in Electronic Packages
Award Size: $323,217

Performance Period: April 2013-April 2016
Program Manager: Mondira Pant
PI: Asegun Henry (Georgia Institute of Technology)
Co-PIs: Kyriaki Kalaitzidou (Georgia Institute of Technology)

Source: Department of Energy SunShot Concentrated Solar Power (CSP)
Project Title: Robust, Cost-Effective Heat Exchangers for 800°C Operation with Supercritical CO_2
Award Size: $4.8M
Performance Period: November 1 2015-November 1 2018
Program Manager: Joseph Stekli
PI: Kenneth Sandhage (Purdue University)
Co-PIs: Asegun Henry (Georgia Institute of Technology), Devesh Ranjan (Georgia Institute of Technology), Mark Anderson (University of Wisconsin)

Source: National Science Foundation CAREER Award
Project Title: Engineering Heat Conduction Through Alloys and Interfaces
Award Size: $500,000
Performance Period: March 1 2016-March 1 2021
Program Manager: Jose' Lage
PI: Asegun Henry (Georgia Institute of Technology)

Source: Office of Naval Research MURI
Project Title: Leveraging a New Theoretical Paradigm to Enhance Interfacial Thermal Transport in Wide Bandgap Power Electronics
Award Size: $7.5M
Performance Period: 2018-2022
Program Manager: Mark Spector
PI: Samuel Graham (Georgia Institute of Technology)
Co-PIs: Asegun Henry (MIT), Patrick Hopkins (University of Virginia), Alan Doolittle (Georgia Institute of Technology), Asif Khan (University of South Carolina), Tengfei Luo (Notre Dame), Mark Goorsky (UCLA)

Source: Department of Energy SunShot Concentrated Solar Power (CSP): Gen3CSP
Project Title: High Temperature Pumps and Valves for Molten Salt
Award Size: $1.9M
Performance Period: September 1 2018- September 1 2020
Program Manager: Vijaykumar Rajgopal
PI: Asegun Henry (MIT)
Co-PIs: Kenneth Sandhage (Purdue University), Marc Buckler (Flowserve Corp.)

Source: Department of Energy SunShot Concentrated Solar Power (CSP): Gen3CSP
Project Title: Ceramic Castable Cement Tanks and Pipes for Molten Salt
Award Size: $1.7M
Performance Period: September 1 2018- September 1 2020
Program Manager: Andru Prescod
PI: Asegun Henry (MIT)
Co-PIs: Kenneth Sandhage (Purdue University), Kenneth McGowan (Westmoreland Advanced Materials, Inc.)

Source: Department of Energy SunShot Concentrated Solar Power (CSP): Gen3CSP
Project Title: Robust High-Temperature Heat Exchangers
Award Size: $1.9M
Performance Period: September 1 2018 - September 1 2020
Program Manager: Vijaykumar Rajgopal
PI: Kenneth Sandhage (Purdue University)
Co-PIs: Asegun Henry (MIT), Aaron Wildberger (Vacuum Process Engineering, Inc.)

Source: Advanced Research Projects Agency – Energy (ARPA-E)
Project Title: Thermal Energy Grid Storage Using Multi-Junction Photovoltaics
Award Size: $1.5M
Performance Period: February 1 2019 - February 1 2022
Program Manager: Scott Litzelman
PI: Asegun Henry (MIT)
Co-PIs: Evelyn Wang (MIT), Daniel Friedman (NREL), Myles Steiner (NREL)