



Dr. Hou-Tong Chen
Technical Staff Member
Center for Integrated Nanotechnologies
Los Alamos National Laboratory
Los Alamos, NM 87545
Tel/Fax: 505-665-7365 / 9030
Email: chenht@lanl.gov

Education

- PhD 2004 Physics Rensselaer Polytechnic Institute
- M.S. 2000 Physics University of Science & Technology of China
- B.S. 1997 Physics University of Science & Technology of China

Appointments

- | | | |
|---------------------|----------------------------|----------------------------------|
| • 06/2010 – present | CINT Scientist | Los Alamos National Laboratory |
| • 06/2008 – present | Technical Staff Member | Los Alamos National Laboratory |
| • 05/2005 – 05/2008 | Postdoc Research Associate | Los Alamos National Laboratory |
| • 04/2005 – 05/2005 | Postdoc Fellow | Rensselaer Polytechnic Institute |

Awards and Honors

- 2007 LAAP Achievement Award, LANL
- 2007 Postdoctoral Publication Prize Honorable Mention, LANL
- 1999 Guanghua Scholarship, USTC
- 1995 Excellent Student Scholarship, University of Science & Technology of China

Research Interests

- Metamaterials and applications
- Nanophotonics
- Ultrafast optics and THz time-domain spectroscopy
- THz imaging and scanning near-field microscopy

Research Highlights

- Discovered a novel tuning phenomenon in high-temperature superconducting metamaterials and identified its underlying physics
- Demonstrated a novel approach of THz antireflection coating using metamaterials, and identified its mechanism responsible for the antireflection or perfect absorption
- Demonstrated an efficient metamaterial-based electrically driven terahertz phase modulator, and achieved broadband modulation of impulsive terahertz radiation
- Accomplished ultrafast switching of terahertz radiation using dynamic metamaterials
- Demonstrated the first frequency agile terahertz metamaterial
- Demonstrated the first active terahertz metamaterial
- Identified a novel near-field imaging mechanism
- For the first time successfully developed an apertureless scanning near-field terahertz microscope capable of nanometers resolution

Professional Societies

- Member of OSA

Professional Activities

- Organizing Committee: International Workshop on Electromagnetic Metamaterials V, Albuquerque, NM, March 2012.
- Organizing Committee: International Workshop on Electromagnetic Metamaterials IV, Albuquerque, NM, August 2010.
- Participate in organizing and co-chair in the Early Career Session in the Internal Workshop on Electromagnetic Metamaterials III, Los Alamos, NM, May 2009.
- Program Committee: 2009 International Conference on Optical Instrument and Technology (OIT09): Session 7 Opto-electronic information security
- International Advisory Committee: IRMMW-THz-2009
- Member of the Editorial Committee: *International Journal of Terahertz Science and Technology*
- Reviewer for:
 - Applied Optics
 - Applied Physics Letters
 - Chinese Optics Letters
 - IEEE Photonics Journal
 - IEEE Photonics Technology Letters
 - International journal of infrared and millimeter waves
 - Journal of Applied Physics
 - Journal of Optics
 - Journal of the Optical Society of America B
 - Nano Letters
 - Nature Communications
 - Nature Photonics
 - Nature Scientific Reports
 - Optics Communications
 - Optics Express
 - Optics Letters
 - Physical Review Letters
 - Physics Letters A
 - PIER
 - PLoS One
 - Science

Patents

- 11/2010, “Active terahertz metamaterial devices,” US Patent No. 7,826,504
- “Dynamical frequency tuning of electric and magnetic metamaterial response,” PCT/US2008/011665

Journal Publications (Total citations 1109, <http://www.researcherid.com/rid/C-6860-2009>)

Publications @ LANL as a Technical Staff Member

45. **H.-T. Chen**, “Interference theory of metamaterial perfect absorbers,” submitted (2012). arXiv:1112.5168.
44. R. Singh, J. Xiong, A. K. Azad, H. Yang, S. A. Trugman, Q. X. Jia, A. J. Taylor, and **H.-T. Chen**, “Optical tuning and ultrafast dynamics of high-temperature superconducting terahertz metamaterials,” submitted (2012). arXiv:1111.3917
43. J. Zhou, **H.-T. Chen**, T. Koschny, A. K. Azad, A. J. Taylor, C. M. Soukoulis, and J. F. O’Hara, “Application of metasurface description for multilayered metamaterials and an alternative theory for metamaterial perfect absorber,” submitted (2012). arXiv:1111.0343v1
42. D. Roy Chowdhury, R. Singh, A. J. Taylor, **H.-T. Chen**, W. Zhang, and A. K. Azad, “Coupling schemes in terahertz planar metamaterials,” *International Journal of Optics*, in press (2012).
41. L. Huang, D. Roy Chowdhury, S. Ramani, M. T. Reiten, S.-N. Luo, A. J. Taylor, and **H.-T. Chen**, “Experimental demonstration of terahertz metamaterial absorbers with a broad and flat high absorption band,” *Optics Letters* **37**, 154–156 (2012).
40. D. Roy Chowdhury, R. Singh, J. F. O’Hara, **H.-T. Chen**, A. J. Taylor, and A. K. Azad, “Dynamically reconfigurable terahertz metamaterial through photo-doped semiconductor,” *Applied Physics Letters* **99**, 231101 (2011).
39. B. S. Alexandrov, K. Ø. Rasmussen, A. R. Bishop, A. Usheva, L. B. Alexandrov, S. Chong, Y. Dagon, L. G. Booshehri, C. H. Mielke, M. L. Phipps, J. S. Martinez, **H.-T. Chen**, and G. Rodriguez, “Non-thermal effects of terahertz radiation on gene expression in mouse stem cells,” *Biomedical Optics Express* **2**, 2679–2689 (2011).
38. D. Roy Chowdhury, R. Singh, M. Reiten, **H.-T. Chen**, A. J. Taylor, J. F. O’Hara and A. K. Azad, “A broadband planar terahertz metamaterial with nested structure,” *Optics Express* **19**, 15817–15823 (2011).
37. **H.-T. Chen**, J. F. O’Hara, A. K. Azad, and A. J. Taylor, “Manipulation of terahertz radiation using metamaterials,” *Laser & Photonics Reviews* **5**, 513–533 (2011).
36. R. Singh, A. K. Azad, Q. X. Jia, A. J. Taylor, and **H.-T. Chen**, “Thermal tunability in terahertz metamaterials fabricated on strontium titanate single-crystal substrates,” *Optics Letters*, **36**, 1230–1232 (2011).
35. J. Bock, Y. Fukuyo, S. Kang, M. L. Phipps, L. B. Alexandrov, K. Ø. Rasmussen, A. R. Bishop, E. D. Rosen, J. S. Martinez, **H.-T. Chen**, G. Rodriguez, B. S. Alexandrov, and A. Usheva, “Mammalian stem cells reprogramming in response to terahertz radiation,” *PLoS ONE* **5**, e15806 (2010).
34. P. Xu, S.-H. Jeon, **H.-T. Chen**, H. Luo, G. Zou, Q. Jia, M. Anghel, C. Teuscher, D. J. Williams, B. Zhang, X. Han, and H.-L. Wang, “Facile synthesis and electrical properties of silver wires through chemical reduction by polyaniline,” *The Journal of Physical Chemistry C* **114**, 22147–22154 (2010).
33. **H.-T. Chen**, H. Yang, R. Singh, J. F. O’Hara, A. K. Azad, S. A. Trugman, Q. X. Jia, A. J. Taylor, “Tuning the resonance in high temperature superconducting terahertz metamaterials,” *Physical Review Letters* **105**, 247402 (2010).

32. J. Gu, R. Singh, Z. Tian, W. Cao, Q. Xing, M. He, J. W. Zhang, J. Han, **H.-T. Chen**, and W. Zhang, “Terahertz superconductor metamaterial,” *Applied Physics Letters* **97**, 071102 (2010).
31. **H.-T. Chen**, J. Zhou, J. F. O’Hara, F. Chen, A. K. Azad, and A. J. Taylor, “Erratum: Antireflection coating using metamaterials and identification of its mechanism [Phys. Rev. Lett. 105, 073901 (2010)],” *Physical Review Letters*, **106**, 079902 (2011).
30. **H.-T. Chen**, J. Zhou, J. F. O’Hara, F. Chen, A. K. Azad, and A. J. Taylor, “Antireflection coating using metamaterials and identification of its mechanism,” *Physical Review Letters*, **105**, 073901 (2010).
29. **H.-T. Chen**, J. Zhou, J. F. O’Hara, and A. J. Taylor, “A numerical investigation of metamaterial antireflection coatings,” *Terahertz Science and Technology* **3**, 66–73 (2010).
28. **H.-T. Chen**, J. F. O’Hara, and A. J. Taylor, “Active Terahertz Metamaterials,” *Optics and Spectroscopy* **108**, 834–840 (2010).
27. X. G. Peralta, I. Brener, W. J. Padilla, E. W. Young, A. J. Hoffman, M. J. Cich, R. D. Averitt, M. C. Wanke, J. B. Wright, **H.-T. Chen**, J. F. O’Hara, A. J. Taylor, J. Waldman, W. D. Goodhue, J. Li, J. Reno, “External modulators for terahertz quantum cascade lasers based on electrically-driven active metamaterials,” *Metamaterials* **4**, 83–88 (2010).
26. A. K. Azad, **H.-T. Chen**, S. R. Kasarla, A. J. Taylor, J. F. O’Hara, Z. Tian, X. Lu, W. Zhang, H. Lu, and A. C. Gossard, “Ultrafast optical control of terahertz surface plasmons in subwavelength hole-arrays at room temperature,” *Applied Physics Letters* **95**, 011105 (2009).
25. W. L. Chan, **H.-T. Chen**, A. J. Taylor, I. Brener, M. J. Cich, and D. M. Mittleman, “A spatial light modulator for terahertz beams,” *Applied Physics Letters* **94**, 213511 (2009).
24. A. K. Azad, **H.-T. Chen**, X. Lu, J. Gu, N. R. Weisse-Bernstein, E. Akhadov, A. J. Taylor, W. Zhang, J. F. O’Hara, “Flexible quasi-three-dimensional terahertz electric metamaterials,” *Terahertz Science and Technology* **2**, 15–22 (2009).
23. **H.-T. Chen**, W. J. Padilla, M. J. Cich, A. K. Azad, R. D. Averitt, and A. J. Taylor, “A metamaterial solid-state terahertz phase modulator,” *Nature Photonics* **3**, 148–151 (2009).
22. X. G. Peralta, E. Smironova, A. K. Azad, **H.-T. Chen**, A. J. Taylor, I. Brener, and J. F. O’Hara, “Metamaterials for THz polarimetric devices,” *Optics Express* **17**, 773–783 (2009).
21. G. P. Acuna, S. F. Heucke, F. Kuchler, **H.-T. Chen**, A. J. Taylor, and R. Kersting, “Surface plasmons in terahertz metamaterials,” *Optics Express* **16**, 18745–18751 (2008).
20. **H.-T. Chen**, S. Palit, T. Tyler, C. M. Bingham, J. M. O. Zide, J. F. O’Hara, D. R. Smith, A. C. Gossard, R. D. Averitt, W. J. Padilla, N. M. Jokerst, and A. J. Taylor, “Hybrid metamaterials enable fast electrical modulation of freely propagating terahertz waves,” *Applied Physics Letters* **93**, 091117 (2008).

Publications @ LANL as a Postdoctoral Research Associate

19. **H.-T. Chen**, H. Lu, A. K. Azad, R. D. Averitt, A. C. Gossard, S. A. Trugman, J. F. O’Hara, and A. J. Taylor, “Electronic control of extraordinary terahertz transmission through subwavelength metal hole arrays,” *Optics Express* **16**, 7641–7648 (2008).

18. **H.-T. Chen**, J. F. O'Hara, A. K. Azad, A. J. Taylor, R. D. Averitt, D. B. Shrekenhamer, and W. J. Padilla, "Experimental demonstration of frequency agile terahertz metamaterials," *Nature Photonics* **2**, 295–298 (2008).
17. Rachel Won and Hou-Tong Chen, "Taming the terahertz," *Nature Photonics* **2**, 324 (2008). (*Author Interview*)
16. **H.-T. Chen**, W. J. Padilla, R. D. Averitt, A. C. Gossard, C. Highstrete, M. Lee, J. F. O'Hara, and A. J. Taylor, "Electromagnetic metamaterials for terahertz applications," *Terahertz Science and Technology* **1**, 42–50 (2008).
15. J. F. O'Hara, A. K. Azad, **H.-T. Chen**, A. J. Taylor, and E. Smirnova, "Effects of microstructure variations on macroscopic terahertz metafilm properties," *Active and Passive Electronic Components*, Vol. **2007**, Article ID 49691, doi: 10.1155/2007/49691 (2007).
14. **H.-T. Chen**, W. J. Padilla, J. M. O. Zide, S. R. Bank, A. C. Gossard, A. J. Taylor, and R. D. Averitt, "Ultrafast optical switching of terahertz metamaterials fabricated on ErAs/GaAs nanoisland superlattices," *Optics Letters* **32**, 1620–1622 (2007).
13. J. F. O'Hara, E. Smirnova, **H.-T. Chen**, A. J. Taylor, R. D. Averitt, C. Highstrete, M. Lee, and W. J. Padilla, "Properties of planar electric metamaterials for novel terahertz applications," *Journal of Nanoelectronics and Optoelectronics* **2**, 90–95 (2007).
12. **H.-T. Chen**, J. F. O'Hara, A. J. Taylor, R. D. Averitt, C. Highstrete, M. Lee, and W. J. Padilla, "Complementary planar terahertz metamaterials," *Optics Express* **15**, 1084–1095 (2007).
11. **H.-T. Chen**, W. J. Padilla, J. M. O. Zide, A. C. Gossard, A. J. Taylor, and R. D. Averitt, "Active terahertz metamaterial devices," *Nature* **444**, 597–600 (2006).

Publications @ RPI as a PhD Student

10. F. Buersgens, R. Kersting, and **H.-T. Chen**, "Terahertz microscopy of charge carriers in semiconductors," *Applied Physics Letters* **88**, 112115 (2006).
9. G. C. Cho, **H.-T. Chen**, S. Kraatz, N. Karpowicz, and R. Kersting, "Apertureless terahertz near-field microscopy," *Semiconductor Science and Technology* **20**, S286–S292 (2005).
8. R. Kersting, **H.-T. Chen**, N. Karpowicz, and G. C. Cho, "Terahertz microscopy with submicrometer resolution," *Journal of Optics A: Pure and Applied Optics* **7**, S184–S189 (2005).
7. **H.-T. Chen**, S. Kraatz, R. Kersting, and G. C. Cho, "Identification of a resonant imaging process in apertureless near-field microscopy," *Physical Review Letters* **93**, 267401 (2004).
6. **H.-T. Chen**, G. C. Cho, and R. Kersting, "Terahertz imaging with nanometer resolution," *Applied Physics Letters* **83**, 3009–3011 (2003).

Publications @ USTC as a Graduate Student

5. W. W. Zhang, W. P. Zhang, P. B. Xie, M. Yin, **H.-T. Chen**, L. Jing, Y.-S. Zhang, L.-R. Lou, and S.-D. Xia, "Optical properties of nanocrystalline $\text{Y}_2\text{O}_3:\text{Eu}$ depending on the odd structure," *Journal of Colloid and Interface Science* **262**, 588–593 (2003).
4. **H. T. Chen**, R. Lian, M. Yin, L. R. Lou, W. P. Zhang, S. D. Xia, and J. C. Krupa, "Luminescence concentration quenching of $^1\text{D}_2$ state in $\text{YPO}_3:\text{Pr}^{3+}$," *Journal of Physics: Condensed Matter* **13**, 1151–1158 (2001).

3. **H. T. Chen**, M. Yin, R. Lian, L. R. Lou, W. P. Zheng, and S. D. Xia, “Luminescence dependence upon concentration and temperature in $\text{YPO}_3:\text{Pr}^{3+}$,” *Spectroscopy and Spectral Analysis* **21**, 151-1-54 (2001).
2. D. F. Zhou, Y. H. Chen, C. S. Shi, Y. G. Wei, **H. T. Chen**, and M. Yin, “Energy transfer in $\text{PbWO}_4/\text{Dy}^{3+}$ luminescence,” *Journal of Alloys and Compounds* **322**, 298–301 (2001).
1. P. B. Xie, W. P. Zhang, M. Yin, **H. T. Chen**, W. W. Zhang, L. R. Lou, and S. D. Xia, “Photoluminescence properties of surface-modified nanocrystalline $\text{ZnS}:\text{Mn}$,” *Journal of Colloid and Interface Science* **229**, 534–539 (2000).

Presentations

Upcoming Talks

56. “Metamaterial Absorbers and Antireflection Coatings: Experiments and Theory,” (**invited**) *The 3rd International Conference on Metamaterials, Photonic Crystals and Plasmonics (META 2012)*, Paris, France, April 19–22, 2012.
55. “Thermally and Optically Tunable High-Temperature Superconducting Terahertz Metamaterials,” (**invited**) *The SPIE Photonics Europe 2012*, Brussels, Belgium, April 16–20, 2012.

Invited Conference Talks

54. “Active tuning and nonlinearity in metamaterials” (**Invited**) *FIFTH 'RIO DE LA PLATA WORKSHOP ON LASER DYNAMICS AND NONLINEAR PHOTONICS*, Colonia Del Sacramento, Uruguay, December 6–9, 2011.
53. “Tunable and Nonlinear Microwave and Terahertz Metamaterials,” *Frontiers in Optics 2011 / Laser Science XXVII (FiO 2011/LS XXVII)*, San Jose, CA, October 16–20, 2011.
52. “Recent Developments in Terahertz Metamaterials” *The 2011 International Symposium on Microwave/Terahertz Science and Applications (MTSA 2011)*, Nanjing, China, June 19–22, 2011.
51. “Metamaterials – New Opportunity in Manipulating Terahertz Radiation,” *Metamaterial Workshop*, Hangzhou, China, April 9–12, 2011.
50. “Active Terahertz Metamaterial Devices ,” (**Trip canceled**) *Winter Topicals 2010: Advances in THz Devices and Application*, Majorca, Spain, January 11–13, 2010.
49. “Recent Progress in Terahertz Metamaterials and Devices,” *Shenzhen International Conference on Advanced Science and Technology (SICAST2009) – Terahertz Science and Technology*, Shenzhen, China, November 15–20, 2009.
48. “Active Terahertz Metamaterials,” *Frontiers in Optics 2009*, San Jose, CA, October 11–15, 2009
47. “Terahertz metamaterials and devices,” *Topical Problems of Biophotonics – 2009*, Nizhny Novgorod, Russia, July 19–24, 2009.

46. "Active Terahertz Metamaterials and Devices,"
2009 SURA Terahertz Applications Symposium, Washington, DC, June 10–12, 2009.
45. "Active metamaterials and devices for terahertz applications,"
International Workshop on Electromagnetic Metamaterials III: Toward Real World Applications, Los Alamos, NM, May 18–19, 2009.
44. "Active terahertz metamaterial devices,"
Plasmonics and Metamaterials (META) 2008, Rochester, NY, October 20–23, 2008.
43. "Hybrid electromagnetic metamaterials for terahertz applications,"
2008 SURA Terahertz Applications Symposium, Washington, DC, June 4–6, 2008.
42. "Electromagnetic metamaterials for terahertz applications,"
Shenzhen International Conference on Advanced Science and Technology (SICAST2007) – Terahertz Science and Technology, Shenzhen, China, November 18–23, 2007.
41. "Active metamaterials: a novel approach to manipulate terahertz waves," (**Plenary**)
The Joint 32nd International Conference on Infrared and Millimetre Waves and the 15th International Conference on Terahertz Electronics (IRMMW-THz 2007), Cardiff, UK, September 2–7, 2007.
40. "Terahertz near-field microscopy,"
SPIE Conference of Optics East, Philadelphia, PA, October 25–28, 2004.

Invited Colloquia and Seminars

39. "Manipulating Terahertz Radiation with Electromagnetic Metamaterials," (**Seminar**)
Seminar @ University of Alabama in Huntsville, October 31, 2011.
38. "Recent Development in Terahertz Metamaterials"
Colloquium @ Wenzhou Medical College, Wenzhou, China, June 29, 2011.
37. "Recent Development in Terahertz Metamaterials"
Colloquium @ Physics Department of Zhejiang University, Hangzhou, China, June 24, 2011.
36. "Metamaterials – New Opportunity in Manipulating Terahertz Radiation ,"
Seminar @ Virginia Commonwealth University, April 29, 2011.
35. "Metamaterials – New Opportunity in Manipulating Terahertz Radiation ,"
Seminar @ Capital Normal University, Beijing, China, April 18, 2011.
34. "Metamaterials – New Opportunity in Manipulating Terahertz Radiation ,"
Seminar @ Soochow University, Suzhou, China, April 14, 2011.
33. "Metamaterials – New Opportunity in Manipulating Terahertz Radiation ,"
Seminar @ Southeast University, Nanjing, China, April 13, 2011.
32. "Metamaterials – New Opportunity in Manipulating Terahertz Radiation ,"
Seminar @ University of Nebraska-Lincoln, March 25, 2011.
31. "Advances in Terahertz Metamaterials and Applications,"
Seminar in the Electrical Engineering Department, UCLA, May 17, 2010.
30. "Actively Controllable Properties of Terahertz Metamaterials and Their Applications,"
Colloquium @ University of Science and Technology of China, November 23, 2009.

29. "Actively Controllable Properties of Terahertz Metamaterials and Their Applications," *LCLS-PULSE seminars @ SLAC, Stanford University*, October 13, 2009.
28. "Terahertz metamaterials: from basics to applications," *OSA Student Chapter @ University of New Mexico*, October 3, 2008.
27. "Electromagnetic metamaterials for terahertz applications," *Southern Illinois Unveristy*, Carbondale, IL, March 2008.
26. "Electromagnetic metamaterials for terahertz applications," *University of Massachusetts*, Amherst, MA, February 2008.
25. "Electromagnetic metamaterials for terahertz applications," *University of Wyoming*, Laramie, WY, December 2007.
24. "Artificial materials to bridge the terahertz gap," *MSCookies & Tea Seminar @ Los Alamos National Laboratory*, November 13, 2007.
23. "Novel Materials and Metamaterials for Terahertz Technology," *Seminar @ University of California at Santa Barbara*, May 17, 2007.
22. "Terahertz near-field microscopy for materials characterization & construction of terahertz functional devices using metamaterials," *Seminar @ University of Connecticut*, February 8, 2007.
21. "Terahertz for materials & metamaterials for terahertz," *Texas A&M University*, College Station, TX, January 2007.
20. "Terahertz metamaterials and their applications," *Seminar @ Rensselaer Polytechnic Institute*, December 1, 2006.

Contributed Conference Presentations

19. "Tuning the Resonance in Superconducting Terahertz Metamaterials," *Conference on Lasers and Electro-Optics (CLEO:2011)*, Baltimore, MD, May 1–6, 2011.
18. "Terahertz Antireflection Coating Using Metamaterials," (**Poster**) *International Workshop on Optical Terahertz Science and Technology (OTST 2011)*, Santa Barbara, CA March 13–17, 2011.
17. "Thermally tunable terahertz metamaterials using strontium titanate single crystal substrates," (**Poster**) *International Workshop on Optical Terahertz Science and Technology (OTST 2011)*, Santa Barbara, CA March 13–17, 2011.
16. "Terahertz Antireflection Coatings Using Metamaterials," *Metamaterials '2010, the Fourth International Congress on Advanced Electromagnetic Materials in Microwaves and Optics*, Karlsruhe, Germany, September 13–16, 2010.
15. "Tuning the Response of Terahertz Metamaterials at Low Temperatures ,"
Metamaterials '2010, the Fourth International Congress on Advanced Electromagnetic Materials in Microwaves and Optics, Karlsruhe, Germany, September 13–16, 2010.
14. "Antireflection coating using metamaterials and identification of its mechanism," (**Poster**) *International Workshop on Electromagnetic Metamaterials IV (IWEM-IV)*, Albuquerque, NM, August 11–12, 2010.

13. “A Novel Approach of Antireflection Coating Using Planar Metamaterials,”
Photonic Metamaterials and Plasmonics (META), Tucson, AZ, June 7–9, 2010.
12. “A broadband terahertz metamaterial electrical modulator,”
Conference of Lasers and Electro-Optics (CLEO2009), Baltimore, MD, May 31 – June 5, 2009.
11. “An electrically controllable terahertz metamaterial phase shifter and its application in broadband terahertz modulation,”
MRS Spring Meeting, San Francisco, CA, April 13–17, 2009.
10. “Frequency tunable terahertz metamaterials,”
Conference of Lasers and Electro-Optics / Quantum Electronics and Laser Science Conference (CLEO/QELS 2008), San Jose, CA, May 4–9, 2008.
9. “Electronically control of extraordinary terahertz transmission through subwavelength metal hole arrays,”
Conference of Lasers and Electro-Optics / Quantum Electronics and Laser Science Conference (CLEO/QELS 2008), San Jose, CA, May 4–9, 2008.
8. “Electrical control of terahertz metamaterials”
Photonic Metamaterials: From Random to Periodic (META2007), Jackson Hole, WY, June 4–7, 2007.
7. “Terahertz switch/modulator based on metamaterials”
Conference of Lasers and Electro-Optics (CLEO2007), Baltimore, MD, May 6–11, 2007.
6. “Metamaterial based terahertz functional devices”
MRS Spring Meeting, San Francisco, CA, April 9–13, 2007.
5. “Active metamaterials at terahertz frequencies,” (**Poster**)
MRS Fall Meeting, Boston, MA, November 27 – December 1, 2006.
4. “Submicron material characterization using terahertz scanning near-field microscopy”
MRS Spring Meeting, San Francisco, CA, April 17–21, 2006.
3. “Submicron material characterization using terahertz scanning near-field microscopy”
APS March Meeting, Baltimore, MD, March 13–17, 2006.
2. “Terahertz imaging with submicron resolution”
MRS Fall Meeting, Boston, MA, November 29 – December 3, 2004.
1. “Terahertz access to the nanoworld”
Conference of Lasers and Electro-Optics / International Quantum Electronics Conference (CLEO / IQEC2004), San Francisco, CA, May 16–21, 2004.