**David G. Cahill**
*Grainger Distinguished Chair in Engineering and Professor of Materials Science*
*Department of Materials Science and Engineering, Materials Research Laboratory*
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## Education

- Ph.D., Experimental Condensed Matter Physics, Cornell University, August 1989.
- B.S., Engineering Physics, Ohio State University, June 1984.

## Professional Experience

- Co-Director, IBM-Illinois Discovery Accelerator Institute, University of Illinois at Urbana-Champaign, March 2021 to present.
- Grainger Distinguished Chair in Engineering, University of Illinois at Urbana-Champaign, 2020 to present.
- Professor, Department of Materials Science and Engineering, University of Illinois at Urbana-Champaign, 2002 to present.
- Willett Professor of Engineering, University of Illinois at Urbana-Champaign, 2005–2020.
- Visiting Professor, Pritzker School of Molecular Engineering, U. Chicago, January to May 2020.
- Department Head, Materials Science and Engineering, University of Illinois at Urbana-Champaign, July 2010 to December 2018.
- Advisory Professor, Center for Phononics and Thermal Energy Science, Tongji University, Shanghai, China, June 2014 to present.
- Associate director, NSF STC, "Center of Advanced Materials for the Purification of Water with Systems," 2007–2010.
- Associate Professor, Department of Materials Science and Engineering, University of Illinois at Urbana-Champaign, 1997 to 2002.
- Visiting Scholar, Mechanical Engineering Department, University of California, Berkeley, 1998.
- Assistant Professor, Department of Materials Science and Engineering, University of Illinois at Urbana-Champaign, 1991–1997.
- Postdoctoral Research Associate, IBM Watson Research Center, 1989–1991.
- Graduate Research Assistant, Cornell University, 1984–1989.

## Awards and Honors

- Tau Beta Pi Daniel C. Drucker Eminent Faculty Award, College of Engineering, University of Illinois at Urbana-Champaign, 2020.

- Fellow, American Association for the Advancement of Science, Section on Engineering, 2020.
- Innovation in Materials Characterization Award, Materials Research Society 2018; citation: For developing transformative methods for characterizing the thermal transport properties of materials and their interfaces using time-domain thermoreflectance (TDTR) and related approaches.
- Yeram S. Touloukian Award, American Society of Mechanical Engineers 2015; citation: For sustained, pioneering contributions to heat conduction metrology including the 3-omega and optical pump-probe methods, which are pervasive in laboratories worldwide; and for landmark contributions on the minimum and ultralow thermal conductivity of solids.
- Fellow of the Materials Research Society, 2012; citation: For the pioneering development of measurement techniques and scientific understanding of thermal transport in materials at nanometer length scales.
- Elected to the cycle of vice-chair, program-chair, chair of the Division of Materials Physics, American Physical Society, 2011–2014.
- Editorial Board of Applied Physics Letters, 2010–2014; Editorial Board of Journal of Applied Physics, 2010–2020.
- Donald Biggar Willett Professor of Engineering, U. Illinois, College of Engineering, 2005–2020.
- Fellow of the American Physical Society, 2005; citation: For original and influential contributions to the physics of heat conduction in materials and the evolution of surface morphology during crystal growth and etching.
- Chair of 2003 Gordon Research Conference, "Thin Film and Crystal Growth Mechanisms."
- Willet Faculty Scholar Award, U. Illinois, College of Engineering, 2002–2004.
- University Scholar, U. Illinois, 2000-2003.
- Xerox Award for Faculty Research, U. Illinois, College of Engineering, 2000.
- Peter Mark Memorial Award, American Vacuum Society, 1998, for "seminal contributions to the atomic-level understanding of thermal conductivity in thin films and surface roughening/smoothing mechanisms during film growth and etching."
- Fellow of the American Vacuum Society, 1998.
- Charles Lucks Award, for significant contribution to the subject of thermal conductivity by a young investigator, International Thermal Conductivity Conference, 1989.
- NSF Graduate Fellow, 1984-1987.

## Teaching Experience

- MatSE 201, *Phases and Phase Relations*, Spring 2021 (on-line).
- MatSE 401, *Thermodynamics of Materials*, Fall 2020 (on-line); Fall 2021-2022.
- MatSE 396, *Introduction to Research*, every semester from Fall 2014 to Fall 2018; Spring 2022-2023.

- MatSE 307/308, *Materials Laboratory I and II*, Fall 2009, Spring 2010. Developed 6 new experiments for each course that provide hands-on laboratory experience for 72 students per semester.
- MatSE 582, *Surface Physics*, Spring 1992; Spring 2004, 2005, Fall 2006–2008; in 2007 and 2008, each student contributed two articles to Wikipedia.
- MatSE 460, *Electronic Materials and Processing I*, Spring 2009.
- MatSE 405, *Microstructure Characterization*, Fall 1999–2004; Spring 2006–2008. Added optical diffraction and microscopy experiments to the teaching laboratory; added computer data acquisition for both optics and x-ray diffraction experiments; added Raman and NMR spectroscopy; in 2008 introduced the use of MatLab for problem solving and data analysis.
- MatSE 204, *Electrical Properties of Materials*, Fall 1994, Spring 1995–2002. Added workstation-based computer simulations to this course during Spring 1996 for lecture-demonstrations and numerical problem solving by the students.
- MatSE 207, *Materials Science and Engineering Laboratory I*, Fall 1996, Fall 1997.
- MatSE 200, *Introduction to Materials Science and Engineering,* Spring 1993, Fall 1995.
- MatSE 306, *Thermal-Mechanical Properties of Materials,* Fall 1992, Fall 1993, Spring 1994. Fall 1992 was the first time this course was taught.

### Accomplishments as Head of the Department of Materials Science and Engineering

From July 2010 to December 2018, Prof. Cahill led all aspects of the operation of a top-ranked academic unit with 24 tenure-system faculty, 4 lecturers, 10 staff, 360 undergraduate and 180 graduate students, and research expenditures of $16M per year. His accomplishments as department head include hiring of 13 of the current tenure system faculty and 4 specialized faculty, renovation of 5000 sq ft of laboratory space in the Materials Science and Engineering Building, expansion of the undergraduate instructional laboratories to encompass 8000 sq ft of space and facilities in the Kiln House and Ceramics Building, an overhaul of the senior year undergraduate curriculum, the introduction of a non-thesis masters of science program, and major strides in improving the safety culture of the department.

- Academic Affairs

  2011: Hired of three assistant professors in the biomaterials area including the first female assistant professor hired into MatSE in more than 20 years.

  2013: Three assistant professors hired including a member of an underrepresented group. Facilitated two dual career hires.

  2014: Three assistant professors hired including two members of an underrepresented group. Facilitated three dual career hires.

  2016: Two assistant professors hired.

  2017: One assistant professor hired from an underrepresented group.

  2018: One assistant professor hired; one associate professor hired: one full professor hired; Start-up funds for the two senior hires enhanced by the "Distinguished Faculty Recruitment Program" of the University of Illinois system.

- Undergraduate Program

  Conducted the first MatSE national search for a Lecturer to improve the quality and breadth of the instructional program and undergraduate advising. In subsequent years, hired three lecturers.

  Hired a Coordinator of Instructional Labs with the responsibility for safe and effective operation of the instructional laboratories.

  Made many changes in teaching assignments to enhance the career development of junior faculty and improve the quality of instruction.

  Implemented procedures for closing the loop on continuous improvement of the undergraduate curriculum that is required by ABET.

  Worked with faculty and staff to implement a new course, "Introduction to Research", that coordinates undergraduate research in the department.

  Greatly expanded equipment in undergraduate instructional labs to accommodate increased enrollment.

  Worked with faculty and staff to implement a new course on computational materials science and engineering to the national Materials Genome Initiative.

  Successfully navigated ABET accreditation.

  Initiated discussions among the faculty and charged the curriculum committee to make major changes to the senior year curriculum to better serve the students, companies that hire our graduates, and make more effective use of faculty teaching assignments. Guided curriculum committee and faculty through the approval of significant changes to the senior year curriculum. Continuing to work with the curriculum committee to define the new lab modules and lecture courses that will be the centerpiece of the new senior year curriculum.

- Graduate Program

  Revised procedures and policies for graduate student admissions to improve fairness and student quality.

  Established a path for the admissions of self-supporting, course-work M.S. students.

  Created policies for the selection of the internal award for research.

  Motivated the faculty to increase the graduate research assistant appointment from 11 to 12 months to partially make-up for low stipends compared to our peers.

  Developed a financial incentive to encourage faculty to move their students through the Ph.D. program more quickly. Faculty receive 50% of the Ph.D. tuition remission received by the department for students that have completed their prelim exams but have not gone beyond 9 semesters of enrollment.

- Advancement

  Worked with our director of advancement to better utilize and grow our senior advisory committee.

  Traveled with major gift offers to make more than 20 visits with individuals or small groups of alumni.

  Worked with our alumni coordinator to better engage members of the alumni board and the broader alumni community to provide mentoring for undergraduates, placements, and projects for undergraduate design.

- Space and Facilities

  Worked with the new Coordinator of Instructional Labs to utilize instructional laboratory space much more effectively.

  Oversaw a a major laboratory renovation on the second floor of MSEB to provide wet-lab and biology space for two assistant professors working in the biomaterials field.

  Oversaw a number of renovation projects in MSEB (entrances, stairwells, hallway to first floor lounge, student office space) and Ceramics Bldg. (furnace room for the instructional laboratories, office space for lecturers, students, and visitors).

  Initiated a second major renovation project on the first floor of MSEB to create space for anticipated new hires in metals, electronic materials, and polymers.

  Worked with staff to implement more comprehensive safety policies and procedures for MatSE based on the process in place at MRL.

- Budget

  Worked with the business office to develop tools to better communicate the inputs and outputs of our budgets to the faculty and other stakeholders.

  Worked with staff business office to develop a more rational spending plan that better connects sources and uses of funds and provides for better stewardship of gifts.

## Undergraduates Involved in Research Program

- Aaron Scott, Ronald E. McNair Scholars Program, summer 1995.

- George Matamis, academic year 1996–1997; Andrew Alig, fall semester 1997; Jason Stephen, academic year 1998–99; Benjamin French, spring semester 1999; Amanda Giermann, academic year 1999–2000; Nadine Dytko, summer, fall semester 2003; Nicholas Laricchia, fall semester 2009; Kelvin Lu, 2013–2015; Leonard Chang, spring semester 2013; Anahita Kagti, spring semester 2014; Matthew Bergschneider, spring semester 2014; Alex Kuznicki, spring semester 2015; En Ju Cho, academic year 2017–18 and 2018–19; Elynn Jensen, fall 2019 through spring 2021; Shuming Kang, academic year 2019-2020; Jacki Li summer 2020 through spring 2022; Chloe Kwak spring 2022, fall 2022.

- Research Experiences for Undergraduates Programs (REUs): Matt Mangriotis, summer 1996, continued in academic year 1996–1997; Clayton Chan, summer 2004; Brad Norkewicz, summer 2005, continued in academic year 2005–2006; Michael Castells, summer 2018, continued in academic year 2018-2019; Sophie Roberts, summer 2021.

## Graduate Students

- S. Jay Chey, August 1991–July 1996, Ph.D. completed, "Generation and Relaxation of Nanometer-scale Roughness on the Ge(001) Surface," placement: post-doctoral research associate, U. Minnesota, Minneapolis, MN; currently with IBM Research Division, Yorktown Heights, NY.

- Joseph Van Nostrand, August 1992–June 1996, Ph.D. completed, "Evolution of the surface morphology of homoepitaxial Ge(001) and heteroepitaxial $Si_{0.5}Ge_{0.5}$/Ge(001) deposited by molecular beam epitaxy at reduced temperatures," placement: research staff, Wright Patterson Air Force Base, Dayton OH; awards: Racheff Award for Outstanding Graduate Research, 1995, Department of Materials Science and Engineering; finalist for the Mort Traum Student Award of the American Vacuum Society, October 1995.

- Brian Karr, August 1992–September 1997, Ph.D. completed, "Surface morphology evolution of epitaxial TiN(001) layers grown by reactive magnetron sputtering," placement: Motorola Corp., Mesa, AZ; currently with Seagate Corp., Minneapolis, MN; awards: Racheff Award for Outstanding Graduate Research, 1996, Department of Materials Science and Engineering; Bunshah Award, best paper at the International Conference on Metallurgical Coatings and Thin Films, San Diego, CA, 1997.

- Andrew Bullen, August 1997–August 1999, M.S. competed "Thermal conductivity of amorphous thin films," placement: Cherry Semiconductor, Providence, RI.

- Jaichan Kim, August 1996–September 2001, Ph.D. completed, "Creation of surface and bulk defects and surface roughening during high energy ion irradiation," placement: post-doctoral research associate, Utah State University.

- Xiaoyuan Hu (co-advisor with R. Averback), August 1998–June 2002, Ph. D. completed,"Ion irradiation induced roughening and smoothing of metal films on dielectric substrates," placement: post-doctoral research associate, U. California-Santa Barbara.

- Arvind Raviswaran, August 1997–June 2002, Ph.D. completed, "Morphological evolution during molecular beam epitaxy," placement: Cypress Semiconductor, Bloomington, MN.

- Marcel Wall (co-advisor with J. Greene), August 1997–September 2003, Ph.D. completed, "Nucleation kinetics during homoepitaxial growth of TiN(001) by reactive magnetron sputtering," placement: Intel, Hillsboro, OR, awards: Mort Traum Student Award of the AVS, Nov. 2003.

- Ben Cho, (co-advisor with J. Greene), August 1998–April 2002, M.S. completed "Effect of growth rate on the size and spatial distributions of Ge/Si(001) nanostructures," placement: Emcore, Albuquerque, NM.

- Justin Serrano (SURGE fellow), August 1999–December 2004, Ph.D. completed, "Stress-induced deformations of thin $SiO_2$ films," placement: post-doctoral research associate, Sandia National Laboratory, Albuquerque, NM.

- Ruxandra Costescu, August 1999–November 2005, Ph.D. completed, "Thermal transport on the nanometer scale and the effect of microstructure and interface resistance," MRS Silver Award, 2003 Spring MRS Meeting, placement: post-doctoral research associate, Max Planck Institute for Solid State Research, Stuttgart, Germany.

- Zhenbin Ge (co-advised with P. Braun), August 2002–May 2006, Ph.D. completed, "Nanoscale thermal transport at solid-liquid interfaces," placement: Applied Materials, Sunnyvale, CA.

- Jeffrey Letcher, August 2004 to January 2007, M.S. completed, "Lifetimes of optical phonons in Si by time-resolved Raman scattering."

- Shawn Putnam, August 2001 to September 2007, Ph.D. completed, "Thermal probes of nanoparticle interfaces: thermodiffusion and thermal conductivity of nanoparticle suspensions," placement: post-doctoral research associate, Air Force Research Laboratory, Dayton, OH; currently assistant professor U. Central Florida.

- Xuan Zheng, August 2003 to October 2008, Ph.D. completed, "High-throughput measurements of the thermal conductivity and the coefficient of thermal expansion" ; Racheff Award for Outstanding Graduate Research, 2008, Department of Materials Science and Engineering; placement: Seagate Technologies, Minnesota, MN.

- Xijing Zhang, January 2003 to November 2008, Ph.D. completed, "Thermodynamics of polyamide separation membranes in contact with aqueous solutions," placement: Porous Media Corp. Minnesota, MN.
- Catalin Chiritescu, January 2005 to April 2010, Ph.D. completed, "Ultralow thermal conductivity in disordered layered crystalline materials," placement: U. Illinois.
- Yee Kan Koh, January 2005 to July 2010, Ph.D. completed, "Heat transport by phonons in crystalline materials and nanostructures"; Racheff Award for Outstanding Graduate Research, 2009, Department of Materials Science and Engineering; Ross Martin Award, 2010, College of Engineering; placement: Assistant Professor, Department of Mechanical Engineering, National University of Singapore.
- Huan Yan, August 2007 to August 2010, coursework M.S. completed, placement: graduate program Georgia Institute of Technology.
- Wen-Pin Hsieh, June 2008 to July 2011, Ph.D. completed, "Testing theories for thermal transport using high pressure," placement: post-doctoral research associate, Stanford University.
- Yuxin Wang, August 2008 to December 2010, coursework M.S. completed, placement: Thor Labs.
- Andrew Hafeli, August 2008 to June 2011, M.S. completed, "Surface phonon polaritons coupled to the far-field by a grating at high temperature," placement: Nexteer Automotive, Saginaw, MI.
- Patricia Weisensee, May 2011 to Dec. 2011, M.S. completed, "Thermal conductivity of $UO_2$ and $U_3O_8$ epitaxial layers damaged by ion irradiation," placement: graduate program Technical University of Munich.
- Ji-Yong Park, August 2007 to December 2012, Ph.D. completed, "Measurements of heat transferred and residence time of a droplet on a hot surface," placement: Intel, Chandler, AZ.
- Tamlin Matthews, January 2008 to December 2013, Ph.D. completed, "Growth dynamics, charge density, and structure of polyamide thin-film composite membranes," placement: Dow Chemical Co., Midland, MI.
- Wei Wang, August 2009 to May 2013; M.S. completed "Thermal transport across interfaces with molecular layers," placement: graduate program U. Colorado, Boulder, CO.
- Jingyu Huang (co-advised with C. Murphy), August 2009 to June 2014, Ph.D. completed, "Photothermal properties and applications of gold nanorods," placement: post-doctoral research associate, U. California-Berkeley.
- Trong Tong, January 2010 to May 2015, Ph.D. completed, "Secondary pyroelectric and electrocaloric effects in thin films," placement: Ntherm, Milpitas, CA.
- Richard Wilson, August 2010 to May 2015, Ph.D. completed, "Phonon thermal transport at the nanoscale"; Racheff Award for Outstanding Graduate Research, 2014, Department of Materials Science and Engineering; placement: post-doctoral research associate, U. California-Berkeley; currently associate professor, UC Riverside.

- Cody Jenson, co-advised with Mark Shannon, 2011 to May 2014, Ph.D. completed, "Photoactivity of titanium dioxide films with controlled orientation," placement: Inprentus, Champaign, IL
- Gregory Hohensee, May 2011 to May 2015, Ph.D. completed, "Using high pressure to study thermal transport and phonon scattering mechanisms," placement: Western Digital Corporation.
- Gyung-Min Choi, August 2011 to May 2015, Ph.D. completed, "Ultrafast laser driven spin generation in metallic ferromagnets," placement: Korea Institute of Science and Technology.
- Jonglo Park, August 2010 to October 2015, Ph.D. completed, "Plasmonic sensing of heat transfer at solid/liquid and solid/gas interfaces," placement: Intel Corporation, Portland, OR.
- May-Ling Li, August 2015 to May 2016, M.S. completed, "The $c_{33}$ elastic constant of $MoS_2$ as a function of pressure."
- Dongyao Li, August 2011 to January 2017, Ph.D. completed, "Surface acoustic wave techniques in laser pump-probe systems and their application in studying mechanical properties of materials," placement: Lam Research.
- John Brethauer, August 2015 to May 2017, M.S. completed, "Mapping the thermal conductivity of SiC/SiC composites."
- Qiye Zheng (co-advised with P. Braun), August 2012 to December 2017, Ph.D. completed,"Functional materials for thermal regulation," placement: post-doc at U. Illinois, currently assistant professor at Hong Kong University of Science and Technology.
- Jordan Dennison (co-advised with C. Murphy), May 2015 to May 2018, Ph.D. completed, "Chemistry and measurement at aqueous nanoscale interfaces," placement: Avista Pharma Solutions, Longmont, CO
- Wenrui Wang (co-advised with V. Lorenz), January 2017 to December 2018, Ph.D. completed, "Optical studies of current-induced spin-orbit effects in magnetic systems," placement: Intel, Albuquerque, NM.
- Jungwoo Shin (co-advised with P. Braun), August 2012 to March 2019, Ph.D. completed, "Thermal conductivity switching of polymers and lithium-ion battery electrode materials in response to external stimuli," placement: post-doc at MIT.
- Hyejin Jang, August 2014 to May 2019, Ph.D. completed, "Thermal transport in two-dimensional materials and magnetic multilayers"; Racheff Award for Outstanding Graduate Research, 2018, Department of Materials Science and Engineering; placement: post-doc at UC Berkeley; currently assistant professor at Seoul National University.
- Ella Pek, August 2014 to December 2019, Ph.D. completed "Magnon and phonon thermal transport in oxides," placement: post-doctoral research associate at U. Maryland.
- Kexin Yang, January 2016 to June 2020, Ph.D. completed "Magnetic and thermal properties of metallic antiferromagnets," placement: Data Scientist, Goldman Sachs, Dallas, TX.
- Akash Rai, August 2017 to December 2021, M.S. completed, "Optical characterization of thermal transport in multifunctional materials," placement: Process Engineering, Lam Research, Tempe, AZ.

- Sushant Mahat, July 2016 to present; June 2016 to June 2022, Ph.D. completed, "Application of picosecond interferometry to characterize physical behavior of crystals," placement: Research Process Engineer, Micron Technology, Boise, ID.
- Kisung Kang (co-advised with A. Schleife), August 2016 to May 2022, Ph.D. completed, "First-principles study of magnetic ground and excited-state properties of metallic antiferromagnets," placement: post-doctoral research associate, Fritz Haber Institute, Berlin, Germany.
- Jingcheng Ma (co-advised with N. Miljkovic), August 2017 to May 2022, Ph.D. completed, "Fundamental studies of hydrophobic thin film durability and degradation mechanisms during dropwise condensation of steam," placement: post-doctoral research associate at University of Chicago.
- Guangxin Lyu (co-advised with C. Evans), August 2018 to July 2022, Ph.D. competed, "Enhanced thermal conductivity in polymer networks," placement: post-doctoral research associate at MIT.
- Xiaoyang Ji, August 2018 to present; Darshan Chalise, January 2019 to present; Junyi Wu (co-advised with V. Lorenz), May 2019 to present; Jinchi Sun, August 2020 to present; Peng Lan (co-advised with C. Evans), August 2021 to present; Jingyi Zhou (co-advised with P. Braun), June 2022 to present; Sooyeon Yeon (co-advised with P. Braun); Rosy Huang (co-advised with P. Braun), August 2022 to present.

### Postdoctoral Research Associates

- Rebecca Cortez, Department of Materials Science and Engineering, UIUC, 1993–1994, placement: U.S. Army Construction Engineering Research Laboratory, Champaign, IL.
- Jeffrey Wood, Department of Materials Science and Engineering, UIUC, 1994–1996, placement: Rockwell Semiconductor Systems, Newport Beach, CA.
- Seung-Min Lee, Department of Materials Science and Engineering, UIUC, 1994–1996, placement: LG Electronics, Seoul, Korea.
- Arturas Vailionis, Department of Materials Science and Engineering, UIUC, 1997–2000, placement: Laboratory for Advanced Materials, Stanford University.
- Thomas Schwarz-Selinger, Department of Materials Science and Engineering, UIUC, 2000–2001. Currently with Max-Plank Institute für Plasma Physik, Garching, Germany.
- Scott Huxtable, Department of Materials Science and Engineering, UIUC, 2002–2003, placement: assistant professor, Virginia Tech.
- Fumiya Watanabe, visiting scientist, Department of Materials Science and Engineering, UIUC, February 2003–January 2006, placement: University of Arkansas.
- Ho-Ki Lyeo, Department of Materials Science and Engineering, UIUC, July 2004–November 2005, placement: Korean Research Institute of Science and Standards.
- Matthew Highland, Department of Materials Science and Engineering, UIUC, July 2006–October 2007, placement: Advanced Photon Source, Argonne National Laboratory.
- Kwangu Kang, Department of Materials Science and Engineering, UIUC, November 2006–November 2008, placement: Yonsei University, Korea.

- Chang-Ki Min, Department of Materials Science and Engineering, UIUC, July 2007–August 2011, placement: Pohang Accelerator Laboratory.
- Dong-Wook Oh, Department of Materials Science and Engineering, UIUC, October 2008–October 2010, placement: Korean Institute of Machinery and Materials; since 2014, Assistant Prof., Department of Mechanical Engineering, Chosun University.
- Mark Losego (co-mentored with P. Braun), Department of Materials Science and Engineering, UIUC, September 2008–September 2011, placement: assistant professor, Georgia Tech.
- Joseph Feser, Department of Materials Science and Engineering, UIUC, January 2011 to August 2013, placement: assistant professor, U. Delaware.
- Xiaojia Wang, Department of Materials Science and Engineering, UIUC, February 2012 to August 2014, placement: assistant professor, U. Minnesota.
- Jun Liu, Department of Materials Science and Engineering, UIUC, October 2013 to July 2015, placement: assistant professor, North Carolina State University.
- Johannes Kimling, Department of Materials Science and Engineering, UIUC, December 2013 to February 2017, placement: ZEISS, Oberkochen, Germany.
- Judith Kimling, Department of Materials Science and Engineering, UIUC, December 2013 to February 2017, placement: ZEISS, Oberkochen, Germany.
- Xu Xie, Department of Materials Science and Engineering, UIUC, February 2015 to July 2018, placement: Lam Research.
- Qiye Zheng, Department of Materials Science and Engineering, UIUC, December 2017 to December 2018, placement: post-doctoral research associate, UC Berkeley.
- Taizo Yoshinaga, visiting scientist, Toyota, December 2017 to December 2018.
- Zhu Diao, visiting scholar, Stockholm University, Sweden, June 2016 July 2019, currently assistant professor, Florida A&M University.
- Tao Wang (co-mentored with Prof. Virginia Lorenz), Department of Physics, UIUC, January 2020 to August 2020, placement: assistant professor, Huazhong University of Science and Technology, Wuhan, China.
- Renee Harton (co-mentored with Prof. Nadya Mason), Illinois Distinguished Postdoctoral Fellow, June 2018 to June 2021, placement: research engineer, U. Illinois-Chicago.
- Zhe Cheng, Department of Materials Science and Engineering, UIUC, January 2020 to present.
- Myoung-Woo Yoo, Department of Physics, UIUC, February 2021 to present.

## Professional Activities–Conferences Organized

- Workshop co-chair: "Heat Transport in Amorphous Solids," 7th International Conference on Phonon Scattering in Condensed Matter, Ithaca, NY, August 3–7, 1992.
- Scientific Advisory Committee, "Dynamics of Crystal Surfaces and Interfaces," Traverse City, MI, August 4–8, 1996.

- Division of Materials Physics, American Physical Society, co-organizer of March Meeting focused session, "Nanometer-scale Morphology of Surfaces and Interfaces," Kansas City, MO, March 17–21, 1997; Seattle, WA, March 12–16, 2001; ; co-organizer of March Meeting focused session, "Thermoelectric Materials," Pittsburgh, PA, March 16–20, 2009.

- Symposium on Thermophysical Properties, co-organizer of sessions on "Thermophysical Properties of Thin Films," Boulder, CO, June 22–27, 1997; and June 25–30, 2000.

- Materials Research Society, lead organizer of symposium "Evolution of surface and thin film microsctructure," 1997 MRS Fall Meeting, Boston, MA; co-organizer "Femtosecond materials science and engineering," 2001 MRS Spring Meeting, San Francisco, CA; co-organizer, "Nanoscale thermal transport," 2003 MRS Spring Meeting, San Francisco, CA; co-editor of MRS Bulletin issue on "Ultrafast Lasers in Materials Research," August 2006; lead organizer "Materials Science of Water Purification," 2009 MRS Spring Meeting, San Francisco, CA; Co-chair of 2024 MRS Spring Meeting.

- Conference Editor, 15th European Conference on Thermophysical Properties, Würzburg, Germany, Sept. 5–9, 1999.

- Gordon Research Conference, "Thin Film and Crystal Growth Mechanisms," vice-chair of 2001 meeting; chair of 2003 meeting.

- Co-chair of workshop for DOE Council on Materials, "Transport at Nanointerfaces," Park City, Utah, Oct. 11–14, 2001.

- American Conference on Crystal Growth, Organizer and chair of session on "Thin films and Nanostructures," Fallen Leaf Lake, CA, June 2–5, 2002.

- Invited workshop participant: "Advancing the Quality of Water," Chapel Hill, NC, March 10–12, 2004;"National Nanotechnology Initiative Workshop on Nanoscience Research for Energy Needs," Crystal City, VA, March 16–18, 2004; "ThermoHub", Purdue University, Dec. 10–11, 2007.

- Program committee, "Phonons 2007", Paris, France, July 15–20, 2007; "Phonons 2010", Taipei, Taiwan, April 18–23, 2010, "Phonons 2012", Ann Arbor, MI, July 9–12, 2012, "Phonons 2015, Nottingham, UK, June 12–17, 2015.

- Co-chair of the Eleventh International Conference on Spin Caloritronics, Urbana, IL, May 23–27, 2022.

### Professional Activities–Professional Society Leadership

- American Vacuum Society, executive board of the Nanometer-scale Science and Technology Division, 1995–1997; executive board of the Electronic Materials and Processing Division, 1999–2001; progression of vice-chair, chair, and program committee chair of Nanometer-scale Science and Technology Division, 2000–2003.

- Division of Materials Physics, American Physical Society, elected member-at-large to the executive committee of the DMP, 2004–2007; elected to cycle of vice-chair, chair-elect, chair, past-chair of the Division of Materials Physics, 2011–2015.

### Professional Activities–Advisory Boards and Government Panels

- Editorial Boards: *High Temperatures High Pressures*, August 1999–2006; *Nanoscale and Microscale Thermophysical Engineering*, March 2004 to present; *Review of Scientific Instruments*, December 2008–2011; *Applied Physics Letters and J. Applied Physics*, December 2010–2015; chair of editorial advisory board, *J. Applied Physics*, 2016–2020.

- NSF panel reviews: Optical Sciences and Engineering Initiative, pre-proposals, Arlington, VA, February 15–16, 1996; DMR CAREER, March 11, 1997; Nanotechnology, April 20–21, 1998; SBIR advanced materials, September 14, 2000; CTS CAREER, November 20, 2000; DMR NIRT, January 28–29, 2001, DMR CAREER award, October 8, 2002; MRSEC site-visit panel, November 5–6, 2003; DMR NIRT, February 10–11, 2005; MRI, May 4, 2006; NSF-CTS, July 14, 2006; DMR CAREER, October 10, 2006; CBET, June 7, 2013; CBET, January 22–23, 2015; MRI, April 23–24, 2020; CTS, September 29–30, 2020.

- DOE panel reviews: Materials Science Programs at the Lawrence Berkeley National Laboratory, Napa, CA, August 17–18, 2006; Solar Energy Utilization, Bethesda, MD, February 4–6, 2007; Advanced Photon Source Cross-cut Review of Materials Science, Materials Physics, and Engineering Materials Research, Argonne National Lab, June 28–29, 2007; SLAC PULSE Center, Menlo Park, CA, Oct. 5–7, 2009; ARPA-E HEATS, Aug. 18, 2011, Arlington, VA.

- Visiting Committee, Cornell Center for Materials Research, July 1999.

- External advisory board, Northwestern University MRSEC, March 2007–2010.

- External advisory board and management council, Center for Electrochemical Energy Science (CEES), Energy Frontier Research Center based at Argonne National Laboratory, 2014–2019.

- Visiting committee, Physical Review B , American Physical Society Journals, March 23–24, 2015.

- External review committee, Department of Chemical Engineering and Materials Science, U. Minnesota, October 2015.

- Governance board, BP International Center for Advanced Materials, April 2015.

- External advisory board, Center for Emergent Materials (CEM), NSF-MRSEC at Ohio State University, January 2016 to present.

- External advisory board, Midwest Integrated Center for Computational Materials (MiCCoM), Argonne National Laboratory, October 2016 to present.

- External review committee, Department of Materials Science and Engineering, U. Florida, April 2017.

- Review committee, Beckman Institute, Molecular & Electronic Nanostructures Theme, U. Illinois, October 19–20, 2017.

## Consulting Activities

- INRAD, Northvale, NJ, 1991.

- Hoechst Celanese, Summit, NJ, 1993.

- United Technologies, East Hartford, CT, 1993–1996.

- Pratt & Whitney, West Palm Beach, FL, 1994–1996.
- HiPatent, Chicago, IL, 1996; 1998.
- Read-Rite, Fremont, CA, 1998–1999.
- Sumitomo Metal Industries, Osaka, Japan, 1998–1999.
- Dow-Corning, Midland, MI, 2000.
- GE Corporate Research and Development, April, 2000, 2011–2012.
- Hewlett-Packard Co., Boise, ID, 2001.
- Seagate Technology, 2002–2009; 2015–1016; 2021.
- Balzers AG, later Oerlikon Balzers, Balzers, Liechtenstein, 2003–2006, 2011, 2019, 2021.
- Cenymer, Longmont, CO, 2004.
- Nanocoolers, Austin, TX, 2004–2007.
- Zimmerman and Associates, Chicago, IL, 2004–2005.
- Hitachi Global Storage Technologies, 2005–2008; 2013–2015.
- Intel, 2005–2006.
- SBA Materials, 2006.
- Voxtel, 2006.
- Baker-Botts, 2006.
- Raytheon, 2006-2008.
- Samsung, 2006–2007; 2011.
- Micropelt, 2006-2007.
- Precision Instruments and Measurement Company, 2007–2008, 2010, 2014–2016, 2018–2020.
- Symetrix Corporation, 2007.
- Fraunhofer Institute for Physical Measurement, 2007–2009, 2015.
- Western Digital Corporation, 2008–2011; 2021.
- Northrop Grumman, 2008.
- Bonutti Technologies, 2008.
- Nextreme Thermal Solutions, 2009.
- Aerospace Corp., 2009.
- Sheetak Inc., 2009, 2019–2020, 2022.

- Phononic Devices, 2010–2014.
- Translucent, 2010–2011.
- Wellcome Trust, 2012.
- U. Hamburg, 2012.
- ZTPlus, 2012.
- McMaster University, 2012–2013.
- UC-Davis, 2012–2013.
- ETH-Zurich, 2012–2014.
- Honeywell, 2012.
- Dutch Institute for Fundamental Energy Research, 2012.
- Advanced Diamond Technologies, 2013.
- DuPont, 2013.
- Silicium Energy, 2013–2014.
- Toyota Motor Engineering and Manufacturing North America, Inc., 2013.
- Dickinson Wright, 2013–2014.
- Henkel Electronics, 2013.
- HRL, 2014.
- Linseis, 2014–2018.
- Veeco, 2015.
- C3Nano, 2015.
- Soraa Laser, 2016–2017.
- Kennametal, 2016.
- Akhan Semiconductor, 2016.
- Evatec, 2016–2017; 2020–2021.
- Diamond Foundry, 2019–2021.
- Materials Characterization Services, 2019–2022.
- Winchester Technologies, 2021–2022.
- Electroninks, 2021.

## Invited Talks

1. D. G. Cahill and R. O. Pohl, "Thermal conductivity at low and high temperatures," 90th Annual Meeting of the American Ceramic Society, Cincinnati, OH, May 1-5 1988.

2. D. G. Cahill, "Thermal conductivity and lattice vibrations," 1991 March Meeting of the APS, Cincinnati, OH, March 18-22.

3. D. G. Cahill and R. O. Pohl, "Is there a lower limit to the thermal conductivity of solids," *MRS Symp. Proc.* **234**, 27 (1991); MRS Spring Meeting, Anaheim, CA, 1991.

4. D. G. Cahill and J. R. Olson, "Diamond thermal conductivity using the $3\omega$ technique," Workshop on Characterizing Diamond Films, Gaithersburg, MD, Feb. 27-28, 1992.

5. D. G. Cahill and R. J. Hamers, "Charge dynamics at the Si(001) surface studied by scanning tunneling microscopy and surface photovoltage," Chicago, IL, May 12, 1992.

6. D. G. Cahill, keynote address, "$3\omega$ method for thick and thin films," *Proceedings of the 22nd International Thermal Conductivity Conference*, edited by T. W. Tong, (Technomic, Lancaster, PA, 1994), p. 33; Tempe, AZ, Nov. 7-10, 1993.

7. D. G. Cahill, "Thermal conductivity measurement of thin film materials," Knolls Atomic Power Lab, Schenectady, NY, Sept. 13, 1994.

8. D. G. Cahill, "Pattern formation during crystal growth by molecular beam epitaxy," Lawrence Livermore National Laboratory, Livermore, CA, Dec. 15, 1994.

9. D. G. Cahill and J. E. Van Nostrand, "Pattern formation during homoepitaxial growth of Ge(001) at low temperatures," 14th Conference on Crystal Growth and Epitaxy, Fallen Leaf Lake, CA, June 4-7, 1995.

10. D. G. Cahill, "Roughening and smoothing during semiconductor crystal growth and etching," Solid State Physics Seminar, Cornell University, Ithaca, NY, Sept. 19, 1995.

11. J. W. Wood, R. Cortez, D. G. Cahill, L. D. Stephenson, and H. H. Zaghloul, "Volatilization during thermal plasma processing of glass melts containing heavy-metals," *Proceedings of the 56th Conference on Glass Problems,* Urbana, IL, Oct. 23-25, 1995.

12. D. G. Cahill, "Thermal conductivity of thin films and multilayers," ARPA Thermoelectric Materials Workshop, Arlington, VA, Nov. 8-9, 1995.

13. D. G. Cahill, S. Jay Chey, and J. E. Van Nostrand, "Coarsening and slope selection during crystal growth and etching of Ge(001)," MRS Symp. Proc. **399**, 221 (1996); MRS Fall Meeting, Boston, MA, Nov. 29-Dec. 1, 1995.

14. D. G. Cahill, S. J. Chey, and J. E. Van Nostrand, "Roughening and smoothing kinetics of Ge(001)," TMS Annual Meeting, Anaheim, CA, Feb. 5, 1996.

15. D. G. Cahill, "Dynamics of the Ge(001) surface during low temperature processing," Condensed Matter Physics Seminar, UCLA, Los Angeles, CA, Feb. 7, 1996.

16. D. G. Cahill, "Heat transport in dielectric films and at solid-solid interfaces," Naval Research Laboratory, March 14, 1996.

17. D. G. Cahill, "Roughening and smoothing of the Ge(001) surface," Condensed Matter Physics Seminar, Ohio State University, Columbus, OH, May 8, 1996.

18. D. G. Cahill and S. J. Chey, "Relaxation of nanometer-scale surface morphology," Dynamics of Crystal Surfaces and Interfaces, Traverse City, MI, August 4-8, 1996, edited by Duxbury and Pence, (Plenum Press, New York, 1997), pp. 59-70.

19. D. G. Cahill and S.-M. Lee, "Influence of interface conductance on the apparent thermal conductivity of thin films," *Microscale Thermophysical Engineering*, **1**, 47 (1997); Second U.S.-Japan Seminar on Molecular and Microscale Transport Phenomena, August 8-10, 1996.

20. D. G. Cahill, "Roughening and smoothing of the Ge(001) surface," Condensed Matter Physics Seminar, U. Notre Dame, Notre Dame, IN, Oct. 4, 1996.

21. D. G. Cahill and S.-M. Lee, keynote address, "Progress in the study of thin film thermal conductivity," proceedings of the 17th Japan Symposium on Thermophysical Properties, Nov. 27-29, 1996.

22. D. G. Cahill, "Low temperature epitaxial growth of semiconductors and ceramics," American Chemical Society, San Francisco, CA, April 13-17, 1997.

23. D. G. Cahill and S.-M. Lee, "Heat Transport measurements of thin films and interfaces," Thin Film Thermal Conductivity Workshop, Boulder, CO, July 23–26, 1997.

24. D. G. Cahill, "Heat transport measurements of oxide films and solid-solid interfaces using the $3\omega$ method," United Technologies Research Center, East Hartford, CT, Aug. 31, 1997.

25. D. G. Cahill, S.-M. Lee, G. Matamis, and W. P. Allen,"Thin film materials and the minimum thermal conductivity," *Microscale Thermophysical Engineering* **2**, 31 (1998); Thermophysical Phenomena in Microscale Sensors, Devices, and Structures, Baltimore, MD, August 9, 1997.

26. D. G. Cahill, "Heat transport in dielectric thin films and at solid-solid interfaces," Read-Rite, Fremont, CA, Feb. 10, 1998.

27. D. G. Cahill, "Heat transport in thin film materials and the minimum thermal conductivity, " Argonne National Laboratory, Argonne, IL, June 10, 1998.

28. D. G. Cahill, A. J. Bullen, T. Selinder, and A. von Keudell, "Thermal conductivity of wear-resistant coatings," Thermophysical Phenomena in Microscale Sensors, Devices, and Structures, Albuquerque, NM, June 14, 1998.

29. D. G. Cahill, "Low temperature growth morphology of TiN(001) and the effects of low energy ion bombardment", Sandia National Laboratory, Albuquerque, NM, June 15, 1998.

30. D. G. Cahill, "Heat conduction in disordered materials and the minimum thermal conductivity," Department of Mechanical Engineering, U. California, Berkeley, Materials Seminar, Oct. 28, 1998.

31. D. G. Cahill, "Morphology of epitaxial films during low temperature growth", AVS 45th International Symposium, Baltimore, MD, Nov. 5, 1998.

32. D. G. Cahill, "Morphology of epitaxial TiN(001) thin films," Sandia National Laboratory, Livermore, CA, Nov. 23, 1998.

33. D. G. Cahill, "Roughening and smoothing of the Ge(001) surface", U. California, Davis, Condensed Matter Physics Seminar, Dec. 3, 1998.

34. D. G. Cahill, "Interface thermal conductance and the thermal conductivity of multilayer thin films," International Thermal Conductivity Conference, Ann Arbor, MI, June 14–16, 1999.

35. D. G. Cahill, "Large-scale kinetic structures formed during growth and etching," Gordon Research Conference, Thin Films and Crystal Growth Mechanisms, Plymouth State College, NH, June 20–25, 1999.

36. D. G. Cahill, S.-C. Chen, and C. Grigoropoulos, "Time-resolved microscopy of surface morphology during laser thermal processing of Si and Ge," Joint US/Japan Symposium on Molecular and Microscale Thermophysical Phenomena in Nanotechnology, Sendai, Japan, Aug 8–11, 1999.

37. D. G. Cahill, A. J. Bullen, and S.-M. Lee, "Interface thermal conductance and the thermal conductivity of multilayer thin films," *High Temperatures High Pressures*, **32** 135 (2000); 15th European Conference on Thermophysical Properties, Würzburg, Germany, Sept. 5–9, 1999;

38. D. G. Cahill, J.-C. Kim, K. Kyuno, and R. S. Averback, "Defects and morphologies produced by keV ion bombardment of Ge and Si surfaces," MRS 1999 Fall Meeting, Boston, MA, Nov. 29–Dec. 3, 1999.

39. D. G. Cahill, "Thermal conductivity of nanostructured thin film materials," Dow Corning Corp., January 6, 2000.

40. D. G. Cahill, "Laser-driven material deformation on nanosecond and picosecond time scales," Lawrence Livermore National Laboratory, Livermore, CA, May 11, 2000.

41. D. G. Cahill, "Instabilities and pattern formation in low temperature crystal growth," Materials Science seminar, Harvard University, April 5, 2001.

42. D. G. Cahill "Nanostructures by dewetting," Materials Science and Engineering Department, Rensselaer Polytechnic Institute, April 19, 2001.

43. D. G. Cahill, panel discussion on "Nanoscale transport phenomena," ASME Congress 2001, New York, NY, Nov. 11-16.

44. D. G. Cahill and T. Schwarz-Selinger, "Surface mass transport during Stranski-Krastinow growth of epitaxial nanostructures," Franco-American workshop on Nanoparticles, Northwestern University, Dec. 3–5, 2001.

45. D. G. Cahill and T. Schwarz-Selinger, "Domes on dimpled substrates", 2002 March Meeting of the APS, Indianapolis, IN, March 18–22.

46. D. G. Cahill, "Nanostructured metal/glass interfaces by ion-induced dewetting and burrowing," Int. Conf. Metallurgical Coatings and Thin Films, San Diego, CA, April 22–26, 2002.

47. D. G. Cahill, "Thermal transport across solid-solid and solid-liquid interfaces," Mechanical Engineering Department, Purdue University, Nov. 15, 2002.

48. D. G. Cahill, "Instabilities and pattern formation in vapor phase crystal growth," Materials Science and Engineering Department, U. of Michigan, Dec. 6, 2002.

49. D. G. Cahill, "Time-domain thermoreflectance studies of thin film thermal conductivity and interface thermal conductance, " Seagate Technology, Bloomington, MN, Jan. 30, 2003.

50. D. G. Cahill, "The denominator of the thermoelectric figure of merit: heat transport by lattice vibrations," 2003 ASM/TMS Spring Symposium, Schenectady, NY, May 12–13.

51. D. G. Cahill, "Flow, buckling, and delamination in laser processing of Si and $SiO_2$/Si," 2003 ASME Mechanics and Materials Conference, Tempe, AZ, June 17–21.

52. D. G. Cahill, "Heat transport by lattice vibrations: disorder and interfaces," Thermal and Environmental Barrier Coatings, Irsee, Germany, August 17–22, 2003.

53. D. G. Cahill and Fumiya Watanabe, "Surface mass transport, island nucleation, and morphological instabilities during growth of Ge on laser textured Si(001)," 2003 Lawrence Symposium, Tempe, AZ, Oct. 9-11, 2003.

54. D. G. Cahill, "Nanostructured materials and the thermal conductance of interfaces," 27th International Thermal Conductivity Conference, Knoxville, TN, Oct. 26–29, 2003.

55. D. G. Cahill, "Nanostructured materials and the thermal conductance of interfaces," Thermal Management for Micro and Meso Power Systems Conference, Chicago, IL, May 17–18, 2004.

56. Fumiya Watanabe and D. G. Cahill, "Strained layer instabilities on vicinal surfaces: $Si_{1-x}Ge_x$ epitaxy on laser textured Si(001)," Third Annual Workshop on the Evolution and Self-Assembly of Quantum Dots, Northwestern U., Aug. 13–14, 2004.

57. D. G. Cahill, "Spatially-resolved measurements of thermal transport properties by time-domain thermoreflectance," Lawrence Livermore National Laboratory, Sept. 23, 2004.

58. D. G. Cahill, "Thermal transport at the nanoscale," Mechanical Engineering Dept. seminar, U. Virginia, Oct. 21, 2004.

59. D. G. Cahill "Thermal transport in nanostructured materials," AVS 51st International Symposium, Anaheim, CA, Nov. 14–19, 2004.

60. D. G. Cahill, "Morphological instabilities during growth of GeSi on laser textured Si(001)," ASME International Mechanical Engineering Congress, Anaheim, CA, Nov. 13–19, 2004.

61. D. G. Cahill, "Thermal transport at the nanoscale," Intel Corp., Portland, OR, Dec. 2, 2004.

62. D. G. Cahill, "Thermal transport at the nanoscale," Materials Research Institute seminar, U. Oregon, Eugene, OR, Dec. 3, 2004.

63. D. G. Cahill, "Thermal transport at the nanoscale, IBM Watson Research Center, Yorktown Heights, NY, Feb. 15, 2005.

64. D. G. Cahill, "Thermal conductance of interfaces," MRS Spring Meeting, San Francisco, CA, March 28–April 1, 2005.

65. D. G. Cahill "Thermal conductance of solid-solid and solid-liquid interfaces," NCN NEMS Workshop, Purdue U., April 8, 2005.

66. D. G. Cahill, "Beating the minimum thermal conductivity with W/alumina nanolaminates," Int. Conf. on Metallurgical Coatings and Thin Films, San Diego, CA, May 2–6, 2005.

67. D. G. Cahill, "Spatially resolved measurements of thermal transport properties by time-domain thermoreflectance," General Atomics, La Jolla, CA, Aug. 9, 2005.

68. D. G. Cahill, "Thermal conductance of solid-solid and solid-liquid interfaces," Argonne National Lab, Argonne, IL, Aug. 17, 2005.

69. D. G. Cahill, "Thermal conductance of solid-solid and solid-liquid interfaces," Micro Thermal System Research Center, Seoul National University, Nov. 7, 2005.

70. D. G. Cahill, "Thermal conductance of solid-solid and solid-liquid interfaces," Mech. Eng. Dept., U. Tokyo, Nov. 9, 2005.

71. D. G. Cahill, "Thermal conductance of solid-solid and solid-liquid interfaces," plenary speaker, 26th Japan Thermophysical Properties Conference, Tsukuba, Japan, Nov. 9-11, 2005.

72. D. G. Cahill, "Thermal conductance of interfaces," SRC/NSF 3rd Workshop on Silicon Nanoelectronics and Beyond, Arlington, VA, Dec. 8–9, 2005.

73. D. G. Cahill, "Thermal conductance of interfaces and the thermal conductivity of epitaxial semiconductors," DARPA Workshop on Nanoscopic Optical Phonon Engineering, Arlington, VA, Dec. 15, 2005.

74. D. G. Cahill, "Picosecond time-scale heat transport in metallic layers," SPIE Photonics West Conference, San Jose, CA, Jan. 23–26, 2006.

75. D. G. Cahill, "Time-domain thermoreflectance studies of thin film thermal conductivity and interface thermal conductance," Hitachi Global Storage, San Jose, CA, Jan. 26, 2006.

76. D. G. Cahill, "Thermodiffusion of nanoparticles in water," MRS Spring Meeting, San Francisco, CA, April 17–20, 2006.

77. D. G. Cahill, "Thermal conductance of solid-solid interfaces," CECAM workshop on heat transfer simulation at the atomic scale, Lyon, France, Sept. 14–16, 2006.

78. D. G. Cahill, "Nanoscale thermal transport," Tulane Physics Department seminar, Nov. 7, 2006.

79. D. G. Cahill, "Nanoscale thermal transport," Louisiana State U. Physics Department seminar, Nov. 8, 2006.

80. D. G. Cahill, "High resolution, high throughput thermal conductivity mapping of ceramic coatings and composites," 31st Int. Conf. Advanced Ceramics and Composites, Daytona Beach, FL, January 23–26, 2007.

81. D. G. Cahill, "Heat transport at solid-liquid interfaces: confrontation between experiment and simulation," 2007 March Meeting of the APS, Denver, CO, March 5–9, 2007.

82. D. G. Cahill, IBM Lecture Series on Nanotechnology,"Thermal conductivity of superlattices, multilayers, and layered crystals: how low can we go?", Notre Dame University, South Bend, IN, April 3, 2007.

83. D. G. Cahill, "Materials characterization using ultrafast lasers," Advanced Materials/Failure Analysis, Phoenix, AZ, April 20, 2007.

84. D. G. Cahill, "Nanoscale thermal conductance," NSF Workshop on Frontiers in Transport Phenomena, Storrs, CT, May 17–18, 2007.

85. D. G. Cahill, "Frequency dependent thermal conductivity and ballistic phonon heat transport in semiconductor alloys," Phonons Scattering in Condensed Matter, Paris, France, July 16–20, 2007.

86. D. G. Cahill, "Extremes in heat conduction: Pushing the boundaries of the thermal conductivity of materials," United Technologies Research Center Fellows Innovation Seminar, Hartford, CT, Sept. 12, 2007.

87. D. G. Cahill, "Interfacial effects in heat transport," ECI conference on Nanofluids: Fundamentals and Applications, Copper Mountain, CO, Sept. 16–20, 2007.

88. D. G. Cahill, "Extremes in heat conduction: Pushing the boundaries of the thermal conductivity of materials," Mechanical Eng. Dept. seminar, U. Pennsylvania, Oct. 4, 2007.

89. D. G. Cahill, "Extremes in heat conduction: Pushing the boundaries of the thermal conductivity of materials," Air Force Research Laboratory, Dayton, OH, Oct. 15, 2007.

90. D. G. Cahill, "Extremes in heat conduction: Pushing the boundaries of the thermal conductivity of materials," Materials Science Dept. seminar, Michigan State University, Oct. 25, 2007.

91. D. G. Cahill, "Extremes in heat conduction: Pushing the boundaries of the thermal conductivity of materials," Defense Sciences Research Council workshop on Energy Harversting, Arlington, VA, Nov. 7, 2007.

92. D. G. Cahill, "Ultrafast thermometry and the measurement of thermal transport properties at the nanoscale," Materials Science Dept. seminar, Stanford University, Nov. 9, 2007.

93. D. G. Cahill, "Nanoscale heat conduction at solid-liquid interfaces," Gordon Research Conference on Photoacoustic and Photothermal Phenomena, Ventura, CA, Feb. 10–14, 2008.

94. D. G. Cahill, "Extremes in heat conduction: Pushing the boundaries of the thermal conductivity of materials," Mechanical Engineering Dept. seminar, University of Texas–Austin, Feb. 29, 2008.

95. D. G. Cahill, "Thermal conductivity of phase change materials and the thermal conductance of interfaces," MRS Spring Meeting, San Francisco, CA, March 24–27, 2008.

96. D. G. Cahill, "Pushing the boundaries of the thermal conductivity of materials," 6th US-Japan Joint Seminar on Nanoscale Transport Phenomena—Science and Engineering, Boston, MA July 13–16, 2008.

97. D. G. Cahill, "Pushing the boundaries of the thermal conductivity of materials," International Conference on Thermoelectrics, Corvallis, OR, August 4–7, 2008.

98. D. G. Cahill, "Ion beam analysis of materials for water purification: Partitioning of inorganic ions in FT30 reverse osmosis membranes," International Conference on the Application of Accelerators in Research and Industry, Forth Worth, TX, August 10–16, 2008.

99. D. G. Cahill, "Nanoscale thermal transport and the thermal conductance of interfaces," International Workshop on Energy Dissipation at Surfaces, Bad Honnef, Germany, August 25–28, 2008.

100. D. G. Cahill, "Pushing the boundaries of the thermal conductivity of materials," Institute for Materials Research—Materials Week, The Ohio State University, Columbus, OH, September 10–12, 2008.

101. D. G. Cahill, "Passive and active control of heat transfer at interfaces," Thermal Management Materials Workshop, Dayton, OH, September 16–17, 2008.

102. D. G. Cahill, "Pushing the boundaries of the thermal conductivity of materials," Mechanical Engineering Dept. seminar, University of Colorado–Boulder, September 18, 2008.

103. D. G. Cahill, "Pushing the boundaries of the thermal conductivity of materials," Nanoscience Seminar, Arizona State University, Tempe, AZ, October 20, 2008.

104. D. G. Cahill, "Ultrafast laser-based metrology for micron-scale measurements of thermal transport, coefficient of thermal expansion, and temperature," Intel Corporation, Chandler, AZ, October 21, 2008.

105. D. G. Cahill, "Thermal unobtainiums(?)," Defense Sciences Research Council Workshop on Thermal Superconductivity, Arlington, VA, November 17, 2008.

106. D. G. Cahill, "Pushing the boundaries of the thermal conductivity of materials," Materials Science Seminar, Harvard University, Cambridge, MA, February 12, 2009.

107. D. G. Cahill, "Transport of water and solutes in reverse osmosis and nanofiltration membranes", 2009 March Meeting of the APS, Pittsburgh, PA, March 18–22.

108. D. G. Cahill "Ultralow thermal conductivity in disordered layered crystals," MRS Spring Meeting, San Francisco, CA, April 13–16, 2009.

109. D. G. Cahill "Nanoscale thermal transport during ultrafast melting and crystallization of Ag and Si," MRS Spring Meeting, San Francisco, CA, April 13–16, 2009.

110. D. G. Cahill, "Reducing the phonon thermal conductivity at cryogenic temperatures," Workshop on Recent Advances in Peltier Cooling," Kirtland AFB, NM, April 22–23, 2009.

111. D. G. Cahill, "Thermal conductivity control with thin films," International Conference on Metallurgical Coatings and Thin Films, San Diego, CA, April 27–30, 2009.

112. D. G. Cahill, "Measurement of thermal conductivity," Spring School on Thermal Conductivity and Related Properties, Gainseville, FL, May 18-22, 2009.

113. D. G. Cahill, "Spatially-resolved measurements of thermal stresses by picosecond time-domain probe beam deflection," plenary lecture at Thermal Stresses 2009, Urbana, IL, June 1–4, 2009.

114. D. G. Cahill and Yee Kan Koh, "Do embedded nanodots make better thermoelectrics?," International Conference on Thermoelectrics, Freiburg, Germany, July 27–30, 2009.

115. D. G. Cahill "Ultralow thermal conductivity in disordered layered crystals," Materials Science Seminar, ETH, Zurich, Switzerland, July 31, 2009.

116. D. G. Cahill, "Ultrafast laser-based metrology for micron-scale measurements of thermal transport and coefficient of thermal expansion," Oerlikon Balzers, Balzers, Liechtenstein, July 31, 2009.

117. D. G. Cahill, "Pushing the boundaries of the thermal conductivity of materials," Chemistry Department Seminar, Dalhoise University, Halifax, Nova Scotia, Canada, August 21, 2009.

118. D. G. Cahill, "Pushing the boundaries of the thermal conductivity of materials," Frontiers in Materials Science Seminar Series, Vanderbilt University, Nashville, TN, November 18, 2009.

119. D. G. Cahill, "Phonon lifetimes in Si from 50 GHz to 15 THz," MRS Fall Meeting, Boston, MA, November 30–December 3, 2009.

120. D. G. Cahill, "Thermal conductance of interfaces and ultralow thermal conductivity," 37th Conference on the Physics and Chemistry of Surfaces and Interfaces, Santa Fe, NM, January 10–14, 2010.

121. D. G. Cahill, "Pushing the boundaries of the thermal conductivity of materials," Center for Nanoscale Science Seminar, Los Alamos National Laboratory, Los Alamos, NM, January 2010.

122. D. G. Cahill, "Pushing the boundaries of the thermal conductivity of materials," Mechanical Engineering Department Seminar, U. Michigan, Ann Arbor, MI, January 29, 2010.

123. D. G. Cahill, IBM Distinguished Lecture in Materials Science,"Pushing the boundaries of the thermal conductivity of materials," Rensselaer Polytechnic Institute, Troy, NY, February 3, 2010.

124. D. G. Cahill, "Thermal conductance of solid-state interfaces," TMS Annual Meeting, Seattle, WA, February 14–18, 2010.

125. D. G. Cahill, "Thermal energy conversion and control," AAAS Annual Meeting, San Diego, CA, February 18–22, 2010.

126. D. G. Cahill, "Ultralow thermal conductivity in nanostructured materials," Workshop on Transport in Nanostructured Materials, Lawrence Berkeley Laboratory, Berkeley, CA, April 1–2, 2010.

127. D. G. Cahill and Yee Kan Koh, "Nanostructures and the lattice thermal conductivity of thermoelectric materials," MRS Spring Meeting, San Francisco, CA, April 5–9, 2010.

128. D. G. Cahill, "Measurement and control of ultrafast thermal energy transport at interfaces," DARPA Workshop on Local Control of Chemistry at Surfaces, Arlington, VA, May 11–12, 2010.

129. D. G. Cahill, "Comparison of the $3\omega$ method and time-domain thermoerflectance," Thermal Conductivity in Reduced Dimensions: $3\omega$ Method and Beyond, U. of Göttingen, Germany, May 27–28, 2010.

130. D. G. Cahill, "Ultralow thermal conductivity and the thermal conductance of interfaces, Institute of Materials Physics Seminar, U. of Göttingen, Germany, May 28, 2010.

131. D. G. Cahill, "Thermodiffusion of nanoparticles in water and the thermal boundary conditions of solid-liquid interfaces," Ninth International Meeting on Thermodiffusion, Toulouse, France, June 7–11, 2010.

132. D. G. Cahill, "Ultrafast optical metrology for quantitative measurements of thermal transport at the nanoscale," tutorial lecture, Workshop on Transmission of Information and Energy in Nonlinear and Complex Systems, Singapore, July 5–9, 2010.

133. D. G. Cahill, "Nanostructures and the control of thermal conductivity," Institute for Microelectronics, Singapore, July 7, 2010.

134. D. G. Cahill, "Thermal energy transport at graphene interfaces," Workshop on Transmission of Information and Energy in Nonlinear and Complex Systems, Singapore, July 5–9, 2010.

135. D. G. Cahill, "Probing the mechanisms of heat conduction through the dependence of thermal conductivity on MHz frequencies and GPa pressures," Workshop on Transport Phenomena In Low Dimensional Quantum Magnets, Kolymbari, Crete, Greece, September 24–27, 2010.

136. D. G. Cahill, "Heat conduction across interfaces with molecular layers: solids, liquids, and vapors," New Trends in Nonlinear Dynamics: Heat Control and Thermoelectric Efficiency, Erice, Sicily, Italy, October 23–28, 2010.

137. D. G. Cahill, keynote,"Nanostructures and the control of thermal conductivity," e-Therm 2010, AIST, Tsukuba, Japan, December 15–17, 2010.

138. D. G. Cahill, "Testing the physics of heat conduction in glasses and crystals using high pressures," Dynamic Phenomena under Extremes, Austin, TX, January 25–27, 2011.

139. D. G. Cahill, "Measuring thermal transport in extreme environments: Thermal conductivity of water ice VII to 20 GPa," Workshop on Thermal Issues for Hydrogen Energy Systems, Kyushu University, Fukuoka, Japan, February 3, 2011.

140. D. G. Cahill, Distinguished Visitor Lecture, "Science of water purification for the 21st century," Haverford College, PA, February 21, 2011.

141. D. G. Cahill, Distinguished Visitor Lecture, "Extremes of heat conduction: Searching for the perfect thermal insulator," Haverford College, PA, February 22, 2011.

142. D. G. Cahill, "Ultralow thermal conductivity and the thermal conductance of interfaces," Materials Science and Engineering Department Seminar, Cornell University, Ithaca, NY, March 10, 2011.

143. D. G. Cahill, "Phonon scattering and thermal conduction in nanostructured semiconductors," Emerging Opportunities in Nanostructured Semiconductors, Northwestern University, Evanston, IL, June 2–3, 2011.

144. D. G. Cahill, "Thermal conductance of material interfaces," Euromat 2011, Montpellier, France, September 12–15, 2011.

145. D. G. Cahill, "Ultralow thermal conductivity and the thermal conductance of interfaces," Materials Science and Engineering Department Seminar, University of Maryland, October 7, 2011.

146. D. G. Cahill, "The challenge of water: a tutorial on thermodynamics," World Materials Summit, Washington, DC, October 9–12, 2011.

147. D. G. Cahill, plenary, "The challenge of water," World Materials Summit, Washington, DC, October 9–12, 2011.

148. D. G. Cahill, plenary, Symposium X, "eXtremes of heat conduction: Pushing the boundaries of the thermal conductivity of materials," MRS Fall Meeting, Boston, MA, November 28–December 2, 2011.

149. D. G. Cahill, "Thermal conductance of weak and strong interfaces," MRS Fall Meeting, Boston, MA, November 28–December 2, 2011.

150. D. G. Cahill, "Nanostructures and the control of thermal conductivity," Conference on Electronic Materials and Applications, Orlando, FL, January 18–20, 2012.

151. D. G. Cahill, "Perspectives on the past decade: phonon experiment", NSF/ONR Workshop on Nano/Microscale Thermal Transport, Atlanta, GA, March 4, 2012.

152. D. G. Cahill, "Thermal conductance of weak and strong interfaces," 3rd ASME Microscale and Nanoscale Heat and Mass Transfer International Conference, Atlanta, GA, March 4–6, 2012.

153. D. G. Cahill, "Phonon scattering and thermal conduction in nanostructured semiconductors," MRS Spring Meeting, San Francisco, CA, April 9–13, 2012.

154. D. G. Cahill, "Measurements of thermal transport at the nanoscale using kHz and ultrafast thermal waves: the $3\omega$ method and time-domain thermoreflectance," Phonon Dynamics, Heat Transfer, and Thermoelectric Phenomena in Nanostructures, Companion School to 15th International Workshop on Computational Electronics, Madison, WI, May 21–22, 2012.

155. D. G. Cahill, "Ultralow thermal conductivity and the thermal conductance of interfaces," Sandia National Laboratory, Albuquerque, NM, June 6, 2012.

156. D. G. Cahill and Wen-Pin Hsieh, plenary, "Testing models for heat conduction using high pressures: crystals, glasses, and interfaces," Phonons 2012, Ann Arbor, MI, July 9–11, 2012.

157. D. G. Cahill, "Ultralow thermal conductivity and the thermal conductance of interfaces," Department of Materials Science and Engineering seminar, U. Florida-Gainesville, September 11, 2012.

158. D. G. Cahill, "High throughput mapping of the thermophysical properties of materials," Harnessing the Materials Genome, Vail, CO, September 30–October 1, 2012.

159. D. G. Cahill, "eXtremes of heat conduction: Pushing the boundaries of the thermal conductivity of materials," Department of Materials Science and Engineering seminar, Drexel University, Philadelphia, PA, October 23, 2012.

160. D. G. Cahill, "Electronic thermal transport in nanoscale metal layers," MRS Spring Meeting, San Francisco, CA, April 1–5, 2013.

161. D. G. Cahill, "Thermal conductance of weak and strong interfaces," Heraeus Seminar on Thermal Transport at the Nanoscale, Bad Honnef, Germany, April 7–10, 2013.

162. D. G. Cahill, invited panelist, "Metrology with high resolution in space and time and high sensitivity to interfacial phenomena," International Workshop on Micro and Nano Structures for Phase Change Heat Transfer, Dedham, MA, April 22–23, 2013.

163. D. G. Cahill, "Magnon-phonon coupling in copper-oxides and the coupling of spin and heat currents in metallic multilayers," Spin Caloritronics V, Columbus, OH, May 13–15, 2013.

164. D. G. Cahill, "Surface science at the University of Illinois and the challenge of high pressure and liquid ambients," BP Downstream Technology Seminar, Manchester, UK, June 18–20, 2013.

165. D. G. Cahill, "Testing the physics of heat conduction using high pressure: crystals, glasses, and interfaces," International Workshop on Thermoelectric Research and Thermal Management Technology, Tsukuba, Japan, June 28, 2013.

166. D. G. Cahill, "Extremes of heat conduction in molecular materials," CECAM Workshop on Nanophonics, Bremen, Germany, August 19–23, 2013.

167. D. G. Cahill, "Electronic thermal transport in nanoscale metal layers," Physikalisch-Technische Bundesanstalt, Braunschweig, Germany, August 23, 2013.

168. D. G. Cahill, "Extremes of heat conduction in molecular materials," Materials Science and Engineering Department Seminar, Penn State University, State College, PA, September 19, 2013.

169. D. G. Cahill, "Extremes of heat conduction in molecular materials," Materials Science and Engineering Department Seminar, U. Washington, Seattle, WA, September 30, 2013.

170. D. G. Cahill, "Extremes of heat conduction in molecular materials," Thomas Young Center Highlight Seminar, Imperial College, London, UK, October 10, 2013.

171. D. G. Cahill, "Thermal conductance of weak and strong interfaces," CECAM Workshop on Heat Transfer at Small Scales, Zaragoza, Spain, October 14–16, 2013.

172. D. G. Cahill, "Thermal conductance of weak and strong interfaces," Hughes Research Laboratory Colloquium, October 28, 2013.

173. D. G. Cahill, "Extremes of heat conduction in molecular materials," AVS 60th International Symposium, Long Beach, CA, October 28 to November 1, 2013.

174. D. G. Cahill, "Extremes of heat conduction in molecular materials," Materials Research Lectures, Caltech, Pasadena, CA, October 30, 2013.

175. D. G. Cahill, "Extremes of heat conduction in molecular materials," Henkel Corporation, Irvine, CA, November 1, 2013.

176. D. G. Cahill, "Extremes of heat conduction in molecular materials," Chemical Engineering and Materials Science Seminar, U. Minnesota, Minneapolis, MN, November 12, 2013.

177. D. G. Cahill, "Extremes of heat conduction in molecular materials," 3M Corporation, St. Paul, MN, November 13, 2013.

178. D. G. Cahill, "Extremes of heat conduction in molecular materials," Department of Materials Science and Engineering Seminar, U. Tennessee, Knoxville, TN, November 15, 2013.

179. D. G. Cahill, "Extremes of heat conduction in molecular materials," Department of Materials Science and Engineering Seminar, Georgia Tech, Atlanta, GA, November 18, 2013.

180. D. G. Cahill, "Extremes of heat conduction in molecular materials," MRS Fall Meeting, Boston, MA, December 2–6, 2013.

181. D. G. Cahill, "Extremes of heat conduction in molecular materials," Department of Chemical Engineering Seminar, Illinois Institute of Technology, Chicago, IL, February 19, 2014.

182. D. G. Cahill, "Extremes of heat conduction in molecular materials," plenary talk, International Thermal Conductivity Conference, Purdue University, April 28–30, 2014.

183. D. G. Cahill and G.-M. Choi, "Thermally-driven ultrafast spin currents: picosecond demagnetization and the spin-dependent Seebeck effect," Institute for Materials Research—Materials Week, The Ohio State University, Columbus, OH, May 7–9, 2014.

184. D. G. Cahill, "Time-domain thermoreflectance: fundamentals and advanced techniques", tutorial lectures, International Conference on Phononics and Thermal Energy Sciences, Tongji University, Shanghai, China, May 26–28, 2014.

185. D. G. Cahill, "Extremes and enhanced functionality in thermal conduction", plenary talk, International Conference on Phononics and Thermal Energy Sciences, Tongji University, Shanghai, China, May 29–31, 2014.

186. D. G. Cahill and Gyung-Min Choi, "Coupling of spin and heat currents in metallic multilayers," International Conference on Thermoelectrics ICT2014, Nashville, TN July 6–10, 2014.

187. D. G. Cahill, G. Hohensee, and Gyung-Min Choi, "Coupling of heat and spin currents in cuprates and metallic multilayers," US-Japan Joint Seminar on Nanoscale Transport Phenomena, Santa Cruz, CA, July 13–16, 2014.

188. D. G. Cahill, G.-M. Choi, J. Park, J. Huang, W. Wang, R. Wilson, "Ultrafast heat transfer in nanoscale materials," Mechanical Engineering Department Seminar, U. Houston, September 4, 2014.

189. D. G. Cahill, G.-M. Choi, J. Park, J. Huang, W. Wang, R. Wilson, "Ultrafast heat transfer in nanoscale materials," Materials Science and Engineering Department Seminar, U. Pennsylvania, September 18, 2014

190. D. G. Cahill, J. Cho, P. V. Braun, "Electrochemical control of thermal conduction in thin films," 2014 Electrochemical Society and SMEQ Joint International Meeting, Cancun, Mexico, October 5–9, 2014.

191. D. G. Cahill, Greg Hohensee, and Gyung-Min Choi, "Coupling of heat and spin currents in cuprates and metallic multilayers," keynote talk, Eurotherm Seminar 103: NMHT IV, Lyon, France, October 15–17, 2014.

192. D. G. Cahill, G.-M. Choi, J. Park, J. Huang, W. Wang, R. Wilson, "Ultrafast heat transfer in nanoscale materials," Mechanical Engineering Department Seminar, U. Minnesota, October 28, 2014.

193. D. G. Cahill, J. Liu, X. Wang, and D. Li, "Thermal conductivity and elastic constants of PEDOT:PSS," MRS Fall Meeting, Boston, MA, December 1–5, 2014.

194. D. G. Cahill and R. B. Wilson, "Failure of Fourier's law in measurements of thermal conductivity by time-domain thermoreflectance," MRS Fall Meeting, Boston, MA, December 1–5, 2014.

195. D. G. Cahill and J. Park, "Plasmonic sensing of heat transport and phase change near solid-liquid interfaces," Gordon Research Conference on Micro and Nanoscale Phase Change Heat Transfer, Galveston, TX, January 11–16, 2015.

196. D. G. Cahill, Gyungmin Choi, Rich Wilson, Johannes Kimling, Judith Kimling, Jun Liu, "Thermal spin transfer torque driven by ultrafast heat flow in metallic spin-valve structures," Seagate Technology, Minneapolis, MN, March 18, 2015.

197. D. G. Cahill and Rich Wilson, "Failure of Fouriers law in measurements of thermal conductivity by time-domain thermoreflectance," plenary talk, PHONONICS 2015, Paris, France, May 31 to June 5, 2015.

198. D. G. Cahill, "Passive and active control of heat conduction in materials," Toyota Research Institute of North America, Ann Arbor, MI, June 9, 2015.

199. D. G. Cahill, G.-M. Choi, J. Park, J. Huang, W. Wang, R. Wilson, "Ultrafast heat transfer in nanoscale materials," plenary talk, 19th Symposium on Thermophysical Properties, Boulder, CO, June 22-26, 2015.

200. D. G. Cahill, G.-M. Choi, R. B. Wilson, "Picosecond spin caloritronics," International Colloquium on Magnetic Films and Surfaces, Krakow, Poland, July 12–17, 2015.

201. D. G. Cahill, G.-M. Choi, J. Park, J. Huang, W. Wang, R. Wilson, "Ultrafast heat transfer in nanoscale materials," School of Materials Science and Engineering, Jiao Tong University, Shanghai, China, July 22, 2015.

202. D. G. Cahill, G.-M. Choi, J. Park, J. Huang, W. Wang, R. Wilson, "Ultrafast heat transfer in nanoscale materials," Ceremony of awarding the advisory professor of Tongji University, Center for Phononics and Thermal Energy Sciences, Shanghai, China, July 24, 2015.

203. D. G. Cahill, "Extremes of heat conduction in molecular materials," 2015 Scientific Advisory Board Meeting, Henkel Corporation, Rocky Hill, CT, September 2–3, 2015.

204. D. G. Cahill, G.-M. Choi, R. B. Wilson, "Picosecond spin caloritronics," Workshop on Non-Linear Spin-Heat Interactions, Ohio State University, Columbus, OH, September 16–17, 2015.

205. D. G. Cahill, G.-M. Choi, R. B. Wilson, "Picosecond spin caloritronics," LASSP and A&EP Seminar, Cornell University, Ithaca, NY, October 6, 2015.

206. D. G. Cahill, G.-M. Choi, J. Park, J. Huang, W. Wang, R. Wilson, "Ultrafast heat transfer in nanoscale materials," Mechanical Engineering Department Seminar, Iowa State University, October 27, 2015.

207. D. G. Cahill, J. Liu, Judith Kimling, Johannes Kimling, "Time-resolved magneto-optical Kerr effect for studies of phonon thermal transport," MRS Fall Meeting, Boston, MA, November 29 to December 4, 2015.

208. D. G. Cahill, Judith Kimling, Johannes Kimling, J. Liu, "Ultrafast thermal analysis of HAMR media," 2016 Joint MMM/Intermag Conference, San Diego, CA, January 11–15, 2016.

209. D. G. Cahill, Judith Kimling, Johannes Kimling, G.-M. Choi, R. B. Wilson, "Picosecond spin caloritronics," Physics Department Seminar, Boston College, January 27, 2016.

210. D. G. Cahill, G.-M. Choi, J. Park, J. Huang, W. Wang, R. Wilson, "Ultrafast heat transfer in nanoscale materials," MSE Seminar, Boston University, January 29, 2016.

211. D. G. Cahill, G.-M. Choi, J. Park, J. Huang, W. Wang, R. Wilson, "Ultrafast heat transfer in nanoscale materials," Mechanical Engineering and Materials Science Seminar, Yale University, March 2, 2016.

212. D. G. Cahill, G.-M. Choi, J. Park, J. Huang, W. Wang, R. Wilson, "Ultrafast heat transfer in nanoscale materials," Materials Science and Engineering Colloquium, Columbia University, March 4, 2016.

213. D. G. Cahill, "Picosecond spin caloritronics," APS March Meeting 2016, Baltimore, MD, March 14–18.

214. D. G. Cahill, Judith Kimling, Johannes Kimling, G.-M. Choi, R. B. Wilson, "Picosecond spin caloritronics," WE-Heraeus-Seminar on Electrons and phonons: Interfaces and interactions, Bad Honnef, Germany, April 3–6, 2016.

215. D. G. Cahill, G.-M. Choi, J. Park, J. Huang, W. Wang, R. Wilson, "Ultrafast heat transfer in nanoscale materials," Mechanical Engineering Department Seminar, University of Pittsburgh, April 21, 2016.

216. D. G. Cahill, "Faculty job search," seminar for post-doc professional development group, Sandia National Laboratory, Albuquerque, NM, July 12, 2016.

217. D. G. Cahill, G.-M. Choi, Johannes Kimling, Judith Kimling, R. B. Wilson, "Picosecond spin caloritronics," Physics and Astronomy Colloquium, U. Kentucky, Lexington, KY, September 2, 2016.

218. D. G. Cahill, Johannes Kimling, G.-M. Choi, "Picosecond spin caloritronics," SPICE workshop on Quantum spintronics: spin transport through quantum materials, Johannes Gutenburg Universität, Mainz, Germany, September 21–23, 2016.

219. D. G. Cahill, tutorial lecture, "Time domain thermoreflectance 1.0: Fundamentals," Nanoscale and Microscale Heat Transfer V, Eurotherm seminar no. 108, Santorini, Greece, September 26–30, 2016.

220. D. G. Cahill, Jonglo Park, Xu Xie, "Plasmonic thermometry and plasmonic probes of ultrafast evaporation and condensation," Nanoscale and Microscale Heat Transfer V, Eurotherm seminar no. 108, Santorini, Greece, September 26–30, 2016.

221. D. G. Cahill, G.-M. Choi, Johannes Kimling, R. B. Wilson, "Picosecond spin caloritronics," Materials Science Department Seminar, UC Davis, Davis, CA, November 10, 2016.

222. D. G. Cahill, Xu Xie, Kexin Yang, Dongyao Li, Jungwoo Shin, "Lower and upper limits to the vibrational thermal conductivity of amorphous polymers and polymer salts," MRS Fall Meeting, Boston, MA, November 27–December 2, 2016.

223. D. G. Cahill, G.-M. Choi, Johannes Kimling, R. B. Wilson, "Picosecond spin caloritronics," Materials Science Department Seminar, U. Michigan, Ann Arbor, MI, January 6, 2017.

224. D. G. Cahill, G.-M. Choi, J. Park, J. Huang, W. Wang, R. Wilson, "Ultrafast heat transfer in nanoscale materials," Materials Science Department Seminar, UC Riverside, Riverside, CA, January 11, 2017.

225. D. G. Cahill, G.-M. Choi, Johannes Kimling, R. B. Wilson, "Picosecond spin caloritronics," Spins and Heat in Nanoscale Electronic Systems Workshop, Palm Desert, CA, January 12–13, 2017.

226. D. G. Cahill, G.-M. Choi, J. Park, J. Huang, W. Wang, R. Wilson, "Ultrafast heat transfer in nanoscale materials," Materials Science Department Seminar, Ohio State University, Columbus, OH, January 30, 2017.

227. D. G. Cahill, Xiaojia Wang, Xu Xie, "Ultralow thermal conductivity in molecular materials," Building Envelope Innovation Workshop, Atlanta, GA, March 2, 2017.

228. D. G. Cahill, "Current understanding and unsolved problems in thermal transport at the nanoscale," Son et Lumière International School, Les Houches, France, April 17–28, 2017.

229. D. G. Cahill, "Measurement of thermal transport coefficients at the nanoscale using ultrafast optical thermometry," Son et Lumière International School, Les Houches, France, April 17–28, 2017.

230. D. G. Cahill, Xiaojia Wang, Xu Xie, "Extremes of heat conduction by lattice vibrations," HEATER Workshop, Lawrence Berkeley National Laboratory, Berkeley, CA, July 31–August 1, 2017.

231. D. G. Cahill, G.-M. Choi, J. Park, J. Huang, W. Wang, R. Wilson, "Ultrafast heat transfer in nanoscale materials," Physics and Chemistry Department Seminar, Indiana State University, Terre Haute, IN, August 29, 2017.

232. D. G. Cahill, G.-M. Choi, J. Park, J. Huang, W. Wang, R. Wilson, "Ultrafast heat transfer in nanoscale materials," Materials Science Department Seminar, U. Wisconsin, Madison, WI, October 26, 2017.

233. D. G. Cahill, G.-M. Choi, J. Park, J. Huang, W. Wang, R. Wilson, "Ultrafast heat transfer in nanoscale materials," Materials Science Department Seminar, Rutgers University, New Brunswick, NJ, November 13, 2017.

234. D. G. Cahill, G.-M. Choi, J. Park, J. Huang, W. Wang, R. Wilson, "Ultrafast heat transfer in nanoscale materials," Materials Science Department Seminar, U. Central Florida, Orlando, FL, December 8, 2017.

235. D. G. Cahill, G.-M. Choi, J. Park, J. Huang, W. Wang, R. Wilson, "Ultrafast heat transfer in nanoscale materials," Materials Science Department Seminar, Texas A&M University, College Station, TX, January 23, 2018.

236. D. G. Cahill, G.-M. Choi, J. Park, J. Huang, W. Wang, R. Wilson, "Ultrafast heat transfer in nanoscale materials," Materials Science Department Seminar, Northwestern University, Evanston, IL, February 27, 2018.

237. D. G. Cahill and Xu Xie, "Lower and upper limits to the vibrational thermal conductivity of amorphous polymers and polymer salts," APS March Meeting 2018, Los Angeles, CA, March 5–9.

238. D. G. Cahill, "Picosecond spin caloritronics," Kickoff Meeting of the CRC/TRR 227on Ultrafast Spin Dynamics, Free University of Berlin, Germany, March 22–23, 2018.

239. D. G. Cahill, G.-M. Choi, J. Park, J. Huang, W. Wang, R. Wilson, "Ultrafast heat transfer in nanoscale materials," Mechanical, Materials & Aerospace Engineering Department Seminar, Illinois Institute of Technology, Chicago, IL, March 28, 2018.

240. D. G. Cahill, Q. Zheng, X. Xie, J. Shin, "From isotopically-enriched crystals to fullerene derivatives and everything in between: measurement of thermal conductivity by time-domain thermoreflectance," MRS Spring Meeting, Phoenix, AZ, April 2–6, 2018.

241. D. G. Cahill, "Plasmonic probes of ultrafast interfacial heat transfer and liquid-vapor phase transformations," Interfaces in Energy Materials, Trinity College, University of Cambridge, UK, April 10–12, 2018.

242. D. G. Cahill, H. Jang, K. Yang, Judith Kimling, Johannes Kimling, "Ultrafast thermometry using linear and quadratic magneto-optic Kerr effects in metallic ferromagnetic and antiferromagnetic materials," Spin Caloritronics IX, Columbus, OH, June 25–29, 2018.

243. D. G. Cahill, "Ultralow thermal conductivity in disordered layered crystals and functionalized fullerenes solids," Nanoscale Thermal Transport and Heat Localization Workshop, Qunatum Matter Institute, University of British Columbia, Vancouver, Canada, August 30–31, 2018.

244. D. G. Cahill, G.-M. Choi, J. Park, J. Huang, W. Wang, R. Wilson, "Ultrafast heat transfer in nanoscale materials," Materials Science and Engineering Department Seminar, U. Virginia, Charlottesville, VA, October 15, 2018.

245. D. G. Cahill, G.-M. Choi, J. Park, J. Huang, W. Wang, R. Wilson, "Ultrafast heat transfer in nanoscale materials," Materials Science and Engineering Department Seminar, Drexel University, Philadelphia, PA, December 5, 2018.

246. D. G. Cahill, "Current understanding and unsolved problems in thermal transport at the nanoscale," Son et Lumière International School, Les Houches, France, March 11-22, 2019.

247. D. G. Cahill, "Measurement of thermal transport coefficients at the nanoscale using ultrafast optical thermometry," Son et Lumière International School, Les Houches, France, March 11-22, 2019.

248. D. G. Cahill, tutorial lecture, "Current understanding and unsolved problems in thermal transport at the nanoscale," MRS Spring Meeting, Phoenix, AZ, April 22-26, 2019.

249. D. G. Cahill, H. Jang, "Ultrafast thermometry using the magneto-optic Kerr effect," MRS Spring Meeting, Phoenix, AZ, April 22-26, 2019.

250. D. G. Cahill, E. Pek, H. Jang, "Bulk and interfacial thermal transport by electrons, phonons, and magnons in the context of the spin Seebeck effect," Spin Caloritronics X, Groningen, Netherlands, May 20–24, 2019.

251. D. G. Cahill, G.-M. Choi, J. Park, J. Huang, W. Wang, R. Wilson, "Ultrafast heat transfer in nanoscale materials," Physics Department Seminar, University of Bielefeld, Bielefeld, Germany, May 27, 2019.

252. D. G. Cahill, "Current understanding and unsolved problems in thermal transport at the nanoscale," Birck Nanotechnology Center Seminar, Purdue University, West Lafayette, IN, June 5, 2019.

253. D. G. Cahill, "Current understanding and unsolved problems in thermal transport at the nanoscale," IBM Micro-Symposium on Nanoscale Heat Transport, Rüschlikon, Switzerland, July 3, 2019.

254. D. G. Cahill, "Current understanding and unsolved problems in thermal transport at the nanoscale," Materials Science Seminar, EPFL, Lausanne, Switzerland, July 4, 2019.

255. D. G. Cahill, "Current understanding and unsolved problems in thermal transport at the nanoscale," 3M Technical Forum Seminar, St. Paul, MN, August 20, 2019.

256. D. G. Cahill, "Phonon-phonon interactions in crystals: everything old is new again," International Workshop on Correlated Dynamics in Energy Conversion, Göttingen, Germany, September 2–4, 2019.

257. D. G. Cahill, "Current understanding and unsolved problems in thermal transport at the nanoscale," Materials Science Department Seminar, Boise State University, Boise, ID, September 20, 2019.

258. D. G. Cahill, "Current understanding and unsolved problems in thermal transport at the nanoscale," John B. Derieux Lecture, North Carolina State University, Rayleigh, NC, October 21, 2019.

259. D. G. Cahill, "Current understanding and unsolved problems in thermal transport at the nanoscale," Materials Science and Nano-engineering Seminar, Rice University, Houston, TX, November 7, 2019.

260. D. G. Cahill, "Low, high, and switchable thermal conductivity in soft materials," APS March Meeting 2020, March 2–6, Denver, CO (cancelled due to COVID-19 pandemic)

261. D. G. Cahill, "Phonon-phonon interactions in crystals: everything old is new again," Quantum Matter Institute Phonon Transport Seminar, University of British Columbia, Vancouver, CA, June 23, 2020 (virtual).

262. D. G. Cahill, "Current understanding and unsolved problems in thermal transport at the nanoscale," Materials and Biomaterials Science and Engineering Department Seminar, U. California-Merced, September 8, 2020 (virtual).

263. D. G. Cahill, "Current understanding and unsolved problems in thermal transport at the nanoscale," School of Mechanical and Aerospace Engineering Seminar, Cornell University, Ithaca, NY, September 15, 2020 (virtual).

264. D. G. Cahill, "Current understanding and unsolved problems in thermal transport at the nanoscale," Mechanical Engineering Seminar, Carnegie Mellon University, Pittsburgh, PA, October 30, 2020 (virtual).

265. D. G. Cahill, "Low, high, and switchable thermal conductivity in soft materials," MRS Spring Meeting, April 17–23, 2021 (virtual).

266. D. G. Cahill, "Current understanding and unsolved problems in thermal transport at the nanoscale," Distinguished Lecture Series, Department of Chemical and Materials Engineering, NJ Institute of Technology, Newark, NJ, September 13, 2021.

267. D. G. Cahill, "Thermal conductivity, Li stoichiometry, and three-dimensional thermometry of solid electrolytes for Li ion batteries," MRS Fall Meeting, Boston, MA, November 29–December 3, 2021.

268. D. G. Cahill, "Relationships between molecular structure and thermal conductivity of epoxy resins," MRS Fall Meeting, Boston, MA, November 29–December 3, 2021.

269. D. G. Cahill, "Ultralow and anisotropic thermal conductivity in disordered layered materials," Japan Workshop on the Thermal and Charge Transport Across Flexible Nano interfaces, December 10, 2021 (virtual).

270. D. G. Cahill, "Advanced passive and active heterogeneous thermal conductors and their characterization needs and gaps, CABLE 2022 Big Idea Workshop, Argonne National Laboratory, July 20–21, 2022 (hybrid meeting, participated remotely).

271. D. G. Cahill, "Low, high, and switchable thermal conductivity in soft materials," Dow Chemical, Midland MI, July 18, 2022.

## Major Review Articles

- D. G. Cahill, W. K. Ford, K. E. Goodson, G. D. Mahan, A. Majumdar, H. J. Maris, R. Merlin, and S. R. Phillpot, "Nanoscale thermal transport," *Applied Physics Reviews*, *J. Appl. Phys.* **93**, 793 (2003).

- David G. Cahill, Paul V. Braun, Gang Chen, David R. Clarke, Shanhui Fan, Kenneth E. Goodson, Pawel Keblinski, William P. King, Gerald D. Mahan, Arun Majumdar, Humphrey J. Maris, Simon R. Phillpot, Eric Pop, and Li Shi, "Nanoscale thermal transport II: 2003–2012", *Appl. Phys. Rev.* **1**, 011305 (2014).

## Book Chapters

- David G. Cahill, "Heat transport in dielectric thin films and at solid-solid interfaces", in *Microscale Energy Transport,* edited by C. L. Tien, A. Majumdar, and F. M. Gerner, (Taylor & Francis, New York, 1998), pp. 95–118.

## Publications in Refereed Journals

1. David G. Cahill and R. O. Pohl, "Thermal conductivity of amorphous solids above the plateau," *Phys. Rev. B* **35**, 4067 (1987).

2. David G. Cahill and R. O. Pohl, "Thermal properties of a tetrahedrally bonded amorphous solid: $CdGeAs_2$," *Phys. Rev. B* **37**, 8773 (1988).

3. David G. Cahill and R. O. Pohl, invited review, "Lattice vibrations and heat transport in crystals and glasses,"*Ann. Rev. Phys. Chem.* **39**, 93 (1988).

4. H. E. Fischer, S. K. Watson, and David G. Cahill, invited review,"Specific heat, thermal conductivity and electrical resistivity of high temperature superconductors," *Comments on Condensed Matter Physics* **14**, 65 (1988).

5. David G. Cahill, Henry E. Fischer, Tom Klitsner, E. T. Schwartz, and R. O. Pohl, "Thermal conductivity of thin films: measurement and understanding," *J. Vac. Sci. Technol. A* **7**, 1259 (1989).

6. David G. Cahill and R. O. Pohl, "Low-energy excitations in crystalline $Ba_{1-x}La_xF_{2+x}$," *Phys. Rev. B* **39**, 10477 (1989).

7. David G. Cahill, H. E. Fischer, S. K. Watson, R. O. Pohl, and G. A. Slack, "Thermal properties of boron and borides," *Phys. Rev. B* **40**, 3254 (1989).

8. Susan K. Watson, David G. Cahill, and R. O. Pohl, "Specific heat of $KBr_{1-x}CN_x$ from 1 to 25 K," *Phys. Rev. B* **40**, 6381 (1989).

9. David G. Cahill and R. O. Pohl, "Heat flow and lattice vibrations in glasses, *Solid State Commun.* **70**, 927 (1989).

10. David G. Cahill and J. E. VanCleve, "Torsional oscillator for internal friction data at 100 kHz," *Rev. Sci. Instrum.* **60**, 2706 (1989).

11. David G. Cahill, "Thermal conductivity measurement from 30 to 750 K: the $3\omega$ method, *Rev. Sci. Instrum.* **61**, 802 (1990).

12. R. J. Hamers and David G. Cahill, "Ultrafast time resolution in scanned probe microscopies," *Appl. Phys. Lett.* **57**, 2031 (1990).

13. D. G. Cahill and R. J. Hamers, "STM of photoexcited carriers at the Si(001) surface," *J. Vac. Sci. Technol. B* **9**, 564 (1991).

14. R. J. Hamers and D. G. Cahill, "Ultrafast time resolution in scanned probe microscopies: Surface photovoltage on Si(111)-7×7," *J. Vac. Sci. Technol. B* **9**, 514 (1991).

15. David G. Cahill, J. R. Olson, Henry E. Fischer, S. K. Watson, R. B. Stephens, R. H. Tait, T. Ashworth, and R. O. Pohl, "Thermal conductivity and specific heat of glass ceramics," *Phys. Rev. B* **44**, 12226 (1991).

16. T. R. Anthony, J. R. Fleischer, J. R. Olson, and David G. Cahill, "The thermal conductivity of isotopically enriched polycrystalline diamond films," *J. Appl. Phys.* **69**, 8122 (1991).

17. David G. Cahill and R. J. Hamers, "Surface photovoltage of Ag on Si(111)-7 × 7 by scanning tunneling microscopy," *Phys. Rev. B* **44**, 1387 (1991).

18. Ph. Avouris and D. Cahill, "STM studies of Si(100)-2 × 1 oxidation: defect chemistry and Si ejection," *Ultramicroscopy* **42-44**, 838 (1992).

19. David G. Cahill and Ph. Avouris, "Si ejection and regrowth during the initial stages of Si(001) oxidation," *Appl. Phys. Lett.* **60**, 326 (1992).

20. P. A. Bennett, M. Copel, David G. Cahill, J. Falta, and R. M. Tromp, "Structure of the Si(111)-Co and 1×1 impurity stabilized surfaces," *Phys. Rev. Lett.* **69**, 1224 (1992).

21. David G. Cahill, S. K. Watson, and R. O. Pohl, "Lower limit to the thermal conductivity of disordered crystals," *Phys. Rev. B* **46**, 6131 (1992).

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