

Selected Publications

- 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).
- **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).
- 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).
- **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).
- **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).
- 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).
- **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).
- **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).
- **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 sub-wavelength metal hole arrays,” *Optics Express* **16**, 7641–7648 (2008).
- **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).
- **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).
- **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).
- **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).
- **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).
- **H.-T. Chen**, G. C. Cho, and R. Kersting, “Terahertz imaging with nanometer resolution,” *Applied Physics Letters* **83**, 3009–3011 (2003).

Full Journal Publication List (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 1D_2 state in YPO₃:Pr³⁺,” *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 YPO₃:Pr³⁺,” *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 PbWO₄/Dy³⁺ 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 ZnS:Mn,” *Journal of Colloid and Interface Science* **229**, 534–539 (2000).