

Kedar Hippalgaonkar

([Google Scholar](#))

Assistant Professor, Materials Science and Engineering
Nanyang Technological University

Senior Scientist I, Institute of Materials Research and Engineering
Agency for Science, Technology and Research

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Website: <https://kedarh.wixsite.com/nanotransport>
Nationality: Singapore DOB: 16-04-1984

Education

PhD, University of California at Berkeley, CA Aug 2007 - Aug 2013
Department of Mechanical Engineering (GPA: 3.9)

Advisors: **Prof. Arun Majumdar** (2007-2009)
Prof. Xiang Zhang (2012-2013)
Thesis: Using morphology and structure to tune solid-state thermal properties

BSME, Purdue University, West Lafayette, IN Jan 2003 - Dec 2005
Department of Mechanical Engineering (GPA: 3.92)

Graduated with Distinction

Research Advisor: **Prof. Arvind Raman**
Undergraduate Research Thesis: Use of Wavelet Transforms to study Tip Sample Interactions in Tapping Mode Atomic Force Microscopy

Awards

NRF Fellowship	2021
MOE START Award (Inauguration Grant)	2020
Emerging Leader - Journal of Physics D: Applied Physics	2020
Emerging Investigators - Journal of Materials Chemistry	2019
Future Leader for Science and Technology Forum Attendees included Nobel Laureates, World Leaders and Corporate CEOs	Oct 2017
Graduate Student Silver Award Materials Research Society	April 2013
Nominated to represent UC Berkeley -Global Youth Scientist Summit National Research Foundation, Singapore	Jan 2013

Graduate Fellowship National Science Scholarships Agency for Science Technology and Research, Singapore	Aug 2007 - Aug 2012
Summer Undergraduate Research Fellowship Purdue University	May 2005 - Sep 2005
Zmola Undergraduate Teaching Fellowship Purdue University	2005
Top 10 Outstanding Mechanical Engineering Portfolios Purdue University	2004
Singapore Airlines Youth Scholarship 50 selected students from all over India for fully funded GCE-A levels at Hwa Chong Junior College, Singapore	2000-2001

Employment History

Joint Appointment as a Senior Scientist I Director (Accelerated Materials Development Program, S\$25M) Co-Program Manager (Hybrid Thermoelectrics for Ambient Applications, S\$12M) Institute of Materials Research and Engineering, Singapore	Feb 2014 - current
Research Associate Prof. Xiang Zhang Group, UC Berkeley	Jan 2013-Dec 2013
Scientific Consultant Alphabet Energy, Inc. Identified key technology areas and directions for Thermoelectric Applications	Aug 2011 - Mar 2012
Research Internship Institute of Materials Research and Engineering, Singapore Research Topic: Ultra High Vacuum Scanning Thermovoltage Microscopy	Jan 2006 - Apr 2007
Research Internship Singapore Institute of Manufacturing Technology, Singapore Research Topic: Micro-XRD on Ball-Milled TiO ₂ nanospheres	Apr 2004 - Oct 2004

Key Areas of Research

- Designing functional materials, especially for energy applications.
- Solid state physics, 1D (nanowires), 2D (TMDCs) as well as inorganic-organic (hybrid) materials. Materials by design built on creating and utilizing materials data by high-performance computing and high-throughput experiments to synthesize and characterize materials for optical and electronic properties.
- Machine learning and data science for materials discovery.
- Non-equilibrium transport in condensed matter specifically in understanding their thermal, optical and thermoelectric properties.

- Developing tools such as process optimization, design of experiments and materials and process fingerprinting from materials development to device applications.
- AI for materials discovery.

Active Competitive Research Grants

- **Program Director AME-Programmatic Funds, A-Star (Sept 2018-Sept 2023):**
“Accelerated Materials Development for Manufacturing” S\$24.8 million, 5 work packages
 - PI of project hosted at NTU (~S\$1M)
 - PI of project hosted at IMRE, A*STAR (~\$9M)
- **Co-Program Director Pharos Research Program, A-Star (1 Jan 2016-31 Dec 2020):**
“Hybrid Thermoelectric Materials for Ambient Energy Harvesting” ~\$12.4 million, 7 individual projects
 - PI of 1 project hosted at IMRE, A*STAR (~\$2M)
 - Successfully completed under my leadership with multiple follow-up grants secured, >70 research papers as a part of the program, technology know-how created, multiple patents filed
- **NRF Fellowship (expected mid-2021 for 5 years):**
“Thermoelectric Materials by Design: Understanding and Extrapolating from Non-Equilibrium Charge and Heat Transport”
 - PI - NTU (~S\$3M)
- **AME Programmatic Funds (Feb 2021 - Jan 2025)**
“Ferroelectric Aluminum Scandium Nitride (Al_{1-x}Sc_xN) Thin Films and Devices for mm-Wave and Edge Computing”
 - PI - NTU (~S\$400k)
- **Startup Grant (Nov 2019-Oct 2022):**
“Materials by Design”
 - PI - NTU (\$150k)
- **ANR-NRF (expected mid-2021 for 3 years):**
“Rational design of halide perovskite-based quantum dots for photonic applications”
 - Co-PI - NTU (~\$450k)
- **Co-Principal Investigator: Industry Alignment Funds -Prepositioning (Feb 2020 - Feb 2023)**
“The Accelerated Catalysis Development Platform”
 - Co-PI - IMRE (S\$2.1M)
- **Co-Principal Investigator - Industry Project (Nov 2020 - July 2021):**
“Machine Learning Augmented Polymer Formulations Aging Profile Engineering”
 - *confidential* (Multi-National Company) - IMRE (~S\$200k)

Previous Competitive Research Grants

- **Principal Investigator: Pharos, A-Star:**
“Phononics & Thermoelectrics with 2D Materials”,
~S\$1.2 million, Jan 2016 - Dec 2020

- **Principal Investigator - Industry Project:** “Application of Accelerated Materials Development methodologies for enhancement of processes and methods used in Solid State Battery device manufacture
-*confidential*, Jan 2020 - Sep 2020 (Multi-National Company)

Teaching Record

MS0003 - Data Science and Artificial Intelligence, Semester 2, AY2019/20, AY2020/21

MS2018 - Electricity and Magnetism (30% every semester since Semester 2, AY2020)

MSE 7059 - Nanoscale Heat and Energy Transfer

Instructor (full responsibility to design and plan the course, including homeworks and exams) of graduate level course offered in the Materials Science and Engineering Department at Nanyang Technological University (NTU)

Course offered four times: Fall 2015/2016/2017/2018

List of Technology Disclosures

6* Technology Disclosures related to Accelerated Materials Development in IMRE, A*STAR
1 Technology Disclosure related to Inverse Design of Crystals in NTU

**2 being considered for patent application*

Students, postdocs and full-time staff supervised

Project Leader and group supervisor of NTU Materials by Design and IMRE Nanotransport, AMDM group;
Current group size: 14

5 graduate students currently being supervised:

- Ruiming Zhu, Nanyang Technological University
- Ng Hong Kuan, National University of Singapore
- Tan Jin Da, National University of Singapore
- Madhav Krishnan, Nanyang Technological University
- Daniil Bash, National University of Singapore

Main supervisor for 9 full time staff at IMRE:

Dr. Wu Jing, Dr. Pawan Kumar, Dr. Maheswar Repaka, Dr. Jayce Cheng, Dr. Lim Yee Fun, Dr. Xu Yang, Dr. Vijila Chellappan, Dr. Yang Bai

Graduated PhD students:

- Jose Recatala Gomez - Joint PhD (ARAP) between IMRE and University of Southampton graduated Dec 2020
- Yunshan Zhao, Liu Yi - Electrical Engineering at the National University of Singapore, graduated April 2018 ((co-supervisor with Prof. John Thong, ELE, NUS)

Book Chapter and Invited Reviews

Book Chapter: Experimental Studies of thermal transport in nanostructures
In Thermal Transport in Carbon-Based Materials (edited by Gang Zhang),
Kedar Hippalgaonkar, Jae Hun Seol, Dongyan Xu, Deyu Li, 319-357, **Elsevier** (2017)

Invited Review: Toward Accelerated Thermoelectric Materials and Process Discovery,
Jose Recatala-Gomez, Ady Suwardi, Iris Nandhakumar, Anas Abutaha, **Kedar Hippalgaonkar**
ACS Applied Energy Materials (2020)

Invited Review: New Horizons in Thermoelectric Materials: Correlated Electrons, Organic
Transport, Machine Learning, and more
Jeffrey Urban, Akanksha Menon, Zhiting Tian, Anubhav Jain, **Kedar Hippalgaonkar**
Journal of Applied Physics (2019)

Invited Review: Accelerating Materials Development via Automation, Machine Learning, and
High-Performance Computing
Juan Pablo Correa-Baena, **Kedar Hippalgaonkar**, Jeroen van Duren, Shaffiq Jaffer, Vijay R
Chandrasekhar, Vladan Stevanovic, Cyrus Wadia, Supratik Guha, Tonio Buonassisi[#],
Joule-Cell Press, 2, 1-11 (2018)

Invited Review: Perspectives on Thermoelectricity in Layered and Two-Dimensional Materials
Jing Wu, Yabin Chen, Junqiao Wu, **Kedar Hippalgaonkar** 4 (12), 1800248
Advanced Energy Materials (2018)

Invited Review: Two-Dimensional Black Phosphorus for Energy Storage and Thermoelectric
Applications,
Yu Zhang, Yun Zheng, Kun Rui, Huey Hoon Hng, **Kedar Hippalgaonkar**, Jianwei Xu, Wenping
Sun, Jixing Zhu, Qingyu Yan, Wei Huang, 13, 28,
Small (2017)

Invited Review: Designing hybrid architectures for advanced thermoelectric materials,
Yun Zheng, Yubo Luo, Chengfeng Du, Beibei Zhu, Qinghua Liang, Huey Hoon Hng, **Kedar
Hippalgaonkar**, Jianwei Xu, Qingyu Yan, 1, 12, 2457
Materials Chemistry Frontiers (2017)

Some Highlighted (non-refereed) Journal Publications

1. “Metastable 1T'-phase transition metal dichalcogenides with high-critical-temperature
superconductivity”
Q He*, ..., **Kedar Hippalgaonkar**[#], Zhang Hua[#]
accepted in Nature Materials (2021)
2. “How gameplaying and robotics inform applications of machine learning to materials
research”
invited in Nature Reviews Materials (2021)

3. “Graphical Regression enables high electrical conductivity of P3HT-CNT composites”
Daniil Bash*, Cai Yongqiang*, Vijila Chellappan*, ..., Li Qianxiao#, Tonio Buonassisi#, **Kedar Hippalgaonkar#**
under review *Nature Machine Intelligence* (2021)
4. “Electronic transport descriptors for the rapid screening of thermoelectric materials”
Deng Tianqi*, Jose Recatala Gomez*, Masato Ohnishi*, Maheswar Repaka*, ... Yang Shuo-Wang#, **Kedar Hippalgaonkar#**
under review *Chemistry of Materials* (2021)

Refereed Journal Publications

Full publication list at: [Google Scholar](#),

h-index: **23**, Citation count ~**2480**

(# indicates corresponding author, * indicates joint first author)

Refereed Journal Publications

1. “Correlating charge and thermoelectric transport to paracrystallinity in conducting polymers”,
Anas Abutaha*, Pawan Kumar*, Erol Yildirim*, Wen Shi, Yang Shuo-Wang, Wu Gang# and **Kedar Hippalgaonkar#**
Nature Communications **11** (1), 1-8 (2020)
2. “Large enhancement of thermoelectric performance in MoS₂/h-BN heterostructure due to vacancy-induced band hybridization”
Jing Wu*, Yanpeng Liu*, ..., AH Castro Neto, John TL Thong#, Kian Ping Loh#, **Kedar Hippalgaonkar#**
Proceedings of the National Academy of Sciences, **117** (25), 13929-13936 (2020)
3. “Machine learning-assisted cross-domain prediction of ionic conductivity in sodium and lithium-based superionic conductors using facile descriptors”
Y Xu, Y Zong#, **K Hippalgaonkar#**
Journal of Physics Communications **4** (5), 055015 (2020)
4. “EPIC STAR: a reliable and efficient approach for phonon- and impurity-limited charge transport calculations”,
Deng Tianqi, Michael Sullivan, Zicong Wang, **Kedar Hippalgaonkar**, Jian-Sheng Wang#, Shuo-Wang Yang#, Wu Gang#
npj Computational Materials **6** (1), 1-11 (2020)
5. “Toward Accelerated Thermoelectric Materials and Process Discovery”
Jose Recatala-Gomez*, Ady Suwardi*, Iris Nandhakumar#, Anas Abutaha#, **Kedar Hippalgaonkar#**
ACS Applied Energy Materials **3** (3), 2240-2257 (2020)
6. “Origin of High Thermoelectric Performance in Earth-abundant Phosphide-Tetrahedrite”,
Ady Suwardi*, Lei Hu*, ..., Jianwei Xu#, Yun Zheng#, **Kedar Hippalgaonkar#**
ACS Appl. Mater. Interfaces **12**, 8, 9150-9157 (2020)
7. “High-contrast and reversible polymer thermal regulator by structural phase transition”,
R Shreshtha, ..., **Kedar Hippalgaonkar**, Sheng Shen#

Science Advances 5 (12), eaax3777 (2019)

8. “Unprecedented Enhancement of Thermoelectric Power Factor Induced by Pressure in Small-Molecule Organic Semiconductors”
W Shi, T Deng, G Wu, **Kedar Hippalgaonkar**[#], JS Wang, SW Yang[#]
Advanced Materials 31 (36), 1901956 (2019)
9. “Effects of structural phase transition on thermoelectric performance in lithium-intercalated Molybdenum Disulfide (Li_xMoS_2)”,
Ng Hong Kuan*, A Abutaha*, ..., Goki Eda[#], **Kedar Hippalgaonkar**[#]
ACS Applied Materials & Interfaces, 11 (13), 12184 (2019)
10. “Employing a Bifunctional Molybdate Precursor to Grow the Highly Crystalline MoS_2 for High-Performance Field-Effect Transistors”
T Shi Wun, ..., **Kedar Hippalgaonkar**, Chi Dongzhi[#]
ACS Applied Materials & Interfaces, 11 (15), 14239 (2019)
11. “2D Single Layer π -Conjugated Nickel Bis (dithiolene) Complex: A Good-Electron-Poor-Phonon Thermoelectric Material”,
Tianqi Deng, ..., **Kedar Hippalgaonkar**, ..., Gang Wu[#]
Advanced Electronic Materials, 5(4), 1800892 (2019)
12. “Polymer morphology and interfacial charge transfer dominates over energy-dependent scattering in organic-inorganic hybrid thermoelectrics”,
Pawan Kumar*, Edmond Zaia*, ..., Jeffrey Urban[#], **Kedar Hippalgaonkar**[#]
Nature Communications, 9 (1), 5347 (2018)
13. “Full-Parameter Omnidirectional Thermal Metadevices of Anisotropic Geometry”
Tiancheng Han, ..., **Kedar Hippalgaonkar**, Cheng Wei Qiu[#]
Advanced Materials, 30 (49), 1804019 (2018)
14. “Probing physical origin of anisotropic thermal transport in black phosphorus nanoribbons”
Yunshan Zhao, ..., **Kedar Hippalgaonkar**, ..., John Thong[#]
Advanced Materials, 30(50), 1804928 (2018)
15. “Crystalline polymer nanofibers with ultra-high strength and thermal conductivity”,
Ramesh Shreshta, ... K. **Kedar Hippalgaonkar**, Maarten P de Boer[#], Sheng Shen[#]
Nature Communications, 9, 1664 (2018)
16. “n-Type SnSe_2 Oriented-Nanoplate-Based Pellets for High Thermoelectric Performance”,
Yubo Luo, ..., **Kedar Hippalgaonkar**, ..., Yan Qingyu[#], Mercouri Kanatzidis[#]
Advanced Energy Materials 8 (8), 1702167 (2018)
17. “Enhanced Thermoelectric Performance of PEDOT: PSS Films by Sequential Post-Treatment with Formamide”,
Aung Ko Ko Kyaw[#], ..., **Kedar Hippalgaonkar**, Xu Jianwei[#],
Macromolecular Materials and Engineering, 303, 2 (2018)
18. “Poly (nickel-ethylenetetrathiolate) and Its Analogs: Theoretical Prediction of High-Performance Doping-Free Thermoelectric Polymers”
Wen Shi, ..., **Kedar Hippalgaonkar**, ..., Shuo-Wang Yang[#]

Journal of the American Chemical Society 140 (41), 13200 (2018)

19. "Lithography-free resistance thermometry based technique to accurately measure Seebeck coefficient and electrical conductivity for organic and inorganic thin films", Pawan Kumar*, DV Maheswar Repaka*, **Kedar Hippalgaonkar**[#]
Review of Scientific Instruments, 88 (12), 125112 (2017)
20. "Ultralow thermal conductivity of single crystalline porous silicon nanowires", Yunshan Zhao, ... Baowen Li[#], John TL Thong[#], **Kedar Hippalgaonkar**[#]
Advanced Functional Materials, 27, 40, 1702824 (2017)
21. "Thermal Conductance of the 2D MoS₂/h-BN and graphene/h-BN Interfaces", Yi Liu, ... John TL Thong[#], Cheng-Wei Qiu[#], **Kedar Hippalgaonkar**[#]
Scientific Reports 7, 43886 (2017)
22. "Effect of dimensionality on thermoelectric powerfactor of MoS₂", Ng Hong Kuan, Chi Dongzhi, **Kedar Hippalgaonkar**[#]
Journal of Applied Physics 121 (20), 204303 (2017)
23. "High Thermoelectric Powerfactor in 2D Crystals of MoS₂", **Kedar Hippalgaonkar**^{*}, Ying Wang^{*}, Yu Ye^{*}, Diana Y Qiu, Hanyu Zhu, Yuan Wang, Joel Moore, Steven G Louie, Xiang Zhang[#],
Physical Review B 95 (11), 115407 (2017)
24. "Anomalously low electronic thermal conductivity in metallic vanadium dioxide", Sangwook Lee^{*}, **Kedar Hippalgaonkar**^{*}, Fan Yang^{*}, Jiawang Hong^{*}, Changhyun Ko, Joonki Suh, Kai Liu, Kevin Wang, Jeffrey J. Urban, Xiang Zhang, Chris Dames, Sean A. Hartnoll, Olivier Delaire[#], Junqiao Wu[#]
Science 355, 6323, 371 (2017) featured in [LBL News](#), [Forbes](#), [Indian Express](#), [Materials Today](#), [Today Online](#)
25. "Anisotropic in-plane thermal conductivity of black phosphorus nanoribbons at temperatures higher than 100K", Sangwook Lee, Fan Yang, Joonki Suh, Sijie Yang, Yeonbae Lee, Hwan Sung Choe, Aslihan Suslu, Yabin Chen, Changhyun Ko, Joonsuk Park, Kai Liu, Jingbo Li, **Kedar Hippalgaonkar**, Sefaattin Tongay, Jeffrey Urban, Junqiao Wu,
Nature Communications, 6, 8573 (2015)
26. "Tunable Thermal Transport in Polysilsesquioxane (PSQ) Hybrid", Pengfei Li, Sui Yang, Teng Zhang, Ramesh Shrestha, **Kedar Hippalgaonkar**[#], Tengfei Luo, Xiang Zhang, Sheng Shen[#],
Scientific Reports, 6, 21452 (2016)
27. "Temperature Gated Thermal Rectifier for Active Heat Flow Control", Jia Zhu^{*}, **Kedar Hippalgaonkar**^{*}, Sheng Shen, Yohannes Abate, Kevin Wang, Sangwook Lee, Xiaobo Yin, Junqiao Wu, Arun Majumdar[#], Xiang Zhang[#],
Nano letters 14 (8), 4867-4872 (2014)
28. "Axially Engineered Metal-Insulator Phase Transition by Graded Doping VO₂ Nanowires", Sangwook Lee; Chun Cheng; Hua Guo; **Kedar Hippalgaonkar**; Kevin Wang; Joonki Suh, Kai Liu, Junqiao Wu[#],

JACS, 135(12), 4850, (2013)

29. “Quantifying Surface Roughness Effects on Phonon Transport in Silicon Nanowires”, Jong Woo Lim*, **Kedar Hippalgaonkar***, Sean Andrews, Arun Majumdar#, Peidong Yang#, **Nano Letters**, 12(5), 2475, (2012)
30. “Observation of Anisotropy in Thermal Conductivity of Individual Single-crystalline Bi Nanowires”, Jong Wook Roh*, **Kedar Hippalgaonkar***, Jin hee Ham, Renkun Chen, Ming Zhi Li, Peter Ercius, Woochul Kim, Arun Majumdar#, Wooyoung Lee#, **ACS Nano** 5, 3954 (2011)
31. “Fabrication of microdevices with integrated nanowires for investigating low-dimensional phonon transport”; **Kedar Hippalgaonkar***, Baoling Huang*, Renkun Chen*, Karma Sawyer, Arun Majumdar#, **Nano Letters**, 10(11), 4341, (2010)

**denotes equal contribution, #denotes corresponding author*

1 Keynote, ~20 Invited talks at Conferences and 4 Department Seminars

Scheduled Invited Talks in 2021:

at NSF-JST Joint Workshop, CHAOS CA2DM Seminar, MRS Fall 2020 (2 Symposia on Accelerated Materials Development), Workshop on Thermal and Charge Transport across Flexible Nano-Interfaces

“Organic and Hybrid Thermoelectric Materials”, MRS Fall 2019, Boston (*Invited Talk* November 2019)

“Thermoelectrics Materials by Design - Big Data and Machine Learning”, MRM 2019, Yokohama, Japan (*Invited Talk* December 2019)

“Data Driven Approach to Thermoelectrics Materials Discovery - Machine Learning and High Throughput Computations”, IUMRS-ICA, Perth (*Keynote Talk* September 2019)

“Data-driven approaches to Thermoelectrics Materials Discovery”, MCARE, Jeju Island, Korea (*Invited Talk* August 2019)

“High-Throughput Thermal Conductivity Predictions and Spatial-Temporal Imaging”, MRS Spring Meeting, Phoenix (*Invited Talk* April 2019)

“Materials by design: Machine learning and data-driven discovery”, Condensed Matter Physics, School of Physical and Mathematical Sciences (SPMS), Nanyang Technological University (*Invited Departmental Seminar* February 2019)

“Bayesian Inference enabled Thermoelectric Materials Descriptors”, The Asian Conference on Thermoelectrics (ACT3) & Micro & Nanoscale Heat Transfer and Energy Workshop, Taipei, Taiwan (*Invited Talk* October 2018)

“Thermoelectrics for harvesting body heat in wearable devices: optimizing the system-level problem” MRS Fall Meeting, Boston (*Invited Talk* November 2018)

Clean Energy Materials Innovation Challenge Innovation Challenge Industry Meeting, Toronto, Canada (*Invited Attendee*: May 2018)

“Phonon Engineering in Single Crystal Silicon Nanowires”, **Kedar Hippalgaonkar**, PHONONS, Nanjing, China (*Invited Talk* May 2018)

“Thermal and Thermoelectric Physics in 2D MoS₂”, **Kedar Hippalgaonkar**, Recent Progress in Graphene Research Singapore (*Invited Talk* September 2017)

“Low electronic thermal conductivity and violation of Wiedemann-Franz Law in correlated metallic vanadium dioxide”, ***Kedar Hippalgaonkar**, Sangwook Lee, Fan Yang, Jiawang Hong, Sean Hartnoll, Olivier Delaire, Junqiao Wu, 15th IUMRS-ICAM, Kyoto University (*Invited Talk* June 2017)

“Inorganic-Organic Hybrid Thermoelectrics for Ambient Applications”, **Kedar Hippalgaonkar**, 8th International Conference on New and Renewable Energy (ICNRE), Kyungpook University, South Korea (*Invited Talk* April 2017)

“Electron and Phonon Transport in 1D and 2D Materials Towards Applications in Thermoelectrics”, **Kedar Hippalgaonkar**, Chemical Engineering and Materials Science, University of Southern California (*Invited Department Seminar* April 2017)

“Thermal and Thermoelectric Transport in inorganic-organic hybrid materials”, **Kedar Hippalgaonkar**, Materials Research Society (MRS) Fall Meeting, Boston (*Invited Talk* 2016)

“Thermoelectric Physics in 2D Materials”, **Kedar Hippalgaonkar**, IUMRS-ICYRAM, Bangalore, India (*Invited Talk* December 2016)

“Thermoelectric Powerfactor and Interface Thermal Resistance in 2D MoS₂”, **Kedar Hippalgaonkar**, Center for Advanced 2D Materials (CA2DM) and Physics Department, National University of Singapore (*Invited Department Seminar* 2015)

“Temperature Gated Solid-State Thermal Rectifier”; **Kedar Hippalgaonkar**, Physics Department, California State University, Long Beach (*Invited Departmental Seminar* 2013)

“Using Morphology and Structure to Tune Solid-state Thermal Properties”; **Kedar Hippalgaonkar**, Jongwoo Lim, Peter Ercius, Jia Zhu, Renkun Chen, Xiang Zhang, Peidong Yang, Arun Majumdar, Materials Research Society (MRS) Spring Meeting, San Francisco - (*Graduate Student Award Symposium* 2013)

Contributed talks at Conferences

“Inverse Design of Thermoelectric Materials—Results and the Case for a Database of Charge Scattering Times”; **Kedar Hippalgaonkar**, Materials Research Society (MRS) Spring Meeting, Phoenix (2019)

“Anomalous sign change in the Seebeck coefficient of 2D MoS₂”; **Kedar Hippalgaonkar**, Materials Research Society (MRS) Fall Meeting, Boston (2017)

“High Thermoelectric Powerfactor in Single and Few-Layer MoS₂”; **Kedar Hippalgaonkar**, Materials Research Society (MRS) Spring Meeting, San Francisco (2015)

“Ultralow thermal conductivity in Mesoporous Silicon Nanowires”; **Kedar Hippalgaonkar**, Materials Research Society (MRS) Spring Meeting, San Francisco (2015)

“Structure-Thermal Property Relations using Novel Microfabricated Platforms”; **Kedar Hippalgaonkar**, Jongwoo Lim, Jia Zhu, Peter Ercius, Peidong Yang, Arun Majumdar, American Society of Mechanical Engineers (ASME) International Mechanical Engineering Congress and Exposition (IMECE), Texas - (*Invited Talk* 2012)

“Effect of Morphology on Thermal Conductivity of Silicon Nanowires”; **Kedar Hippalgaonkar**, Jongwoo Lim, Peter Ercius, Peidong Yang, Arun Majumdar, PHONONS 2012, Michigan - (Presentation 2012)

“Effect of Morphology and Roughness on Thermal Conductivity of Silicon Nanowires”; **Kedar Hippalgaonkar**, Jongwoo Lim, Peter Ercius, Ming Zhi Li, Renkun Chen, Peidong Yang, Arun Majumdar, 3rd Micro and Nano Heat and Mass Transfer Conference (MNHMT), Atlanta - (Presentation 2012)

“Morphology and Thermal Conductivity in Silicon Nanowires”; **Kedar Hippalgaonkar**, Jongwoo Lim, Ming Zhi Li, Peter Ercius, Renkun Chen, Peidong Yang and Arun Majumdar, Materials Research Society, Boston - (Presentation 2011)

“Phonon Transport in Silicon Nanowires for Thermoelectric Applications”; Renkun Chen, **Kedar Hippalgaonkar**, Baoling Huang, Karma Sawyer, Jinyao Tang, Peidong Yang, Arun Majumdar, Materials Research Society, San Francisco (*Invited Talk* 2011)

“Quantifying the Effect of Surface Roughness on Phonon Transport in Silicon Nanowires”; Jongwoo Lim, **Kedar Hippalgaonkar**, Arun Majumdar, Peidong Yang, San Francisco - (Presentation 2011)

“Correlated Phonon Scattering in Mesoscopic Silicon Nanowires”; **Kedar Hippalgaonkar**, Renkun Chen, Arun Majumdar, Frontiers in Matter Waves and Optics (FOMO), Obergurgl, Austria - (Poster 2011)

“Ultra-low thermal conductivity in quasi-one dimensional Silicon Nanowires”; **Kedar Hippalgaonkar**, Jinyao Tang, Peter Ercius, Karma Sawyer, Baoling Huang, Renkun Chen, Peidong Yang, Arun Majumdar, International Heat Transfer Conference (IHTC), Washington DC - (Accepted for Proceedings 2010)

“Phonon Transport in one-dimensional Silicon Nanowires”; **Kedar Hippalgaonkar**, Jinyao Tang, Renkun Chen, Peidong Yang, Arun Majumdar, American Physical Society, Oregon - (Presentation 2010)

“Ultralow thermal conductivity in Electrolessly Etched Silicon Nanowires”; **Kedar Hippalgaonkar**, Renkun Chen, Bair Budaev, Jinyao Tang, Sean Andrews, Pdraig Murphy, Subroto Mukherjee, Joel Moore, Peidong Yang, Arun Majumdar, American Physical Society, Pittsburgh - (Presentation 2009)

“Investigating Phonon Transport using Microdevices with Integrated Silicon Nanowires”, Karma Sawyer, Renkun Chen, Baoling Huang, **Kedar Hippalgaonkar**, Ming Chang Lu, Materials Research Society, Boston - (Presentation 2009)

Professional Activities

- **Symposium Organizer**, Symposium MT-03, Automated and Data-Driven Approaches to Materials Development—Bridging the Gap Between Theory and Industry, Materials Research Society, Fall Meeting, November 2019/November 2020, Boston
- **Workshop Co-Organizer, Accelerating the Development of Functional Energy Materials and Novel Structural Materials**, with Prof. Tonio Buonassisi (MIT), Prof. Ted Sargent (University of Toronto), Dr. Shaffiq Jaffer (TOTAL), Prof. Alan Aspuru-Guzik (Harvard University), May 2018, Toronto
- **Symposium Organizer**, Symposium Q/DD—Advanced Materials for Thermoelectrics, International Conference on Materials for Advanced Technologies, June 2017/2019, Singapore
- **Symposium Organizer**, Symposium NM2—Nanoscale heat transport: from fundamentals to devices, Materials Research Society, Fall Meeting, April 2017, Phoenix
- **Session Chair**, Symposium M10, Materials Research Society, Spring Meeting, April 2015, San Francisco
- **Session Chair**, Materials for Thermal Management and Thermoelectrics, Molecular Materials Meeting (M3), August 2015, Singapore
- **Session Chair**, Symposium V2, Materials Research Society, Spring Meeting, April 2013, San Francisco
- Reviewer for *Physical Review Letters*, *Physical Review B*, *Nature Nanotechnology*, *Nature Communications*, *Nano Letters*, *ACS Nano*, *Journal of Applied Physics*, *ACS Materials and Interfaces*, *Small*, *Nanoscale*, *Scientific Reports*, *Applied Physics Letters*, *International Journal of Heat and Mass Transfer*, *Macromolecules*, *Journal of Electronic Materials*
- Member of Materials Research Society