

Chris Dames

Department Chair
Chang-Lin Tien Professor
Department of Mechanical Engineering
University of California, Berkeley

Mechanical Faculty Scientist/Engineer
Thermal Energy Group
Energy Technologies Area
Lawrence Berkeley National Laboratory

Research Interests

Fundamental studies of heat transfer and energy conversion, using theoretical and experimental methods.

Education

- PhD, 2006 *Massachusetts Institute of Technology* Cambridge, MA
Mechanical Engineering.
Major: Heat transfer. Minors: Fluid mechanics, Solid state physics.
Thesis: "Thermal properties of nanowires and nanotubes: modeling and experiments."
Thesis Adviser: Prof. Gang Chen.
- MS, 2001 *University of California, Berkeley* Berkeley, CA
Mechanical Engineering.
M.S. Project: "Application of deformable diffraction gratings for parallel detection of bio-molecules." M. S. Adviser: Prof. Arun Majumdar.
- BS, 1998 *University of California, Berkeley* Berkeley, CA
Mechanical Engineering.
(*University of Auckland*, one year study abroad) Auckland, New Zealand
Foreign exchange student in the Department of Mechanical Engineering, 2/97 - 11/97.

Appointments & Work Experience

- 7/2021 - present Chair, Department of Mechanical Engineering, UC Berkeley
- 7/2018 - present Professor, Dept. of Mechanical Engineering, UC Berkeley
- 7/2016- 12/2018 Vice Chair for Graduate Matters, Dept. of Mechanical Engineering, UC Berkeley
- 7/2015 - 6/2016 Vice Chair of Instruction, Dept. of Mechanical Engineering, UC Berkeley
- 12/2013 - present Faculty Staff Scientist/Engineer, Lawrence Berkeley National Laboratory
- 7/2013 - 6/2018 Associate Professor (tenured), Dept. of Mechanical Engineering, UC Berkeley
- 7/2011 - 6/2013 Acting Associate Professor, Dept. of Mechanical Engineering, UC Berkeley
- 7/2011 - present Adjunct Faculty, Department of Mechanical Engineering, UC Riverside
- 9/2006 - 6/2011 Assistant Professor, Department of Mechanical Engineering, UC Riverside
- 6/2006 - 8/2006 Postdoctoral Scholar, Department of Mechanical Engineering, Massachusetts Institute of Technology (Adviser: Prof. Gang Chen)
- 6/1998 - 6/1999 Research Engineer, Solo Energy Corp., Alameda, CA

Awards & Honors

- 2025 - Chang-Lin Tien Endowed Chair in Mechanical Engineering, UC Berkeley
- 2020 - 2025 Howard Penn Brown Endowed Chair in Mechanical Engineering, UC Berkeley
- 2021 UCB Faculty Leadership Academy (Spring).
- 2018 UCB Mechanical Engineering Department award for “Excellence in the Instruction of Graduate-Level Courses”
- 2017 UCB Mechanical Engineering Department award for “Excellence in the Instruction of Undergraduate-Level Courses,” for Spring + Fall 2016
- 2015 Viskanta Fellowship and heat transfer lecture at Purdue University, “Conduction as Radiation: Exploiting the Phonon-Photon Analogy in Nanoscale Heat Transfer”
- 2011 - 2016 NSF CAREER Award
- 2009 - 2012 DARPA Young Faculty Award
- 2008 - 2009 UC Regents Faculty Fellowship
- 2003 Best presentation award, Mat. Res. Soc. Fall Meeting, Thermoelectrics Symposium
- 2001 - 2002 MIT Presidential Fellowship
- 1994 - 1998 UC Berkeley Chancellor's Scholarship

Publications

Refereed Journal Publications

- 92. CC Lin, TJ Park, A Bhat, TY Kim, D Lou, D Kang, Z Tian, J Kim, S Pamula, J Kim, B Hanrahan, C Dames, and LW Martin, “Nanoscale Compositional and Strain Gradients Enable High-speed and Amplitude-resolved Pyroelectric Sensing”, *Advanced Materials* , <https://doi.org/10.1002/adma.73909> (2026).
- 91. SM Chen, S Kaur, and C Dames, “Simple Device Modification Simultaneously Enhances Indoor Passive Evaporative Cooling Power and Duration”, *Cell Reports Physical Science* , <https://doi.org/10.1016/j.xcrp.2026.103386> (2026).
- 90. M Hao, M Li, Z Zou, H Kuo, A Bhat, X Li, J Liu, Y Wei, S Xu, Y Sun, H Ding, GJ Snyder, W Zhong, and C Dames, “Carpentry inspired interfaces for improved electronic and thermal transport,” *Nature Electronics*, <https://doi.org/10.1038/s41928-026-01622-3> (May 2026). MH, WZ, and CD joint corresponding authors.
- 89. SP Alliston and C Dames, “A needle-form 3-omega sensor for thermal conductivity measurements of soft materials and biological tissues,” *Scientific Reports* 15, 42670 (2025).
- 88. A Bhat and C Dames, “An exact closed-form solution for the 2ω method for an arbitrarily anisotropic substrate”, *ASME Journal of Heat and Mass Transfer* 147, 104502 (2025).
- 87. B Zhang, D Chalise, Y Zeng, F Shen, M Tucker, S Kaur, C Dames, and R Prasher, “Solid-state batteries enabled by ultra-high-frequency self-heating”, *Joule* 9, 101973 (2025).
- 86. SP Alliston, C Dames, and M J Powell-Palm, “A size-dependent ideal solution model for liquid–solid phase equilibria prediction in aqueous organic solutions,” *PNAS* 122, e2415843122 (2025).
- 85. C-C Lin, Y Hu, J Kim, D Lou, A Bhat, P Kavle, T Y Kim, C Dames, S Liu, and L W Martin, “Domain-Wall Enhanced Pyroelectricity”, *Physical Review X* 1, 011063 (2025).
- 84. L Tang, L M Corrêa, M Francoeur, and C Dames, “Corner- and edge-mode enhancement of near-field radiative heat transfer”, *Nature* 629, 67–73 (2024).

83. L Tang and C Dames, "Effects of thermal annealing on thermal conductivity of LPCVD silicon carbide thin films", *Journal of Applied Physics* 134, 165101 (2023)
82. Y Zeng, B Zhang, Y Fu, F Shen, Q Zheng, D Chalise, R Miao, S Kaur, SD Lubner, MC Tucker, V Battaglia, C Dames, and RS Prasher, "Extreme fast charging of commercial Li-ion batteries via combined thermal switching and self-heating approaches", *Nature Communications* 14 (1), 3229 (2023).
81. T Gilbert, AK Menon, C Dames, R Prasher, "Heat source and application-dependent leveled cost of decarbonized heat", *Joule* 7 (1), 128-149 (2023). Joint corresp. auth.
80. Akanksha K Menon, Mingxin Jia, Sumanjeet Kaur, Chris Dames, Ravi S Prasher, "Distributed desalination using solar energy: A techno-economic framework to decarbonize nontraditional water treatment," *iScience* 26, 105966 (2023). Joint corresp. auth.
79. T Hori, C Dames, "Analytical models for phonon mean free path in polycrystalline nanostructures based on mean square displacement", *Journal of Applied Physics* 132, 135104 (2022)
78. R Miao, R Kishore, S Kaur, R Prasher, and C Dames, "A Non-Volatile Thermal Switch for Building Energy Savings", *Cell Reports Physical Science* 3, 100960 (2022)
77. Q Zheng, D Chalise, M Jia, Y Zeng, M Zeng, M Saeidi-Javash, A NM Tanvir, G Uahengo Jr, S Kaur, JE Garay, T Luo, Y Zhang, RS Prasher, and C Dames, "Structured illumination with thermal imaging (SI-TI): A dynamically reconfigurable metrology for parallelized thermal transport characterization", *Applied Physics Reviews* 9, 021411 (2022).
76. X Wu, L Tang, CL Hardin, C Dames, Y Kodera, JE Garay, "Thermal conductivity and management in laser gain materials: A nano/microstructural perspective," *Journal of Applied Physics* 131, 020902 (2022)
75. J Lau, JK Papp, D Lilley, P Khomein, S Kaur, C Dames, G Liu, R Prasher, "Dynamic tunability of phase-change material transition temperatures using ions for thermal energy storage", *Cell Reports Physical Science* 2 (10), 100613
74. MA Duarte, V Mishra, C Dames, Y Kodera, JE Garay, "Processing and Thermal Conductivity of Bulk Nanocrystalline Aluminum Nitride", *Materials* 14 (19), 5565.
73. Y Peng, W Li, B Liu, W Jin, J Schaadt, J Tang, G Zhou, G Wang, J Zhou, C Zhang, Y Zhu, W Huang, T Wu, K E Goodson, C Dames, R Prasher, S Fan, and Y Cui, "Integrated cooling (i-Cool) textile of heat conduction and sweat transportation for personal perspiration management", *Nature Communications* 12, 1 (2021)
72. M Westwood, X Zhao, Z Chen, C Dames, "4-fold enhancement in energy scavenging from fluctuating thermal resources using a temperature-doubler circuit". *Joule* 5, 2223-2240 (2021).
71. JD Wilbur, C Dames, "Frequency regime dependent figures of merit and optimization guidelines for maximizing pyroelectric power output", *Applied Energy* 293, 116868 (2021).
70. D Lilley, J Lau, C Dames, S Kaur, R Prasher, "Impact of size and thermal gradient on supercooling of phase change materials for thermal energy storage", *Applied Energy* 290, 116635 (2021).
69. H Kang, C Dames, JJ Urban, "Melting Point Depression and Phase Identification of Sugar Alcohols Encapsulated in ZIF Nanopores", *The Journal of Physical Chemistry C* 125 (18), 10001-10010 (2021)
68. L Tang, C Dames, "Anisotropic thermal conductivity tensor measurements using beam-offset frequency domain thermoreflectance (BO-FDTR) for materials lacking in-plane symmetry," *International Journal of Heat and Mass Transfer* 164, 120600 (2021)
67. Q Zheng, M Hao, R Miao, J Schaadt, C Dames, "Advances in thermal conductivity for energy applications: a review", *Progress in Energy* 3 012002 (2021)
66. V. Mishra, J. E. Garay, and C. Dames, "Leveraging Anisotropy for Coupled Optimization of Thermal Transport and Light Transmission in Micro-Structured Materials for High-Power Laser Applications". *Advanced Theory and Simulations*. 3, 2000036. doi:10.1002/adts.202000036 (2020).

65. AD Pickel, C Dames, "Size and shape effects on the measured peak temperatures of nanoscale hotspots", *Journal of Applied Physics* 128, 045103 (2020).
64. K. Tang, X. Wang, K. Dong, Y. Li, J. Li, B. Sun, X. Zhang, C. Dames, C. Qiu, J. Yao and J. Wu, "A Thermal Radiation Modulation Platform by Emissivity Engineering with Graded Metal-Insulator Transition", *Advanced Materials* 2020, 1907071. <https://doi.org/10.1002/adma.201907071> (2020).
63. C Liu, W Si, C Wu, J Yang, Y Chen, C Dames, "The ignored effects of vibrational entropy and electrocaloric effect in PbTiO₃ and PbZr_{0.5}Ti_{0.5}O₃ as studied through first-principles calculation", *Acta Materialia* 191, 221 (2020). <https://doi.org/10.1016/j.actamat.2020.03.059>
62. P Yuan, JY Wu, DF Ogletree, JJ Urban, C Dames, Y Ma, "Adapting the electron beam from SEM as a quantitative heating source for nanoscale thermal metrology", *Nano Letters* 20, 3019 (2020) [CD & YM: joint corresp. authors].
61. Q Zheng, S Kaur, C Dames, RS Prasher, "Analysis and improvement of the hot disk transient plane source method for low thermal conductivity materials", *International Journal of Heat and Mass Transfer* 151, 119331 (2020) [CD & RSP: joint corresp. authors].
60. W. Hodges and C. Dames, "A multi-frequency 3ω method for tracking moving phase boundaries," *Review of Scientific Instruments* 90, 094903 (2019).
59. G. Velarde, S. Pandya, L. Zhang, D. Garcia, E. Lupi, R. Gao, J.D. Wilbur, C. Dames, and L.W. Martin, "Quantifying Intrinsic, Extrinsic, Dielectric, and Secondary Pyroelectric Responses in PbZr_{1-x}Ti_xO₃ Thin Films," *ACS Applied Materials and Interfaces* 11, 35146-35154 (2019).
58. O. Kwon, G. Wehmeyer, and C. Dames, "Modified ballistic-diffusive equations for obtaining phonon mean free path spectrum from ballistic thermal resistance: II. Derivation of Integral Equation Based on Ballistic Thermal Resistance," *Nanoscale and Microscale Thermophysical Engineering* (2019).
57. O. Kwon, G. Wehmeyer, and C. Dames, "Modified ballistic-diffusive equations for obtaining phonon mean free path spectrum from ballistic thermal resistance: I. Introduction and validation of the equations," *Nanoscale and Microscale Thermophysical Engineering* 3, 259-273 (2019).
56. H.S. Choe, R. Prabhakar, G. Wehmeyer, F.I. Allen, W. Lee, L. Jin, Y. Li, P. Yang, C. Qiu, C. Dames, M. Scott, A. Minor, J. Bahk, and J. Wu, "Ion Write Microthermotics: Programming Thermal Metamaterials at the Microscale," *Nano Letters* 19, 3830-3837 (2019).
55. C. H. Liu, Y. F. Chen, and C. Dames, "Electric-Field-Controlled Thermal Switch in Ferroelectric Materials Using First-Principles Calculations and Domain-Wall Engineering". *Physical Review Applied* 11, 044002 (2019).
54. X. Xu, Q. Q. Zhang, M. L. Hao, Y. Hu, Z. Y. Lin, L. L. Peng, T. Wang, X. X. Ren, C. Wang, Z. P. Zhao, C. Z. Wan, H. L. Fei, L. Wang, J. Zhu, H. T. Sun, W. L. Chen, T. Du, B. W. Deng, G. J. Cheng, I. Shakir, C. Dames, T. S. Fisher, X. Zhang, H. Li, Y. Huang, and X. F. Duan, "Double-negative-index ceramic aerogels for thermal superinsulation". *Science* 363, 723 (2019).
53. S. Pandya, G. A. Velarde, R. Gao, A. S. Everhardt, J. D. Wilbur, R. J. Xu, J. T. Maher, J. C. Agar, C. Dames, and L. W. Martin, "Understanding the Role of Ferroelastic Domains on the Pyroelectric and Electrocaloric Effects in Ferroelectric Thin Films". *Advanced Materials* 31, 1803312 (2019).
52. G. Wehmeyer, K. Bustillo, A.M. Minor, and C. Dames. "Measuring temperature-dependent thermal diffuse scattering using scanning transmission electron microscopy," *Applied Physics Letters* 113, 253101 (2018)
51. M. I. Khan, S. D. Lubner, D. F. Ogletree, and C. Dames, "Temperature dependence of secondary electron emission: A new route to nanoscale temperature measurement using scanning electron microscopy". *Journal of Applied Physics* 124, 195104 (2018).
50. A.D. Pickel, A. Teitelboim, E.M. Chan, N.J. Borys, P.J. Schuck, and C. Dames, "Apparent self-heating of individual upconverting nanoparticle thermometers," *Nature Communications* 9, 4907 (2018).

49. M. Hao, J. Li, S. Park, S. Moura, and C. Dames, "Efficient thermal management of Li-ion batteries with a passive interfacial thermal regulator based on a shape memory alloy," *Nature Energy* 3, 899-906 (2018).
48. C. Liu, V. Mishra, Y. Chen, and C. Dames, "Large Thermal Conductivity Switch Ratio in Barium Titanate Under Electric Field through First-Principles Calculation," *Advanced Theory and Simulations*, 1800098 (2018).
47. G. Wehmeyer, A. D. Pickel, and C. Dames, "Onsager reciprocity relation for ballistic phonon heat transport in anisotropic thin films of arbitrary orientation," *Physical Review B* 98, 014304 (2018).
46. S. Pandya, J. Wilbur, J. Kim, R. Gao, A. Dasgupta, C. Dames, and L.W. Martin, "Pyroelectric energy conversion with large energy and power density in relaxor ferroelectric thin films," *Nature Materials* 17, 432–438 (2018). doi:10.1038/s41563-018-0059-8
45. T. Li, A.D. Pickel, Y. Yao, Y. Chen, Y. Zeng, S.D. Lacey, Y. Li, Y. Wang, J. Dai, Y. Wang, B. Yang, M.S. Fuhrer, A. Marconnet, C. Dames, D.H. Drew, and L. Hu, "Thermoelectric properties and performance of flexible reduced graphene oxide films up to 3000 K," *Nature Energy* 3, 148-156 (2018).
44. G. Wehmeyer, T. Yabuki, C. Monachon, J. Wu, and C. Dames, "Thermal diodes, regulators, and switches: Physical mechanisms and potential applications," *Applied Physics Reviews* 4, 041304 (2017).
43. S. Pandya, J. D. Wilbur, B. Bhatia, A. R. Damodaran, C. Monachon, A. Dasgupta, W. P. King, C. Dames, and L. W. Martin, "Direct Measurement of Pyroelectric and Electrocaloric Effects in Thin Films". *Physical Review Applied* 7, 034025 (2017).
42. S. Lee, K. Hippalgaonakar, F. Yang, J. Hong, C. Ko, J. Suh, K. Liu, K. Wang, J.J. Urban, X. Zhang, C. Dames, S.A. Hartnoll, O. Delaire, and J. Wu, "Anomalously low electronic thermal conductivity in metallic vanadium dioxide," *Science* 355, 371 (2017).
41. J. Lee, W. Lee, G. Wehmeyer, S. Dhuey, D. Olynick, S. Cabrini, C. Dames, J. J. Urban, and P. Yang, "Investigation of phonon coherence and backscattering using silicon nanomeshes". *Nature Communications* 8, 14054 (2017).
40. Z. Wei, G. Wehmeyer, C. Dames, and Y. Chen, "Geometric tuning of thermal conductivity in three-dimensional anisotropic phononic crystals," *Nanoscale* DOI: 10.1039/C6NR04199J (2016).
39. C. Monachon, L. Weber, and C. Dames, "Thermal Boundary Conductance: A materials science perspective," *Annual Review of Materials Research* 46, 433 (2016).
38. J. D. Kilbane, E. M. Chan, C. Monachon, N. J. Borys, E. S. Levy, A. D. Pickel, J. J. Urban, P. J. Schuck, and C. Dames, "Far-field optical nanothermometry using individual sub-50 nm upconverting nanoparticles". *Nanoscale* 8, 11611-11616 (2016).
37. Wenzhong Bao*, Andrea Pickel*, Qing Zhang, Yannan Chen, Yonggang Yao, Jiayu Wan, Kun Fu, Yibo Wang, Jiaqi Dai, Hongli Zhu, Dennis Drew, Michael Fuhrer, Chris Dames*, and Liangbing Hu,* "Flexible, High Temperature, Planar Lighting with Large Scale Printable Nanocarbon Paper," *Advanced Materials* 28, 4684 (2016).
36. H. Natesan, W. Hodges, J. Choi, S. Lubner, C. Dames, and J. Bischof, "A Micro-Thermal Sensor for Focal Therapy Applications". *Scientific Reports* 6, 21395 (2016).
35. C. Dames, "Cost optimization of thermoelectric materials for power generation: The case for ZT at (almost) any cost," invited Viewpoint article for *Scripta Materialia* 111, 16 (2016).
34. Z. Chen and C. Dames, "An anisotropic model for the minimum thermal conductivity". *Applied Physics Letters* 107, 193104 (2015).
33. J. Suh, K. M. Yu, D. Fu, X. Liu, F. Yang, J. Fan, D. J. Smith, Y. H. Zhang, J. K. Furdyna, C. Dames, W. Walukiewicz, and J. Wu, "Simultaneous Enhancement of Electrical Conductivity and Thermopower of Bi₂Te₃ by Multi-Functionality of Native Defects," *Advanced Materials* 27, 3681 (2015)

32. V. Mishra, C. L. Hardin, J. E. Garay, and C. Dames, "A 3 Omega Method to Measure an Arbitrary Anisotropic Thermal Conductivity Tensor," *Review of Scientific Instruments* **86**, 054902 (2015).
31. T. Hori, J. Shiomi, and C. Dames, "Effective phonon mean free path in polycrystalline nanostructures", *Applied Physics Letters* **106**, 171901 (2015).
30. F. Yang and C. Dames, "Heating frequency dependent thermal conductivity: an analytical solution from diffusive to ballistic regime and its relevance to phonon scattering measurements," *Physical Review B* **91**, 165311 (2015).
29. L. Shi, C. Dames, J. R. Lukes, P. Reddy, J. C. Duda, D. Cahill, J. Lee, A. Marconnet, K. Goodson, J. H. Bahk, A. Shakouri, R. Prasher, J. Felts, W. P. King, B. Han, and J. C. Bischof, "Evaluating Broader Impacts Of Nanoscale Thermal Transport Research". *Nanoscale and Microscale Thermophysical Engineering* **19**, 127 (2015).
28. A. T. Wieg, Y. Kodera, Z. Wang, C. Dames, and J. E. Garay, "Thermomechanical properties of rare earth doped AlN for laser gain media: The role of grain boundaries and grain size," *Acta Materialia* **86**, 148 (2015).
27. Sean D. Lubner, Jeunghwan Choi, Geoff Wehmeyer, Bastian Waag, Vivek Mishra, Harishankar Natesan, John C. Bischof, and Chris Dames, "Reusable bi-directional 3ω sensor to measure thermal conductivity of 100- μm thick biological tissues", *Review of Scientific Instruments* **86**, 014905 (2015).
26. H. Guo, M. I. Khan, C. Cheng, W. Fan, C. Dames, J. Wu and A. M. Minor, "VO₂ nanowire-based microthermometer for quantitative evaluation of electron beam heating," *Nature Communications* **5**, 4986 (2014).
25. S. LeBlanc, S. Yee, M. Scullin, C. Dames, and K. E. Goodson, "Material and Manufacturing Cost Considerations for Thermoelectrics," *Renewable and Sustainable Energy Reviews* **32**, 313 (2014).
24. W. Jang, W. Bao, L. Jing, C. N. Lau, and C. Dames, "Thermal Conductivity of Suspended Few-layer Graphene by a Modified T Bridge Method," *Applied Physics Letters* **103**, 133102 (2013).
23. J. P. Angle, Z. Wang, C. Dames, and M. L. Mecartney, "Comparison of two-phase thermal conductivity models with experiments on dilute ceramic composites," *Journal of the American Ceramic Society* **96**, 2935 (2013).
22. S. K. Yee, S. LeBlanc, K. E. Goodson, and C. Dames, "\$ per Watt Metrics for Thermoelectric Power Generation: beyond ZT," *Energy & Environmental Science* **6**, 2561 (2013).
21. Z. Chen, Z. Wei, Y. Chen, and C. Dames, "Anisotropic Debye model for the thermal boundary conductance," *Physical Review B* **87**, 125426 (2013).
20. F. Yang and C. Dames, "Mean free path spectra as a tool to understand thermal conductivity in bulk and nanostructures", *Physical Review B* **87**, 035437 (2013).
19. Z. Wei, Y. Chen, and C. Dames, "Negative correlation between in-plane bonding strength and cross-plane thermal conductivity in a model layered material," *Applied Physics Letters* **102**, 011901 (2013).
18. W. Bao, K. Myhro, Z. Zhao, Z. Chen, W. Jang, L. Jing, F. Miao, H. Zhang, C. Dames, and C. N. Lau, "In Situ Observation of Electrostatic and Thermal Manipulation of Suspended Graphene Membranes," *Nano Letters* **12**, 5470 (2012).
17. A. T. Wieg, Y. Kodera, Z. Wang, T. Imai, C. Dames, and J. E. Garay, "Visible photoluminescence in polycrystalline aluminum nitride ceramics with high thermal conductivity," *Applied Physics Letters* **101**, 111903 (2012).
16. Z. Wei, Y. Chen, and C. Dames, "Wave packet simulations of phonon boundary scattering at graphene edges," *Journal of Applied Physics* **112**, 024328 (2012).
15. E. S. Toberer, L. L. Baranowski, and C. Dames, "Advances in thermal conductivity," *Annual Review of Materials Research* **42**, 179 (2012).

14. Z. Wang, J. E. Alaniz, W. Jang, J. E. Garay, and C. Dames, "Thermal Conductivity of Nanocrystalline Silicon: Importance of Grain Size and Frequency-Dependent Mean Free Paths". *Nano Letters* **11**, 2206 (June 2011).
13. W. Jang, Z. Chen, W. Bao, C. N. Lau, and C. Dames, "Thickness-dependent thermal conductivity of encased graphene and ultrathin graphite," *Nano Letters* **10**, 3909 (2010).
12. F. Yang, T. Ikeda, G. J. Snyder, and C. Dames, "Effective thermal conductivity of polycrystalline materials with randomly oriented superlattice grains," *Journal of Applied Physics* **108**, 034310 (2010).
11. Z. Chen, W. Jang, W. Bao, C. N. Lau, and C. Dames, "Thermal contact resistance between graphene and silicon dioxide," *Applied Physics Letters* **95**, 161910 (2009).
10. C. C. Chen, W. Bao, J. Theiss, C. Dames, C. N. Lau, and S. Cronin, "Raman spectroscopy of ripple formation in suspended graphene," *Nano Letters* **9**, 4172 (2009).
9. W. Bao, F. Miao, Z. Chen, H. Zhang, W. Jang, C. Dames, and C. N. Lau, "Controlled ripple texturing of suspended graphene and ultrathin graphite membranes," *Nature Nanotechnology* **4**, 562 - 566 (2009).
8. C. Dames, "Solid-state thermal rectification with existing bulk materials" *ASME Journal of Heat Transfer* **131**, 061301 (2009).
7. C. Dames, S. Chen, C. T. Harris, J. Y. Huang, Z. F. Ren, M. S. Dresselhaus, G. Chen, "A hot wire probe for thermal measurements of nanowires and nanotubes inside a transmission electron microscope," *Review of Scientific Instruments*, **78**, 10493 (2007).
6. B. Cord, C. Dames, K. Berggren, and J. Aumentado, "Robust shadow-mask evaporation via lithographically-controlled undercut," *Journal of Vacuum Science and Technology B* **24**, 3139 (2006).
5. C. Dames and G. Chen, "1, 2, and 3 ω methods for measurement of thermal properties," *Review of Scientific Instruments* **76**, 124902 (2005).
4. B. Poudel, W. Wang, C. Dames, J. Huang, S. Kunwar, D. Wang, D. Banerjee, G. Chen and Z. Ren, "Formation of crystallized titania nanotubes and their transformation into nanowires," *Nanotechnology* **16**, 1935 (2005).
3. C. Dames, G. Chen, B. Poudel, W. Wang, J. Huang, Z. Ren, Y. Sun, J. I. Oh, C. Opeil, S.J., and M. J. Naughton, "Low dimensional phonon heat capacity of titanium dioxide nanotubes," *Applied Physics Letters* **87**, 031901 (2005).
2. G. Chen, A. Narayanaswamy, and C. Dames, "Engineering nanoscale phonon and photon transport for direct energy conversion," *Superlattices and Microstructures* **35**, 161 (2004).
1. C. Dames and G. Chen, "Theoretical phonon thermal conductivity of Si-Ge superlattice nanowires," *Journal of Applied Physics* **95**, 682 (2004).

Book

- B1. Z. Chen and C. Dames, *Applied Thermal Measurements at the Nanoscale: A Beginner's Guide to Electrothermal Methods*. Volume 7 of the *Lessons from Nanoscience* series, ed. Mark Lundstrom. World Scientific Press, <https://doi.org/10.1142/11009>, ISBN 978-981-3271-10-4 (2018).

Book Chapters

- BC4. C. Dames, "Measuring the thermal conductivity of thin films: 3 ω and related electrothermal methods," invited chapter in the *Annual Review of Heat Transfer*, Begell House (2013).
- BC3. C. Dames, "Microscale Conduction," invited chapter in the textbook *Heat Conduction*, 3rd edition, lead author Latif Jiji, Springer, 2009.

- BC2. C. Dames, "Resistance Temperature Detectors," invited chapter in the *Encyclopedia of Micro- and Nanofluidics*, Springer-Verlag, D. Li (Ed.), 2008.
- BC1. C. Dames and G. Chen, "Thermal conductivity of nanostructured thermoelectric materials," invited chapter in *Thermoelectrics Handbook: Macro to Nano*, Chapter 42, CRC Press, ed. D. Rowe, 2005.

Invited Commentaries

- IC2. C. Dames, "Ultrahigh thermal conductivity confirmed in boron arsenide", invited perspective in *Science* **361**, 549-550 (2018)
- IC1. C. Dames, "Pulling together to control heat flow," invited News & Views article in *Nature Nanotechnology* **7**, 82 (2012).

Non-Referred Articles

- NR1. Frecker, M., Dames, C., Cagan, J., Siegel, D. J., Pelegri, A., Jacobi, A., Erickson, D., and Ranjan, D. "What is Mechanical Engineering?." *ASME. Mechanical Engineering*. July 2024; 146(4): 1.
<https://asmedigitalcollection.asme.org/memagazineselect/article-pdf/146/4/1/7385889/me-2024-july4.pdf>

Patents Issued

- P3. R. Prasher, S. Kaur, G. Liu, C. Dames, J. Lau, D. Lilley, P. Khomein, J. Papp, "Thermal energy storage with phase change materials having an adjustable transition temperature," US-12555819-B2, issued 2/2026.
- P2. A. Sahu, B. Russ, J. J. Urban, N. Coates, R. Segalman, J. Forster, M. Liu, F. Yang, K. Persson, and C. Dames, "Surface doping of nanostructures," United States Patent # US-10249808-B2, issued Apr. 2019
- P1. S. Lubner, J. Choi, H. Natesan, C. Dames, and J. Bischof, "System and method for determining a spatial thermal property profile of a sample," United States Patent # US-9851316-B2, issued Dec. 2017