Daniel Mittleman

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Education

Massachusetts Institute of Technology
- BS Physics May 1988

University of California, Berkeley
- MS Physics May 1990
- Ph.D. Physics May 1994

Professional Experience

- Professor, School of Engineering, Brown University 7/15 –
- Professor, Electrical and Computer Engineering Department, Rice University 7/08 – 6/15
- Associate Professor, Electrical and Computer Engineering Department, Rice University 7/04 – 6/08
- Assistant Professor, Electrical and Computer Engineering Department, Rice University 7/99 – 6/04
- Lecturer, Electrical and Computer Engineering Department, Rice University Fall 1998
- Faculty Fellow, Electrical and Computer Engineering Dept., Rice University 7/96 – 6/99
- Postdoctoral Member of Technical Staff, Advanced Photonics Research Dept., Bell Laboratories - Lucent Technologies 4/95 – 8/96
  Development of terahertz imaging system.
  Research Supervisor: Dr. Martin Nuss
- Postdoctoral Member of Technical Staff, Advanced Lithography Dept., AT&T Bell Laboratories 4/94 – 4/95
  Studies of the interactions of atoms with high intensity laser fields.
  Research Supervisor: Dr. Richard R. Freeman
- Graduate Research Assistant, Physics Department, University of California, Berkeley & Lawrence Berkeley Laboratory 1/90 – 4/94
  Femtosecond laser spectroscopy of the ultrafast dynamics of condensed matter systems, including the electronic and vibrational dynamics of semiconductor nanocrystals, and the photophysics of solid C_{60}.
  Thesis title: "Femtosecond Dynamics of CdSe Nanocrystals"
  Thesis Advisor: Professor Charles V. Shank

Consulting Activities

- Traycer Diagnostic Systems 2015
- Technical Advisor, United States District Court, Judge Barbara Lynn 2011

- Research Consultant, Princeton Nanotechnology Systems, Inc. 2007
- Research Consultant, Shell International Exploration & Production 2006 – 2007
- Research Consultant, ITT Industries 2006
- Research Consultant, Coherent Laser Group 2005 – 2006
- Research Consultant, Southwest Research Institute, San Antonio, TX 2003 – 2004
- Research Consultant, MITRE Corp., McLean, VA 2002 – 2004
- Research Consultant, Picometrix, Inc., Ann Arbor, MI 1998 – present
- Research Consultant, Bell Laboratories - Lucent Technologies 1996 – 1997
- Research & Development Consultant, Philip Morris USA R&D 1996 – 1997

Professional Activities

- Member — Program Committee, 6th European Optical Society Topical Meeting on Terahertz Science and Technology (Berlin Germany, May 2018)
- Member — National Science Foundation ECCS-EPMD Career proposal panel (2017)
- Chair — International Society for Infrared Millimeter and Terahertz Waves, 2017 – 2020
- Lecturer — Short course, CLEO/Europe, "Terahertz measurements and applications," Munich Germany, June 2017
- Member — CLEO 2018 Subcommittee on Terahertz Technologies and Applications.
- Member — CLEO 2017 Subcommittee on Terahertz Technologies and Applications.
- Member — National Academy of Engineering Committee on Millimeter Wave Airport Passenger Screening, 2015 – 2017
- Associate editor — *Advances in Physics X*, 2015 – 2017
- Member — Program Committee, 5th European Optical Society Topical Meeting on Terahertz Science and Technology (Pecs Hungary, May 2016)
- Member — IEEE Photonics Society Publications Council, 2015 – 2018
- Lecturer — Short course, CLEO/Europe, "Terahertz measurements and applications," Munich Germany, June 2015
- Vice-Chair — International Society for Infrared Millimeter and Terahertz Waves, 2014 – 2017
- Invited lecturer — University of Tsukuba Summer Nanotechnology Lectures, 2014
- Director — Richard E. Smalley Institute for Nanoscale Science and Technology, 2012 – 2014
- General Co-Chair — OSA Topical Meeting on Laser and Terahertz Science and Technology (LTST 2012), Wuhan China, November 2012
- General Chair — 36th International Conference on Infrared, Millimeter, and Terahertz Waves, Houston TX, October 2011
- Member — Program Committee, OSA Nonlinear Optics Conference, June 2011
- Member — Editorial Board, *International Journal of Infrared, Millimeter, and Terahertz Waves*, 2009 – present
- Member — Kenneth J. Button Prize Committee, 2009 – 2015
- Editor — *IEEE Transactions on Microwave Theory and Techniques*, Special Issue on Terahertz Technology, 2010
- Associate Editor — Optics Express, Sept. 2007 – Sept. 2013

- Member — Program Committee, OSA Nonlinear Optics Conference, July 2009
- Member — Program Committee, European Optical Society 2008 Annual Meeting, TOM 2 – Terahertz Science and Technology
- Member — CLEO 2009 Subcommittee on Terahertz Technologies and Applications.
- Member — CLEO 2008 Subcommittee on Terahertz Technologies and Applications.
- Member — Program Committee, OSA Topical Meeting on Optical Terahertz Science and Technology, Orlando FL, March 2007.
- Member — Program Committee, OSA Nonlinear Optics Conference, August 2007
- Editor — Virtual Journal of Terahertz Science and Technology, http://www.thznetwork.org/wordpress/VJ/, 2006 – 2007
- Member — International Organizing Committee, IRMMW/THz Electronics Conference, 2006 – 2011
- Member — CLEO Steering Committee (IEEE LEOS representative), 2006 – 2008
- Chair — Joint Council on Quantum Electronics, 2006 – 2008
- Member — Joint Council on Quantum Electronics (IEEE LEOS representative), 2005
- Co-chair — CLEO Pacific Rim 2007 Subcommittee on Terahertz Photonics
- Chair — CLEO 2007 Subcommittee on Terahertz Technologies and Applications
- Chair — CLEO 2006 Subcommittee on Terahertz Technologies and Applications
- Member — IQEC Subcommittee on THz Emission and Spectroscopy, 2005
- Program co-chair — OSA Topical Meeting on Optical Terahertz Science and Technology, Orlando FL, March 2005
- Founder — IEEE LEOS Houston Chapter, 2005 (Chapter Chair: 2005 – 2009)
- Chair — QELS 2005 Subcommittee on Ultrafast Dynamics
- Chair — IEEE LEOS Subcommittee on Ultrafast Optics and Electronics, 2004 - 2006
- Member — IEEE LEOS Subcommittee on Ultrafast Optics and Electronics, 2002 - 2003
- Member — CLEO 2004 Subcommittee on Ultrafast Optics, Optoelectronics and Applications
- Session Leader — DOE-NSF-NIH Workshop on Opportunities in THz Science, Washington DC, February 2004
- Member — Advisory Board, 2nd Annual Knowledge Foundation Conference on Photonic Nanostructures, San Diego, CA, October 2002
- Organizer — *Symposium on Terahertz Bioimaging & Biosensing Applications*, 24th Annual International Conference of the IEEE EMBS, Houston TX, October 2002
- Panelist — NRC/TSWG Workshop on Standoff and Non-intrusive Detection of Explosives, Chemical Agents and Biological Agents, National Academy of Sciences, March 2002
- Panelist — DARPA Terahertz Imaging Review, December 2002
- Organizer — *Symposium on Sensing with Terahertz Radiation*, Optical Society of America Annual Meeting, Baltimore MD, October 1998
- Reviewer — *Nature, Nature Photonics, Nano Letters, Optica, Optics Letters, Optics Express, Journal of the Optical Society of America B,*

IEEE Journal of Quantum Electronics, Physical Review Letters, Physical Review B, Applied Physics Letters, Journal of Applied Physics

- Panelist — National Science Foundation review panels: Engineering, Materials, SBIR
- Member — American Physical Society, Optical Society of America
- Senior Member — IEEE Photonics Society (formerly IEEE LEOS)

Honors and Awards

- Fellow, American Physical Society — 2013
- Fellow, IEEE — 2011
- Fellow, Optical Society of America — 2009
- National Defense Science and Engineering Graduate Fellowship, Victoria Astley — 2006 – 2009
- IEEE LEOS Student Travel Grant, Kanglin Wang — CLEO/QELS 2006
- IEEE LEOS 2004 Best Student Paper Award, Kanglin Wang — LEOS Annual Meeting, October 2004
- IEEE LEOS Distinguished Lecturer — 2002 – 2003
  Reappointed — 2003 – 2004
- Laser Focus World Commendation for Excellence in Technical Communication — May 1998, September 2008
- Phi Beta Kappa — May 1988
- Orloff Award, Department of Physics, Massachusetts Institute of Technology — May 1988

Teaching and University Activities

- Spring 2018 — ENGN 2911T – "Ultrafast Optical Phenomena"
- Spring 2018 — ENGN 1560 – "Optics (was Applied Electromagnetics)"
- Spring 2017 — ENGN 1560 – "Optics (was Applied Electromagnetics)"
- Fall 2016 — ENGN 051 – "Electricity and Magnetism"
- Spring 2016 — ENGN 1560 – "Applied Electromagnetics"
- Fall 2015 — ENGN 2911T – "Ultrafast Optical Phenomena"

- Fall 2013 — Coursera MOOC: "Nanotechnology: the Basics"
- Spring 2011 – Spring 2012 — ELEC 364 – Photonic Measurements Laboratory
- Spring 2006 – Spring 2015 — ELEC 262 - Introduction to Waves and Photonics (previously called ELEC 261)
- Fall 1999 – Fall 2002, Spring 2004 – Spring 2010, Spring 2013 – Spring 2014 — ELEC 569 - Ultrafast Laser Phenomena (New course, not previously offered)
- Fall 2003 – Fall 2004 — ELEC 261 - Introduction to Waves and Photonics (New course, not previously offered)
- Fall 1998, Spring 2000 – Spring 2002 — ELEC 243 - Introduction to Electrical Engineering (New course, not previously offered)

• 2012	Chair, School of Engineering Faculty Search Committee
• 2012	Chair, Applied Physics Graduate Committee
• 2008 – 2009	Member, ECE Department Faculty Search Committee
• 2008 – 2009	External Member, Physics Dept. Faculty Search Committee
• 2001 – 2015	Member, Rice Shared Equipment Authority
• 1999 – 2001, 2003	Member, ECE Graduate Admissions Committee
• 1998 – 2005	Chair, Applied Physics Graduate Committee
• Fall 1998	Project manager, Tubes@Rice
• 1997 – 2008	Faculty Associate (Sid Richardson College) Outstanding Associate, 1998-1999 Outstanding Associate, 2000-2001
• 1997 – 2008	Engineering Divisional Advisor (Sid Richardson)
• 1996 – 2005, 2007 – 2009	Faculty advisor, Rice Men's Ultimate Frisbee Club
• 2003 – 2005	Faculty advisor, Rice Women's Ultimate Frisbee Club

Mentoring activities

Post-doctoral researchers supervised:
Adrian Barkan (2001-2003); Jason Deibel (2004-2007); Joong-Wook Lee (2007-2009); Rajind Mendis (2007-2011); George Keiser (2015 – 2017); Kimberly Reichel (2016 – 2017).
Current: Pernille Pedersen (2015 – present); Yue Huang (2015 – present); Jianjun Ma (2016 – present).

Graduate students supervised:
Jon Johnson (M.S. ECE 2000); Tim Dorney (Ph.D ECE 2001); Joel Boyd (Ph.D Chemistry 2001) (joint with V. Colvin); Rajesh Rengarajan (Ph.D Applied Physics 2004); Jeremy Pearce (Ph.D ECE 2005); Zhongping Jian (Ph.D ECE 2006); Kanglin Wang (Ph.D ECE 2006); Tushar Prasad (Ph.D Applied Physics 2007); Hui Zhan (Ph.D Applied Physics 2010); Wai Lam Chan (Ph.D ECE 2010); Jonathan Laib (Ph.D Chemistry 2010); Victoria Astley (Ph.D Applied Physics 2012); Marx Mbonye (Ph.D Applied Physics 2013); Jingbo Liu (Ph.D Applied Physics 2013); Robert McKinney (M.S. Applied Physics 2014); Daniel Nickel (PhD Applied Physics 2015); Kim Reichel (PhD Applied Physics, 2016).
Current: Nicholas Karl; Wei Zhang; Wenyu Zhang; Rabi Shrestha; Angela Pizzuto.

Undergraduate research students supervised:
Vijay Iyer (1998); Maya Gupta (1998); Ashvin George (1999); Joe McManis (1999); Angel Sun (2000 – 2001); Ari Briskman (1999 – 2002); Molly Rossow (2001 – 2003); James Lloyd (REU, 2002); Jayeeta Kundu (REU, 2003); Kevin Doyle (REU, 2005); Matt Escarra (2004 – 2006); Lisa Qian (2004 – 2006); Nick Berndsen (2006); Michael Hvasta (REU, 2006); Aaron Hallquist (REU, 2007); Alex Mrozack (2007 – 2008); Kriti Charan (2007 – 2008); Frank Chen (2007, 2009); Julianna Scheiman (REU 2008); Abhishek Nag (2009-2010); Jonathan Jones (2011); Patrick Breen (2012); Spencer Kent (2012); Aaron Sharpe (2012-2013); Minnie Ma (2013); Peter Lu (2014); Avery Rock (2016); Caleb Tulloss (2016); Manav Kohli (2016)
Current: Nicolas Lozada-Smith (2016-2017); Aaron Charous (2017); Sarah Lamacchia (2017-2018); Jacob Adelberg (2017-2018).

PhD Thesis Committees (other than as primary advisor)

2014 Evan Constable (advisor: Roger Lewis, University of Wollongong, Australia)
2013 Gargi Sharma (advisor: Tsuneyuki Ozaki, INRS Montreal)
2013 Ruoyu Chen (advisor: Doug Natelson)
2012 Darius Morris (advisor: Junichiro Kono)
2012 William Rice (advisor: Junichiro Kono)
2012 Jeff Worne (advisor: Doug Natelson)
2012 Layla Booshehri (advisor: Junichiro Kono)
2011 Krzysztof Iwaszczuk (advisor: Peter Jepsen, Technical University of Denmark)
2011 Lei Ren (advisor: Junichiro Kono)
2011 Brendan Wyker (advisor: Barry Dunning)
2010 Pascal Mickelson (advisor: Thomas Killian)
2010 Heidar Khakestar (advisor: Peter Nordlander)
2010 Chanjuan Sun (advisor: Junichiro Kono)
2010 Josef Sifuentes (advisor: Mark Embree)
2009 Rajiv Giridharagopal (advisor: Kevin Kelly)
2009 Xiangfeng Wang (advisor: Junichiro Kono)
2008 Jun Zhang (advisor: Kevin Kelly)
2008 Matthew Moravec (MS thesis; advisor: Richard Baraniuk)
2008 Fernando González del Cueto (advisor: Liliana Borcea)
2007 Mark Junker, Physics (advisor: Randy Hulet)
2007 Sarah Nagel, Physics (advisor: Tom Killian)
2007 Feng Qiao, Physics (advisor: John Clark)
2007 Guthrie Partridge, Physics (advisor: Randy Hulet)
2006 David G. Cooke (advisor: Frank Hegmann, University of Alberta, Edmonton)
2006 Vijay Iyer, ECE (advisor: Peter Saggau)
2006 Diane Larrabee, Physics (advisor: Junichiro Kono)
2006 Ya-Qiong Xu, ECE (advisor: Richard Smalley)
2005 Jigang Wang, ECE (advisor: Junichiro Kono)
2005 Nick C. J. Van der Valk (advisor: Paul Planken, Technical University of Delft)
2005 Chad Roller, ECE (advisor: Frank Tittel)

Patents and Invention Disclosures

1. "Method for coupling terahertz pulses into a coaxial waveguide," K. Wang and D. M. Mittleman, US patent No. 9178282, granted November 3, 2015.
2. "A Resonant Cavity Integrated Into a Waveguide for Terahertz Sensing," R. Mendis and D. Mittleman, US patent No. 8,309,925, granted November 13, 2012.
3. "Ultralow loss waveguide for broadband terahertz radiation," R. Mendis and D. Mittleman, US patent No. 8,259,022, granted September 4, 2012.
4. "Terahertz wide aperture reflection tomography," J. Pearce and D. Mittleman, invention disclosure filed at Rice Office of Technology Transfer, February 23, 2005.
5. "Method and systems for transmitting terahertz pulses," D. Mittleman, J. Deibel, and M. Escarra US patent No. 7,531,803, granted May 12, 2009.
6. "Differential photoconductive terahertz detector," A. Barkan and D. Mittleman, invention disclosure filed at Rice Office of Technology Transfer, November 22, 2002.
7. "Chemical sensor based on the optical superprism effect in photonic crystals," T. Prasad, D.

Mittleman, and V. Colvin, US patent application filed July 8, 2003.
8. "Interferometric imaging system and methods," J. Johnson and D. Mittleman, US patent No. 6,665,075, granted December 16, 2003.
9. "Method and apparatus for terahertz tomographic imaging," D. Mittleman and M. Nuss, US Patent No. 6,078,047, granted June 20, 2000.
10. "Systems and methods for processing and analyzing terahertz waveforms," R. Jacobsen, D. Mittleman, and M. Nuss, US Patent No. 5,939,721, granted Aug. 17, 1999.

Publications

Books

1. *Sensing with Terahertz Radiation*, Ed. D. Mittleman, Springer-Verlag, Heidelberg, 2002 (ISBN 3-540-43110-1).

Book chapters

1. "Terahertz Generation and Applications," Daniel M. Mittleman and Alan Cheville, in *Ultrafast Optics*, ed. R. Trebino and J. Squier, in press. See: http://www.physics.gatech.edu/gcuo/ultratext.html
2. "Multistatic Reflection Imaging with Terahertz Pulses," T. Dorney, W. W. Symes, and D. Mittleman, in *Terahertz Sensing Technology, Vol. 1. Electronic Devices and Advanced Systems Technology*, Ed. D. Woolard, W. Loerop, and M. Shur, World Scientific Publishing, Singapore (2003), pp. 327-349.
3. "Terahertz Imaging," D. Mittleman, in *Sensing with Terahertz Radiation*, Ed. D. Mittleman, Springer-Verlag, Heidelberg (2002), pp. 117-154.
4. "Introduction," D. Grischkowsky and D. Mittleman, in *Sensing with Terahertz Radiation*, Ed. D. Mittleman, Springer-Verlag, Heidelberg (2002), pp. 1-38.
5. "Size-Dependent Dielectric Properties of Liquid Water Clusters," J. Boyd, A. Briskman, A. Mikhail, V. Colvin, and D. Mittleman, in *Liquid Dynamics - Experiment, Simulation, and Theory*, Ed. J. Fourkas, Oxford University Press, ACS Symposium Series No. 820, Washington DC (2002), pp. 284-298.
6. "Nanocrystals," D. Mittleman and V. Colvin, in *Encyclopedia of Chemical Physics and Physical Chemistry*, Ed. J. Moore and N. Spencer, Institute of Physics, Bristol UK (2001), pp. 2589-2612.

Refereed Journal Articles

1. "An electrically reconfigurable terahertz channel add-drop filter using liquid metal components," K. S. Reichel, N. Lozada-Smith, I. D. Joshipura, J. Ma, R. Mendis, M. D. Dickey, and D. M. Mittleman, *Nature Communications*, submitted (2017).
2. **Invited article:** "Channel performance for indoor and outdoor terahertz wireless links," Jianjun Ma, Rabi Shrestha, Lothar Moeller, and Daniel M. Mittleman, *APL Photonics*, submitted (2017).
3. "Extraordinary optical reflection resonances from a periodic array of thin metal plates," W. Zhang, R. Mendis, M. Nagai, and D. M. Mittleman, *Optica*, submitted (2017).
4. "Uncovering the connection between low-frequency dynamics and phase transformation phenomena in molecular solids," Michael T. Ruggiero, Wei Zhang, Andrew D. Bond, Daniel M. Mittleman, and Axel Zeitler, *Physical Review Letters*, submitted (2017).
5. **Invited Perspective:** "Terahertz Science and Technology," D. M. Mittleman, *Journal of*

Applied Physics, **122**, 230901 (2017).

6. "Characterization of an active metasurface using terahertz ellipsometry," Nicholas Karl, Martin Heimbeck, Henry Everitt, Hou-Tong Chen, Antoinette J. Taylor, Igal Brener, Alexander Benz, John L. Reno, Rajind Mendis, and Daniel M. Mittleman, *Applied Physics Letters*, **111**, 191101 (2017).
7. "Nanoscale imaging with laser terahertz emission microscopy," Pernille Klarskov, Hyewon Kim, Vicki L. Colvin, and Daniel M. Mittleman, *ACS Photonics*, **4**, 2676–2680 (2017).
8. "Communications with THz waves: switching data between two waveguides," J. Ma, M. Weidenbach, R. Guo, M. Koch and D. M. Mittleman, *Journal of Infrared Millimeter and Terahertz Waves*, **38**, 1316-1320 (2017).
9. "Frequency-division multiplexer/demultiplexer for terahertz wireless links," J. Ma, N. J. Karl, S. Bretin, G. Ducournau, and D. M. Mittleman, *Nature Communications*, **8**, 729 (2017).
10. "Nonlinear terahertz metamaterials with active electrical control," G. Keiser, N. J. Karl, C. Tuloss, H.-T. Chen, A. J. Taylor, I. Brener, A. Benz, J. L. Reno, and D. M. Mittleman, *Applied Physics Letters*, **111**, 121101 (2017).
11. "Artificial dielectric polarizing beamsplitter and isolator for the terahertz region," R. Mendis, M. Nagai, W. Zhang, and D. M. Mittleman, *Scientific Reports*, **7**, 5909 (2017).
12. "A high pressure cell for terahertz time-domain spectroscopy," Wei Zhang, Daniel Nickel, and Daniel M. Mittleman, *Optics Express*, **25**, 2983-2993 (2017).
13. "Extraordinary optical transmission inside a waveguide: Spatial mode dependence," K. S. Reichel, P. Y. Lu, S. Backus, R. Mendis, and D. M. Mittleman, *Optics Express*, **24**, 28221-28227 (2016).
14. "A Broadband Terahertz Waveguide T-Junction Variable Power Splitter," K. Reichel, R. Mendis, and D. M. Mittleman, *Scientific Reports*, **6**, 28925 (2016).
15. "Terahertz artificial dielectric lens," R. Mendis, M. Nagai, Y. Wang, N. Karl, and D. M. Mittleman, *Scientific Reports*, **6**, 23023 (2016).
16. "Focused terahertz waves generated by a phase velocity gradient in a parallel-plate waveguide," Robert W. McKinney, Yasuaki Monnai, Rajind Mendis, and Daniel M. Mittleman, *Optics Express*, **23**, 27947-27952 (2015).
17. "Frequency-division multiplexing in the terahertz range using a leaky wave antenna," Nicholas J. Karl, Robert W. McKinney, Yasuaki Monnai, Rajind Mendis, and Daniel M. Mittleman, *Nature Photonics*, **9**, 717-720 (2015).
18. "Parallel-plate waveguide terahertz time domain spectroscopy for ultrathin conductive films," M. Razanoelina, R. Kinjo, K. Takayama, I. Kawayama, H. Murakami, Daniel M. Mittleman, and M. Tonouchi, *Journal of Infrared, Millimeter, and Terahertz Waves*, **36**, 1182-1194 (2015).
19. "Terahertz disorder-localized rotational modes and lattice vibrational modes in the orientationally-disordered and ordered phases of camphor," Daniel V. Nickel, Michael T. Ruggerio, Timothy M. Korter, and Daniel M. Mittleman, *Physical Chemistry Chemical Physics*, **17**, 6734-6740 (2015).
20. "*In situ* spectroscopic characterization of a terahertz resonant cavity," Kimberly S. Reichel, Krzysztof Iwaszczuk, Peter U. Jepsen, Rajind Mendis, and Daniel M. Mittleman, *Optica*, **1**, 272-275 (2014).
21. **Invited article**: "Artificial dielectrics: Ordinary metallic waveguides mimic extraordinary dielectric media," Rajind Mendis and Daniel M. Mittleman, *IEEE Microwave Magazine*,

15, 34-42 (2014).

22. "Terahertz conductivity and hindered molecular reorientation of lithium salt doped succinonitrile in its plastic crystal phase," Daniel V. Nickel, Hongtao Bian, Junrong Zheng, and Daniel M. Mittleman, *Journal of Infrared Millimeter and Terahertz Waves*, **35**, 770-779 (2014).
23. "Terahertz vibrational modes of the rigid crystal phase of succinonitrile," Daniel V. Nickel, Sean P. Delaney, Hongtao Bian, Junrong Zheng, Timothy M. Korter, and Daniel M. Mittleman, *Journal of Physical Chemistry A*, **118**, 2442-2446 (2014).
24. "An electrically driven terahertz metamaterial diffraction modulator with over 20 dB of dynamic range," Nicholas Karl, Kimberly Reichel, Hou-Tong Chen, Antoinette J. Taylor, Igal Brener, Alexander Benz, John L. Reno, Rajind Mendis, and Daniel M. Mittleman, *Applied Physics Letters*, **104**, 091115 (2014).
25. "The isotropic molecular polarizibilities of single methyl-branched alkanes in the terahertz range," Daniel V. Nickel, Alejandro J. Garza, Gustavo E. Scuseria, and Daniel M. Mittleman, *Chemical Physics Letters*, **592**, 292-296 (2014).
26. "Gated graphene enhanced by extraordinary transmission through ring apertures," Weilu Gao, Jie Shu, Kimberly Reichel, Daniel Nickel, Xiaowei He, Gang Shi, Robert Vajtai, Pulickel M. Ajayan, Junichiro Kono, Daniel M. Mittleman, and Qianfan Xu, *Nano Letters*, **14**, 1242-1248 (2014).
27. "High-Q terahertz Fano resonance with extraordinary transmission in concentric ring apertures," Jie Shu, Weilu Gao, Kimberly Reichel, Daniel Nickel, Jason Dominguez, Igal Brener, Daniel M. Mittleman, and Qianfan Xu, *Optics Express*, **22**, 3747-3753 (2014).
28. "Frontiers in terahertz sources and plasmonics," Daniel M. Mittleman, *Nature Photonics*, **7**, 666-669 (2013).
29. "A Maxwell's fish eye lens for the terahertz region," Jingbo Liu, Rajind Mendis, and Daniel M. Mittleman, *Applied Physics Letters*, **103**, 031104 (2013).
30. "Evanescent wave coupling in terahertz waveguide arrays," K. Reichel, N. Sakoda, R. Mendis, and D. M. Mittleman, *Optics Express*, **21**, 17249-17255 (2013).
31. "Measuring TE_1 mode losses in terahertz parallel-plate waveguides," Marx Mbonye, Rajind Mendis, and Daniel M. Mittleman, *Journal of Infrared, Millimeter, and Terahertz Waves*, **34**, 416-422 (2013).
32. **Invited article**: "A THz band-pass resonator based on enhanced reflectivity using spoof surface plasmons," Jingbo Liu, Rajind Mendis, and Daniel M. Mittleman, *New Journal of Physics*, **15**, 055002 (2013).
33. "Designer reflectors using spoof surface plasmons in the terahertz range," Jingbo Liu, Rajind Mendis, and Daniel M. Mittleman, *Physical Review B*, **86**, 241405 (2012).
34. "Inhibiting the TE_1-mode diffraction losses in terahertz parallel-plate waveguides using concave plates," Marx Mbonye, Rajind Mendis, and Daniel M. Mittleman, *Optics Express*, **20**, 27800-27809 (2012).
35. "A mode-matching analysis of dielectric-filled resonant cavities coupled to terahertz parallel-plate waveguides," Victoria Astley, Kimberly S. Reichel, Jonathan Jones, Rajind Mendis, and Daniel M. Mittleman, *Optics Express*, **20**, 21766-21772 (2012).
36. "THz mirage: deflecting terahertz beams in an inhomogeneous artificial dielectric," Rajind Mendis, Jingbo Liu, and Daniel M. Mittleman, *Applied Physics Letters*, **101**, 111108 (2012).
37. "Terahertz microfluidic sensing using a parallel-plate waveguide sensor," Victoria Astley,

Kimberly Reichel, Rajind Mendis, and Daniel M. Mittleman, *Journal of Visualized Experiments*, **66**, e4304 (2012).

38. "Terahertz multichannel microfluidic sensor based on parallel-plate waveguide resonant cavities," Victoria Astley, Kimberly Reichel, Jonathan Jones, Rajind Mendis, and Daniel M. Mittleman, *Applied Physics Letters*, **100**, 231108 (2012). (Also available in the June 18, 2012 issue of the Virtual Journal of Nanoscale Science and Technology, www.vjnano.org.)
39. "Study of the impedance mismatch at the output end of a THz parallel-plate waveguide," Marx Mbonye, Rajind Mendis, and Daniel M. Mittleman, *Applied Physics Letters*, **100**, 111120 (2012).
40. "A tapered parallel-plate waveguide probe for THz near-field reflection imaging," Jingbo Liu, Rajind Mendis, Daniel M. Mittleman, and Naokazu Sakoda, *Applied Physics Letters*, **100**, 031101 (2012).
41. "High-contrast terahertz modulator based on extraordinary transmission through a ring aperture," Jie Shu, Ciyuan Qiu, Victoria Astley, Daniel Nickel, Daniel M. Mittleman and Qianfan Xu, *Optics Express*, **19**, 26666-26671 (2011).
42. "One-dimensional terahertz imaging of surfactant-stabilized dodecane-brine emulsions," Daniel V. Nickel, Jeremy Pearce, Paul Tortorici, Reinaldo Navarrete, and Daniel M. Mittleman, *IEEE Transactions on Terahertz Science and Technology*, **1**, 473-476 (2011).
43. "The transition from a TEM-like mode to a plasmon mode in parallel-plate waveguides," Jingbo Liu, Rajind Mendis, and Daniel M. Mittleman, *Applied Physics Letters*, **98**, 231113 (2011).
44. "Analysis of rectangular resonant cavities in terahertz parallel-plate waveguides," Victoria Astley, Blake McCracken, Rajind Mendis, and Daniel M. Mittleman, *Optics Letters*, **36**, 1452-1454 (2011).
45. "Characterization of the terahertz near-field output of parallel-plate waveguides," Hui Zhan, Rajind Mendis, and Daniel M. Mittleman, *Journal of the Optical Society of America B*, **28**, 558-566 (2011).
46. **Invited article**: "Multifaceted THz applications of the parallel-plate waveguide: the TE_1 mode," Rajind Mendis and Daniel M. Mittleman, *Electronics Letters*, **46**, S40-S44 (2010).
47. "Optimum areal coverage for perfect transmission in a periodic metal hole array," J. W. Lee, T. H. Park, Peter Nordlander, and Daniel M. Mittleman, *Applied Physics Letters*, **97**, 261112 (2010).
48. "A tunable universal THz filter using artificial dielectrics," Rajind Mendis, Abhishek Nag, Frank Chen, and Daniel M. Mittleman, *Applied Physics Letters*, **97**, 131106 (2010).
49. "Temperature-dependent terahertz spectroscopy of liquid *n*-alkanes," Jonathan P. Laib and Daniel M. Mittleman, *Journal of Infrared, Millimeter, and Terahertz Waves*, **31**, 1015 (2010).
50. "Whispering gallery-mode THz pulse propagation on a curved metallic plate," Rajind Mendis and Daniel M. Mittleman, *Applied Physics Letters*, **97**, 031106 (2010).
51. "A 2D artificial dielectric with $0 < n < 1$ for the terahertz region," Rajind Mendis and Daniel M. Mittleman, *IEEE Transactions on Microwave Theory and Techniques*, **58**, 1993-1998 (2010).
52. "Terahertz vibrational modes induced by crystal nucleation in *n*-alkanes," J. P. Laib, D. V. Nickel, and D. M. Mittleman, *Chemical Physics Letters*, **493**, 279-282 (2010).
53. "Direct measurement of cyclotron coherence times of high-mobility two-dimensional

electron gases," X. Wang, D. J. Hilton, J. L. Reno, D. M. Mittleman, and J. Kono, *Optics Express*, **18**, 12354-12361 (2010).

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111. “Temperature dependence of terahertz emission from dilute magnetic semiconductors,” Hui Zhan, Jason Deibel, Jonathan Laib, Chanjuan Sun, Junichiro Kono, Daniel Mittleman, and Hiro Munekata, in *Proceedings of the Spring Meeting of the Materials Research Society* (2007), presentation CC4.2.
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115. “Coherent THz cyclotron oscillations in a two-dimensional electron gas,” X. Wang, D. Hilton, L. Ren, D. Mittleman, J. Kono, and J. Reno, in *Optical Terahertz Science and*

Technology Topical Meeting on CD-ROM (Optical Society of America, Washington DC, 2007), presentation WA6.

116. "Plasmon-enhanced terahertz near-field sensing at the single molecule level," Daniel Mittleman, in *2007 SPRING IV Conference* (Strategic Partnership for Research in Nanotechnology, 2007), p. 13.
117. "Dispersionless terahertz waveguides," K. Wang and D. Mittleman, in *2006 IEEE/LEOS Annual Meeting Conference Proceedings* (IEEE, Piscataway NJ, 2006), presentation TuE1.
118. "Dispersion of terahertz surface plasmon polaritons on metal wire waveguides," K. Wang and D. Mittleman, in *Conference Digest of the Joint 31st International Conference on Infrared and Millimeter Waves and the 14th International Conference on Terahertz Electronics* (IEEE Press, 2006), p. 514.
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129. "Wire waveguides for picosecond terahertz pulses," Kanglin Wang, Jason Deibel, Matthew Escarra, and Daniel Mittleman, TeraTech '05, Osaka Japan, November 2005.
130. "Measurements of indoor materials and channel characterization at THz frequencies for future WLAN/WPAN applications," R. Piesiewicz, N. Krumbholz, D. Mittleman, M. Koch, and T. Kürner, in *Wireless Personal Multimedia Communications*, Aalborg Denmark, Sept. 2005.
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132. "Guided resonances in photonic crystal slabs studied with terahertz time-domain spectroscopy," Z. Jian and D. Mittleman, in *Conference on Lasers and Electro-Optics*, OSA Technical Digest (Optical Society of America, Washington DC, 2005), presentation CTuL7.
133. "Photoconductive terahertz antenna with radial symmetry," J. Deibel, M. Escarra, and D. Mittleman, in *Conference on Lasers and Electro-Optics*, OSA Technical Digest (Optical Society of America, Washington DC, 2005), presentation JWB23.
134. "Time domain analysis of terahertz propagation on metal wire waveguides," K. Wang and D. Mittleman, in *Optical Terahertz Science and Technology Topical Meeting on CD-ROM* (Optical Society of America, Washington DC, 2005), presentation MB2.
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140. "Metal wire waveguides for broadband terahertz pulses," K. Wang and D. Mittleman, in *2004 IEEE/LEOS Annual Meeting Conference Proceedings* (IEEE, Piscataway NJ, 2004), pp. 372-373.
141. "Imaging and sensing with terahertz radiation," D. Mittleman, in *Proceedings of 2004 Microwave Photonics Meeting, Technical Report of IEICE* (MWP04-7, Fukuoka Japan, October 21, 2004), p. 33-39.
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163. "Terahertz Reflectometry: A Model System for the Inverse Problem," J. L. Johnson, T. D. Dorney, J. V. Rudd, and D. M. Mittleman, in *ITW 2000 – International Terahertz Workshop* (Sandbjerg, Denmark, December 2000), p. 39.
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178. “Terahertz Time-Domain Spectroscopy – Research and Applications,” D. Mittleman, in *25th Annual Conference of the Federation of Analytical Chemistry and Spectroscopy Societies* (Austin TX, October 1998), p. 101.
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Invited Presentations

Conferences and Workshops

1. 8th International Symposium on Terahertz Nanoscience (TeraNano VII) (Okayama, Japan, November 2017)
2. 2017 Annual Meeting of the APS Mid-Atlantic Section (New Jersey Institute of Technology, November 2017)
3. Boston University Materials Day (Boston, October 2017)
4. ACM NanoCom (Washington DC, September 2017)
5. OSA Topical Meeting on Optical Sensors (New Orleans, LA, July 2017)
6. OTST 2017 – 7th Topical Meeting on Optical Terahertz Science and Technology (London England, April 2017)
7. 3rd International Workshop on Terahertz Technologies (IWOTT) (Salt Lake City UT, February 2017)
8. 7th International Symposium on Terahertz Nanoscience (TeraNano VII) (Porquerolles France, October 2016)
9. Latin America Optics & Photonics Conference (Medellin Colombia, August 2016)
10. Progress in Electromagnetics Research (PIERS) Symposium (Shanghai China, August 2016)
11. International Workshop on Terahertz Science, Nanotechnologies, and Applications (Erice Italy, July 2016)
12. Workshop on Frontiers in Electronics (San Juan Puerto Rico, December 2015)
13. 40th International Conference on Infrared, Millimeter, and Terahertz Waves (Hong Kong, August 2015)
14. German THz Conference (Dresden, Germany, June 2015)
15. OSA Sensors (Boston MA, June 2015)

16. OTST 2015 – The Sixth Topical Meeting on Optical Terahertz Science and Technology (San Diego, CA, March 2015)
17. 2014 Tsukuba Nanotechnology Symposium (Tsukuba, Japan, July 2014)
18. 6th International Workshop on Electromagnetic Metamaterials (Santa Fe, NM, September 2014)
19. XXV Doctoral School on Metamaterials, Metamaterials 2014 Congress (Copenhagen, Denmark, August 2014)
20. Tsukuba Nanotechnology Symposium (Tsukuba, Japan, July 2014)
21. Nanosmat-USA 2014 (Houston TX, May 2014)
22. 38th International Conference on Infrared, Millimeter, and Terahertz Waves (Mainz Germany, September 2013)
23. Plenary speaker, Fourth Annual Institute of Photonics and Optical Sciences Symposium (Sydney Australia, November 2012)
24. OSA Topical Meeting on Laser and Terahertz Science and Technology (Wuhan China, November 2012)
25. 37th International Conference on Infrared, Millimeter, and Terahertz Waves (Wollongong Australia, September 2012)
26. SLAC Workshop on Frontiers in Terahertz Science (Stanford CA, September 2012)
27. SPIE Annual Meeting (San Diego CA, August 2012)
28. Low Energy Electrodynamics in Solids (LEES 2012) (Napa CA, July 2012)
29. 4th Annual International Terahertz Science Workshop (Elba Italy, July 2012)
30. 2012 Department of Energy NanoNuclear Workshop (Gaithersburg MD, June 2012)
31. Tutorial speaker, Conference on Lasers and Electro-Optics (CLEO 2012) (San Jose CA, May 2012)
32. 3rd International Conference on Metamaterials, Photonic Crystals, and Plasmonics (Meta '12) (Paris France, April 2012)
33. International Workshop on Terahertz Technology (Kaiserslautern Germany, March 2012)
34. International Symposium on Terahertz Nanoscience (Osaka Japan, November 2011)
35. Workshop on Metamaterial Enabled Applications (Virginia Beach VA, November 2011)
36. Terahertz Science and Technology Castle Meeting (Marburg, Germany, July 2011)
37. OSA Topical Meeting on Optical Sensors (Toronto Canada, June 2011)
38. Air Force Research Laboratory Special Session on Terahertz Technologies and Biological Applications (Halifax, Canada, June 2011)
39. Photonics West (San Francisco, CA, January 2011)
40. 35th International Conference on Infrared, Millimeter, and Terahertz Waves (Rome Italy, September 2010)
41. Gordon Research Conference on Plasmonics (Waterville, ME, June 2010)
42. 2nd International Conference on Metamaterials, Photonic Crystals, and Plasmonics (Meta '10) (Cairo Egypt, Feb. 2010)
43. Shenzhen International Conference on Advanced Science and Technology (SICAST 2009) (Shenzhen, China, Nov. 2009)
44. IRMMW-THz 2009 – The Joint 34rd International Conference on Infrared and Millimeter Waves and 17th International Conference on Terahertz Electronics (Busan, South Korea, Sept. 2009)
45. 6th Annual SURA Terahertz Applications Symposium (Washington DC, June 2009)
46. SPIE International Symposium on Photoelectronic Detection and Imaging (Beijing, June

2009)
47. Plenary speaker, OTST 2009 – The Third Topical Meeting on Optical Terahertz Science and Technology (Santa Barbara, CA, March 2009)
48. Terahertz Imaging and Spectroscopy Workshop (Gordon Center for Subsurface Sensing and Imaging Systems, Northeastern University, Boston MA, October 2008)
49. Plenary speaker, IRMMW-THz 2008 – The Joint 33rd International Conference on Infrared and Millimeter Waves and 16th International Conference on Terahertz Electronics (Pasadena, CA, Sept. 2008)
50. International Conference on Optical, Optoelectronic and Photonic Materials and Applications (ICOOPMA 2008) (Edmonton, Alberta, Canada, July 2008).
51. 5th Annual SURA Terahertz Applications Symposium (Washington DC, June 2008)
52. Optical Society of America Annual Meeting (OSA-ILS) (San Jose, CA, September 2007).
53. Keynote speaker, 3rd International Conference on Electromagnetic Near-Field Characterization and Imaging (ICONIC 2007) (St. Louis MO, June 2007)
54. "Terahertz Science," Colloquium of the Royal Netherlands Academy of Arts and Sciences (Amsterdam, June 2007)
55. 4th Annual SURA Terahertz Symposium (Washington DC, June 2007) (talk delivered by Dr. Jason Deibel)
56. Materials Research Society Spring Meeting (San Francisco CA, April 2007)
57. IEEE LEOS Annual Meeting (Montreal Canada, October 2006)
58. OSA Annual Meeting (Rochester, NY, October 2006)
59. National Space & Technology Association, monthly luncheon (Houston TX, August 2006)
60. IEEE Antennas and Propagation Society Annual Meeting (Albuquerque, July 2006) (talk delivered by Dr. Jason Deibel)
61. NATO Advanced Research Workshop on Terahertz Detection and Identification of Materials and Objects (Spiez, Switzerland, July 2006)
62. IEEE International Microwave Symposium (San Francisco, June 2006)
63. 3rd Annual SURA Terahertz Applications Symposium (Washington DC, June 2006)
64. TeraTech '05 – Meeting of the Terahertz Technology Forum of Japan (Osaka, Japan, November 2005)
65. Research Lab Expo, on-line conference (June 2005)
66. IEEE International Microwave Symposium (Long Beach CA, June 2005)
67. 2nd Annual SURA Terahertz Applications Symposium (Washington DC, June 2005)
68. National Society of Black Physicists Annual Meeting (Orlando FL, February 2005)
69. Photonics West (San Jose CA, January 2005)
70. Japanese Microwave Photonics Meeting (Fukuoka Japan, October 2004)
71. Plenary speaker, The Joint 29th International Conference on Infrared and Millimeter Waves and 12th International Conference on Terahertz Electronics (Karlsruhe Germany, Sept. 2004)
72. SPIE Annual Meeting, Special Workshop: The Emergence of Terahertz Radiation (Denver CO, August 2004)
73. Plenary speaker, 31st Annual Review of Progress in Quantitative Nondestructive Evaluation (Golden CO, July 2004)
74. IEEE LEOS Benelux Chapter Annual Workshop on Photonics Materials and Technology (Eindhoven The Netherlands, May 2004)
75. 1st Annual SURA Terahertz Applications Symposium (Washington DC, March 2004)
76. IEEE LEOS Annual Meeting (Tucson AZ, October 2003)

77. EURESCO Molecular Liquids Conference (Castelvecchio Pascoli Italy, September 2003)
78. Gordon Research Conference on Combustion Dynamics (Oxford UK, August 2003)
79. Terahertz Gap meeting, Royal Society of the United Kingdom (London UK, June 2003)
80. American Physical Society March Meeting (Austin TX, March 2003)
81. 2nd Knowledge Foundation Conference on Photonic Nanostructures (San Diego CA, October 2002)
82. THz-BRIDGE Workshop (Capri Italy, September 2002)
83. ITCom 2002 (Boston MA, July 2002)
84. SPIE Annual Meeting (Seattle WA, July 2002)
85. IEEE International Microwave Symposium (Seattle WA, June 2002)
86. American Physical Society March Meeting (Indianapolis IN, March 2002)
87. First International Conference on Biomedical Imaging and Sensing Applications of Terahertz Technology (Leeds UK, November 2001)
88. 9th International Conference on Terahertz Electronics (Charlottesville VA October 2001)
89. Knowledge Foundation Conference on Photonic Nanostructures (San Diego CA, October 2001)
90. IEEE LEOS Annual Meeting (Rio Grande, Puerto Rico, November 2000)
91. Advanced Light Source Workshop on Far-Infrared Sources (Berkeley CA, October 2000)
92. International Conference on Lasers '98 (Tucson AZ, December 1998)
93. Federation of Analytical Chemistry and Spectroscopy Societies Annual Meeting (Austin TX, October 1998)
94. Optical Society of America Topical Meeting on Nonlinear Optics (Kauai Hawaii, August 1998)
95. American Physical Society March Meeting (Los Angeles CA, March 1998)
96. International Topical Workshop on Contemporary Photonic Technologies (Tokyo, January 1998)
97. Gordon Research Conference on Nonlinear Optics (Hanover NH, July 1997)
98. Quantum Electronics and Laser Science Conference (Baltimore MD, May 1997)
99. Optical Society of America Annual Meeting (Rochester NY, October 1996)
100. Gordon Research Conference on Lasers in Biology and Medicine (July 1996)
101. Gordon Research Conference on Vibrational Spectroscopy (July 1996)
102. Interdisciplinary Laser Science Conference (Dallas TX, October 1994)

Universities and Laboratories

1. SUNY Stony Brook (2017)
2. AFRL Rome Laboratory (2017)
3. University of Duisburg Essen (2017)
4. University of Tel Aviv (2017)
5. City College of New York, Department of Physics (2017)
6. University of Massachusetts Lowell, Department of Physics (2017)
7. Columbia University, Department of Electrical Engineering (2016)
8. Worcester Polytechnic Institute, Department of Physics (2015)
9. National Institute of Materials Science (NIMS), Tsukuba Japan (2014)
10. University of Alberta, Edmonton, Department of Physics (2014)
11. Minzu University, Beijing (2013)
12. Institute of Physics, Chinese Academy of Sciences, Beijing (2013)

13. San Angelo State University, Department of Physics (2012)
14. University of Maryland, Department of Physics (2012)
15. University of Texas, Dallas, Department of Electrical Engineering (2010)
16. University of Alberta, Edmonton, Department of Physics (2009)
17. ExxonMobil Research and Engineering Laboratory, Annandale NJ (2008)
18. Massachusetts Institute of Technology, Harrison Spectroscopy Laboratory (2008)
19. University of North Texas, Department of Chemistry (2008)
20. University of Delaware, Department of Electrical Engineering (2008)
21. Wright State University / Wright-Patterson Air Force Base (2008)
22. Corning Research Laboratory, Corning NY (2008)
23. University of California, Santa Barbara, Department of Physics (2008)
24. Technical University of Denmark, Copenhagen (2007)
25. NIST Boulder (2007)
26. State University of New York at Buffalo, EE Department (2007)
27. Arizona State University, Physics Department (2007)
28. University of Illinois at Urbana-Champaign, ECE Department (2006)
29. Shell Bellaire Research Laboratory (2006)
30. University of New Mexico, Department of Physics and Astronomy (2005)
31. University of Texas MD Anderson Cancer Center (2005)
32. Texas A&M University (2005)
33. Osaka University (2004)
34. Colorado School of Mines (2004)
35. Arizona State University (2004)
36. University of Dayton (2004)
37. University of Barcelona (2004)
38. University of Georgia (2003)
39. Georgia Tech, Physics Department (2003)
40. University of Texas, Dallas (2003)
41. University of Texas, Austin, ECE Department (2003)
42. National Research Council, Ottawa (2003)
43. Duke University (2003)
44. University of New Mexico, Center for High Technology Materials (2003)
45. University of Melbourne (2003)
46. Australian National University, Canberra Australia (2003)
47. Verizon Laboratories, Waltham MA (2003)
48. Old Dominion University (2003)
49. University of Maryland (2003)
50. CREOL/University of Central Florida (2003)
51. JILA/University of Colorado (2003)
52. National Institute of Telecommunications, Warsaw Poland (2002)
53. Strathclyde University, Glasgow (2002)
54. University of Connecticut (2002)
55. University of Houston (2002)
56. CIA Headquarters, Langley VA (2002)
57. Stevens Institute of Technology (2002)
58. Dow Chemical Corp. (2002)

59. Stanford Free Electron Laser Center (2000)
60. University of Toronto (2000)
61. University of Texas, Austin, Physics Dept. (2000)
62. Hughes Research Laboratories (2000)
63. Los Alamos National Laboratory (1999)
64. Korea Advanced Institute of Science and Technology (KAIST) (1998)
65. Ludwig-Maximillians Universität – Munich (1998)
66. Rensselaer Polytechnic Institute (1997)
67. Williams College (1997)