

# Gang Bao

## **EDUCATION:**

Ph. D.	1991	Applied Math., Rice University
M.A.	1990	Math. Sciences, Rice University
B.S.	1985	Comput. Math, Jilin University, China

## **RESEARCH INTEREST:**

Modeling, analysis, and computation of diffractive optics, nonlinear optics, near-field and nano-optics, and electromagnetics; Inverse and design problems for partial differential equations; Numerical analysis; Multi-scale, multi-physics scientific computing.

## **PROFESSIONAL EXPERIENCE:**

- Dean and National Chair Professor, School of Mathematical Sciences, Zhejiang University, China, May 2015-present
- Head and National Chair Professor, Department of Mathematics, Zhejiang University, China, January 2010-May 2015
- Founding Director, Interdisciplinary Center for Applied and Computational Mathematics, Zhejiang University, China 2010-present
- Founding Director, Michigan Center for Industrial and Applied Mathematics (MCIAM), Michigan State University, March 2006 – July 2014.
- Professor, Michigan State University, August 1999 – September 2014.
- Visiting Professor, Chinese University of Hong Kong, November 2007.
- Visiting Professor, City University of Hong Kong, May – November 2002.
- Visiting Professor, National University of Singapore, Singapore, December 2001.
- Member, Mathematical Sciences Research Institute (MSRI), Berkeley, CA, October & November 2001.
- Associate Professor, University of Florida, August 1997 – August 1999.
- Visiting Professor, Ecole Polytechnique, France, April & May 1998, June & July 2000.
- Assistant Professor, University of Florida, August 1994 – August 1997.
- Member, Institute for Mathematics and its Applications (IMA), MN, March 1995.
- Research Associate, IMA, University of Minnesota, September 1992 – August 1994.
- Research Associate, Rice University, January 1991 – August 1992.

## **CURRENT RESEARCH GRANTS:**

1. Principal Investigator, Large scale inverse scattering problems in complicated media, National Natural Science Foundation of China, a Key Project of the Major Research Plan of NSFC (No. 91130004), 2012-2016. Award amount: 3.9 million Chinese Yuans.
2. Principal Investigator, International collaborative research project on inverse problems, National Natural Science Foundation of China, 2014-2019. Award amount: 4 million Chinese Yuans.

3. Principal Investigator: Inverse problems: theory, computation, and applications, Tianyuan Project, National Natural Science Foundation of China, 2015-2017. Award amount: 2 million Chinese Yuans.
4. Principal Investigator: Inverse problems for PDEs: theory, computation, and applications, Innovative Research Group Fund, National Natural Science Foundation of China, 2017-2022. Award amount: 8.4 million Chinese Yuans.

**PREVIOUS RESEARCH GRANTS:**

1. Principal Investigator, *New faculty research support program award (DSR-D)*, University of Florida, June 3, 1994 – June 2, 1995. Award amount: \$7,000.
2. Principal Investigator, *Inverse problems in diffractive optics and wave propagation*, National Science Foundation, DMS9501099, May 1, 1995 – April 30, 1998. Award amount: \$67,800.
3. Principal Investigator, *Mathematical studies of surface enhanced nonlinear optical effects*, Research Development Award (RDA), University of Florida, May 1, 1995 – April 30, 1997. Award amount: \$15,900.
4. Co-Principal Investigator, *Conference on optimal control: theory, algorithms, and applications*, National Science Foundation (PI: W. W. Hager), Feb. 1997. Award amount: \$7,500.
5. Principal Investigator, *Modeling and design of micro-optical structures*, CLAS Research Initiation Projects Programs, University of Florida, 1997. Award amount: \$7,000.
6. Principal Investigator, *Modeling and optimization of diffractive optical structures*, National Science Foundation, University-Industry Cooperative Research Programs in the Mathematical Sciences, DMS9705139, May 1, 1997 – April 30, 1999. Award amount: \$44,361 from NSF, \$40,248 from Cray Research, Inc., Honeywell, Inc., and University of Florida.
7. Principal Investigator, *Modeling and optimization of diffractive optical structures*, Special Board Allocation, Office of Research, Technology, and Graduate Education, University of Florida, May 1, 1998 – April 30, 2000. Award amount: \$22,000.
8. Participant, *Optimal design in near-field optics*, Beckman Foundation Young Investigator Award (PI: W. Tan), May 1, 1997 – April 30, 1999. Award amount: \$11,800.
9. Principal Investigator, *Modeling and design of diffractive optics*, National Science Foundation, University-Industry Cooperative Research Programs in the Mathematical Sciences, DMS98-03809, May 1, 1998 – April 30, 2000. Award amount: \$47,034 from NSF, \$44,560 from University of Florida, Cray Research, Inc., and Lucent Technologies, Inc.
10. Principal Investigator, *Diffractive optics computation*, A special unrestricted research grant, Honeywell Research Center, Jan. 1, 1999 – Dec. 31, 1999. Award amount: \$10,000.
11. Principal Investigator, *Modeling and optimal design in micro-optics*, National Science Foundation, US-France Cooperative Research Program, INT-9815798. May 1, 1999 – April 30, 2002. Award amount: \$17,100.
12. Principal Investigator, *A computational model for the determination of location of epileptic foci in the living human brain*, CLAS Research Initiation Projects Programs,

- University of Florida, 1999. Award amount: \$4,200.
13. Principal Investigator, *Mathematical modeling of micro-optics and electromagnetics*, National Science Foundation, University-Industry Cooperative Research Programs in the Mathematical Sciences, DMS99-72292, May 1, 1999 – April 30, 2001. Award amount: \$46,208 from NSF, \$47,829 from Honeywell, Inc., Geo Control Systems, Inc., and University of Florida.
  14. Co-Principal Investigator, *The multigrid method and electromagnetic modeling*, 2001 Summer Program at the Morningside Center for Mathematics (Co-PIs: Z. Shi, J. Xu, Z. Chen), Academia Sinica, China. Award amount: \$28,000.
  15. Principal Investigator, *Inverse diffraction problems in optics*, National Science Foundation, DMS98-03604, May 1, 1998 – April 30, 2001. Award amount: \$79,200.
  16. Principal Investigator, *A special research grant*, Michigan State University, Aug. 15, 1999 – Aug. 14, 2001. Award amount: \$120,000.
  17. Principal Investigator, *Studies of direct and inverse problems in electromagnetics*, Office of Naval Research, Applied Analysis Programs, N000140010299, Feb. 1, 2000 – Dec. 31, 2001. Award amount: \$90,000.
  18. Principal Investigator, *Inverse problems for 3-D subsurface imaging*, Intramural Research Grants Program, MSU (CO-PI: R. Bachrach), Dec. 15, 2000 – June 14, 2002. Award amount: \$75,000.
  19. Principal Investigator, *Direct and inverse problems in diffractive optics modeling*, National Science Foundation, DMS0104001, July 1, 2001 – June 30, 2006. Award amount: \$320,000.
  20. Co-Principal Investigator, *Exploitation of omnidirectional reflectivity*, (PI: T. Van. Co-PIs: L. Kempel, D. Nyquist) STTR, Air Force Office on Scientific Research (AFOSR), September 1, 2002 – September 30, 2003. Award amount: \$100,000.
  21. Principal Investigator, *Computational electromagnetics*, a research gift, KLA-Tecor Foundation, 2004. Award amount: \$50,000.
  22. Principal Investigator, *Mathematical and computational studies of nonlinear diffractive Optics*, Distinguished Overseas Young Researcher Award, National Science Foundation of China, 10428105, January 1, 2005 – December 31, 2007. Award amount: \$50,000.
  23. Principal Investigator, *Collaborative Research: Foundations of solving large direct and inverse scattering problems-algorithm analysis and system support*, (Co-PI: L. Xiao), National Science Foundation, Theoretical Foundations Programs CCF-0514078, September 1, 2005 – August 31, 2008. Award amount: \$212,000.
  24. Principal Investigator, *Mathematical and computational studies of inverse problems in electromagnetics*, Office of Naval Research, Applied Analysis Programs, N000140210365, March 1, 2002 – February 28, 2008. Award amount: \$434,791.
  25. Principal Investigator, *To strengthen the educational program of the Michigan Center for Industrial and Applied Mathematics*, (Co-PIs: Ch. R. MacCluer and P. Wu), Alfred P. Sloan Foundation, August 1, 2006 – August 31, 2009. Award amount: \$45,000.
  26. Co-Principal Investigator, *MCIAM workshop on multiscale modeling, analysis, and simulations*, March 2008, (PI: A. Christlieb), AFOSR. Award amount: \$7,000.
  27. Co-Principal Investigator, *A High Performance Computing Center for Michigan State University*, (PI: L. Kempel. Co-PIs: P. Piecuch, S. D. Mahanti, F. Jaber) Michigan State

- University, 2005 – 2009. Award amount: \$2,925,000.
28. Director, *Michigan Center for Industrial and Applied Mathematics*, MSU Quality Fund, August 1, 2006 – July 31, 2009. Award amount: \$345,000.
  29. Principal Investigator, *Direct and Inverse modeling of diffractive optics and near-field optics*, National Science Foundation, the US-China Collaboration in Mathematical Research (CMR) Programs DMS-0604790, (Co-PIs: L. Kempel and Z. Zhou) August 16, 2007 – August 15, 2009. Award amount: \$40,000.
  30. Principal Investigator, Collaborative research: *Quantifying tectonic and geomorphic interpretations of thermochronometer data with inverse problem theory*, National Science Foundation, Collaboration in Mathematical Geosciences (CMG) Programs EAR-0724527, September 1, 2007 – August 31, 2012. Award amount: \$217,167.
  31. Principal Investigator, *Gaussian beam methods for large-scale computational electromagnetics and applications*, (Co-PI: J. Qian) National Science Foundation, Theoretical Foundations Programs CCF-0830161, September 1, 2008 – August 31, 2012. Award amount: \$250,000.
  32. Principal Investigator, *Inverse scattering problems in electromagnetics*, Office of Naval Research, Applied Analysis Programs N000140210365, October 1, 2009 – September 30, 2012. Award amount: \$240,000.
  33. Principal Investigator, Modeling, analysis, and computation of diffractive and nano optics, National Science Foundation, Applied Math Program DMS-0908325, June 1, 2009 – May 31, 2012 (No cost extension until May 31, 2013). Award amount: \$341,932.
  34. Principal Investigator, *Modeling, computation, and analysis of optical responses of nano structures*, (MSU Co-PIs: D. Liu, J. Schenker, Z. Zhou; Stanford Co-PI: S. Fan) National Science Foundation, Focused Research Group Programs DMS-0968360, June 1, 2010 – May 31, 2013 (No cost extension to Dec. 31, 2014). Award amount: \$1,260,000 (MSU: \$900,000; Stanford: \$360,000).
  35. Principal Investigator, *Inverse scattering problems in wave propagation*, Office of Naval Research, Applied Analysis Programs N000141210319, Feb. 15, 2012 – September 30, 2015. Award amount: \$239,933.
  36. Principal Investigator, Mathematics and computation of nonlinear problems in diffractive optics, National Science Foundation, Applied Math Program DMS-121129, September 1, 2012– August 31, 2015. Award amount: \$260,000.

#### **AWARDS AND HONORS:**

- Research and Development Award, University of Florida, 1995.
- Faculty Bonus Pay Award, University of Florida, 1997.
- Guest Professor, Jilin University, 1998 –; Fudan University, 2002–.
- Meritorious Performance Award, University of Florida, 1998.
- Changjiang Professor (Cheung Kong Scholar), Ministry of Education and Li Ka Shing Foundation, China, 2001–2006.
- The Feng Kang Prize of Scientific Computing, 2003.
- Distinguished Overseas Young Researcher Award, National Science Foundation of China, 2005.
- University Distinguished Faculty Award, Michigan State University, 2007.

- College of Natural Science Distinguished Faculty Award, Michigan State University, 2007.
- Plenary Speaker, Applied Inverse Problems Conference (AIP 2011), 2011.
- SIAM Fellow, 2016

### **EDITORIAL BOARDS:**

- SIAM J. on Applied Math. (2011-2017)
- Inverse Problems (2014--)
- Journal of Differential Equations (2014-)
- Inverse Problems and Imaging (2015-)
- Discrete and Continuous Dynamical Systems- Series B (2016-2019)
- Communications in Computational Physics (2005--)
- Journal of Computational Mathematics (2006--): Co-Managing Editor
- Evolution Equations and Control Theory (EECT) (2011-)
- International Journal on Numerical Analysis and Modeling (2004--)
- Frontiers of Mathematics in China (2004--)
- Journal of Applied Mathematics and Statistics (2012-)
- Journal of Chinese Universities on Applied Math (2012-)
- Journal of Mathematical Research with Applications(2011-)
- Multiscale Modeling and Simulation: a SIAM Interdisciplinary Journal (2001--2005)
- Journal on Information and Computational Science (2004--2010)
- Annals of Applied Mathematics (2015-)
- Mathematical Monograph Series, Science Publ. (2015-)

### **PH.D. STUDENTS:**

Tri Van (University of Florida, completed in July 1999); John Fleming (completed in December 2001); Kai Huang (completed in April 2002); Peijun Li (completed in May 2005); Weiwei Zhang (completed in June 2006); Ying Li (completed in July 2007); Yuanchang Sun (completed in June 2009); Li Zhao (Chinese Academy of Sciences, completed in June 2010); Junshan Lin (completed in May 2011); Yuliang Wang (completed in May 2013); Jun Lai (completed in May 2013); Hai Zhang (completed in May 2013); Justin Droba (completed in July 2014); Yuqi Hong (completed in August 2014); Huayan Liu (2012-); Bin Hu (2013-)

### **MASTER STUDENTS:**

Wei Chen (completed in May 2006)  
Bo Huang (completed in May 2009)

### **POSTDOC RESEARCH ASSOCIATES:**

Karim Ramdani (1999-2000); Hsiu-Chuan Wei (2000-2001); Hyeona Lim (2001-2003); Triki Faouzi (2003-2005); Haijun Wu (2003-2004); Songming Hou (2005-2007); Yanbo Wang (2007-2008); Kihyun Yun (2007-2010); Zhengfu Xu (2008-2010); Jianhua Yuan (2008-2009); Sonting Luo (2009-2012); Guanghui Hu (2009-2012); Russell Richins (2010-2012); Xiang Xu (2010-2013); Junliang Lv (2011-2013); Yixian Gao (2011-2013); Ming Li (2013-); Lei Zhang (2015-); Tao Ying (2016-).

### **OTHER PROFESSIONAL ACTIVITIES:**

- Chair of the Scientific Committee, Applied Inverse Problems Conference (AIP 2017), 2017
- Organizing Committee, IMA Annual Program on Mathematics of Optics, 2016
- Review Panelist, Young Changjiang Scholar Program, Beijing, December 2015
- Panelist, Advisory Board for the One-Thousand Talent Program, Beijing, December 2015
- Review Panelist, One-Thousand Talent Program of Zhejiang Province, Hangzhou, October 2015
- Co-Chair (with G. Uhlmann), IAS Workshop on Inverse Problems, Imaging and PDEs, Institute for Advanced Study, Hong Kong University of Science and Technology, September 2015
- Lead Panelist, Foreign One-Thousand Talent Program, Beijing, September 2015
- Lead Panelist, One-Thousand Talent Program, Beijing, September 2015
- Organizer, four Minisymposia, ICIAM 2015, Beijing, China, August 2015
- Co-Chair of the Satellite Conference of ICIAM on Inverse Problems and Imaging, August 2015
- Review Panelist, National Natural Science Foundation of China, Xiangtan, July 2015
- Scientific Committee, Applied Inverse Problems Conference (AIP 2015), 2015
- Review Panelist, Tainyuan Project, National Natural Science Foundation of China, Hangzhou, May 2015
- Lead Panelist, Young One-Thousand Talent Program, Beijing, January 2015
- Lead Panelist, Advisory Board for the One-Thousand Talent Program, Beijing, December 2014
- Lead Panelist, Foreign One-Thousand Talent Program, Beijing, November 2014
- Chair of Conference on Inverse Problems: Theory and Applications, Harbin, August 2014
- Review Panelist, National Natural Science Foundation of China, Beijing, July 2014
- Chair of the Organizing Committee, International Conference on Inverse Problems and Imaging, Hangzhou, June 2014
- Panel Member, Kuwait Prize, KFAS, December 2013
- Review Panelist, National Natural Science Foundation of China, Beijing, July 2013.
- Chair of the Prize Committee, Conference on Inverse Problems: Theory and Applications, Taiyuan, China, July 2013.
- Scientific Committee. Applied Inverse Problems Conference (AIP 2013), July 2013.
- Chair of the Organizing Committee, International Conference on Inverse Problems and

- Applications, Hanzhou, China, September 2012.
- Review Panelist, National Natural Science Foundation of China, Twice in July 2012.
  - Co-Chair, MCIAM workshop on Multiscale Modeling, Analysis, and Computation of Nano-Optics, East Lansing, MI, April 2012.
  - Scientific Committee. The Eighth International Conference on Scientific Computing and Applications, Las Vegas, April 2012.
  - Minisymposium Co-Organizer (with Z. Chen) Numerical Methods for Electromagnetic and Acoustic Wave Problems, ICIAM, Vancouver, July 2011.
  - Chair of the Organizing Committee, International Conference on Interdisciplinary Applied and Computational Mathematics, Zhejiang University, Hangzhou, June 2011.
  - Co-Chair, MCIAM Workshop on Computational Wave Propagation, East Lansing, MI, April 2011.
  - Review Panelist, National Science Foundation, DMS, April 2011.
  - Co-Chair, MCIAM Workshop on Nano Optics, East Lansing, MI, March 2011.
  - Review Panelist, National Science Foundation, DMS, March 2011
  - Review Panelist, National Natural Science Foundation of China, December 2010
  - Review Panelist, National Science Foundation, DMS, March 2010
  - Minisymposium Organizer, International Conference on Scientific Computation and Differential Equations, Beijing, China, May 2009.
  - Review Panelist, National Science Foundation, DMS, April 2009.
  - Review Panelist, National Science Foundation, DMS, March 2009.
  - Organizing Committee, The First International Conference on Frontiers in Computational Mathematics, Guilin, China, December 2008.
  - Review Panelist, (twice: Nov. 6-7; Nov. 23-25) National Science Foundation, DMS, November 2008.
  - Invited Participant, IMA Workshop on Solar Initiatives, November 2008.
  - Panelist, Math Review, Ann Arbor, October 2008.
  - Co-Chair, International Conference on Applied Mathematics, City University of Hong Kong, Hong Kong, June 2008.
  - Organizer: International Workshop on PDE Eigenvalue Problems, Beijing, China, May, 2008.
  - Review Panelist, National Science Foundation, DMS, March 2008.
  - Review Panelist, National Science Foundation, CCF, May 2007.
  - Review Panelist, National Science Foundation, DMS, March 2007.
  - Co-Chair of the organizing committee (with Jin Cheng), Workshop on Challenges and Opportunities in Nano-Optics, Shanghai, China, Jan. 5-9, 2007
  - Invited participant, IMA Workshop on Negative Index Materials, IMA, Minneapolis, Oct. 2-4, 2006.
  - Organizing committee, Applied Mathematics Summer Workshop, Applied Mathematics Research Center, Delaware State University, Dover, DE, July 31 – Aug 2, 2006
  - Co-Chair of the organizing committee (with Zhiming Chen), Recent Mathematical and Computational Developments of Maxwell's Equations: Challenges and Frontiers, Weihai, China, July 24-28, 2006.
  - Co-Organizer (with Yong Li), International Workshop on Differential Equations and

- Numerical Analysis, Jilin University, Changchun, China, July 10-12, 2006
- International scientific committee, International Conference on Inverse Problems, Sapporo, Japan, July 3-7, 2006.
  - Invited participant, IMA Workshop on Imaging from Wave Propagation, IMA, Minneapolis, Oct 17-21, 2005.
  - International scientific committee, 7th International Conference on Mathematical and Numerical Aspects of Wave Propagation (WAVES'05), Brown Univ., Providence, RI, June 20-24, 2005.
  - Organizer, SIAM Great Lakes Section 2005 Spring Meeting, East Lansing, MI, April 16, 2005.
  - Conference co-chair, International Conference on Numerical and Applied PDEs, Jilin University, Changchun, China, June 2004.
  - Review Panelist, National Science Foundation, DMS, May 2004.
  - Organizer, Minisymposium "Mathematical and computational modeling of electromagnetics and optics", ICIAM 2003, Sydney, July 2003.
  - Organizer, Minisymposium "Modeling and design in optics and electromagnetics", IPAM, SIAM, and EMS Conference on Applied Inverse Problems, Arrowhead Lake, CA, May 2003.
  - Scientific committee and minisymposium organizer, Minisymposium "Modeling, analysis, and computation of electromagnetics", 3rd International Workshop on Scientific Computing and Applications, Hong Kong, January 2003.
  - Scientific committee and session chair, International Conference on Computational Mathematics, Pohang, Korea, July 2001.
  - Organizing committee, International Conference on Scientific & Engineering Computing, Beijing, China, March 2001.
  - Invited participant, the IMA Workshop on Brain Imaging, Minneapolis, MN, October 2000.
  - Organizing committee, Beijing Workshop on Electromagnetic and Wave Propagation, Beijing, China, August 2000.
  - Scientific committee, 5th International Conference on Mathematical and Numerical Aspects of Wave Propagation, Santiagode Compostela, Spain, July 2000.
  - Visiting professor, Weierstrass Institute for Applied Analysis and Stochastics, Berlin, Germany, December 1999.
  - Invited participant, the IMA Workshop on Analysis and Modeling of Optical Devices, Minneapolis, MN, Sept. 1999.
  - External Ph.D. thesis committee, Chiraz Latiri-Grouz, Ecole Polytechnique, France, Sept. 1999.
  - Organizer, Applied Mathematics Seminar, Michigan State University, August 1999 – July 2002.
  - Organizer (with H. Ammari), Minisymposium "Mathematical Modeling of Electromagnetics", ICIAM, Edinburgh, Scotland, July 1999.
  - Organizer (with Y. Chen), Special Session "Partial Differential Equations and Applications", the AMS Southeastern Sectional Meeting, Gainesville, FL, Jan. 1999.
  - Invited participant, NSF site visit, IMA, University of Minnesota, Minneapolis, MN, Oct.



- 1998.
- Invited participant, the Air Force Workshop on Inverse Scattering, San Antonio, TX, Aug. 1997.
  - Organizer (with L. Cowsar), Minisymposium “Modeling in Optical Science”, SIAM Annual Meeting, Stanford, CA, July 1997.
  - Organizing committee and session chair, Conference on Optimal Control: Theory, Algorithms, Applications, Gainesville, FL, Feb. 1997.
  - Organizer, Graduate Working Seminar in Applied Mathematics, University of Florida, 1997-99.
  - Organizer, Minisymposium “Inverse Problems in Optical Science”, SIAM Annual Meeting, Kansas City, MO, July 1996.
  - Organizer, Applied Mathematics Seminar, University of Florida, 1994-96.
  - Invited participant, the IMA Workshop on Nonlinear Optical Materials, Minneapolis, MN, March 1996.
  - Session chair, CBMS Conference on Nondestructive Evaluation and Inverse Problems, Lexington, KY, June 1995.
  - Invited participant, the IMA Workshop on Computational Wave Propagation, Minneapolis, MN, Sept. 1994.

#### **COLLOQUIUM TALKS AND INVITED CONFERENCE ADDRESSES:**

- 1990** Mathematics Colloquium, University of Florida, February.
- 1991** Partial Differential Equations Seminar, University of Houston, April.  
Contributed talk, Second International Conference on Industrial and Applied Mathematics, Washington, DC, July.
- 1992** Mathematics Colloquium, Iowa State University, January.  
The 15th Annual Texas Partial Differential Equations Conference, Denton, March.  
Two contributed talks, SIAM 40th Anniversary Meeting, Los Angeles, July.
- 1993** 16th Annual Texas Partial Differential Equations Conference, College Station, March.  
Second International Conference on Mathematical and Numerical Aspects of Wave Propagation, Newark, June.  
IMA Workshop on Modeling, Mesh Generation, and Adaptive Numerical Methods for Partial Differential Equations, Minneapolis, July.  
Mathematics Colloquium, University of North Carolina at Charlotte, October.  
13th Southeastern Atlantic Regional Conference on Differential Equations, Wilmington, October.  
Partial Differential Equations Seminar, Iowa State University, October.
- 1994** Mathematics Colloquium, University of Florida, January.  
Mathematics Colloquium, Wichita State University, February.  
Conference on the Mathematical Study of Nonlinear Materials, University of Arkansas, April.  
Partial Differential Equations Seminar, Michigan State University, April.  
Topical Meeting: Diffractive Optics, Optical Society of America, Rochester, New

- York, June.  
 Industrial and System Engineering Department Colloquium, University of Florida, December.
- 1995** CBMS Conference on Nondestructive Evaluation and Inverse Problems, University of Kentucky, Lexington, June.  
 Mathematics Institute Colloquium, Jilin University, Changchun, China, July.  
 Special Colloquium, Department of Mathematics, Texas A & M University, December.
- 1996** Mathematics Colloquium, Michigan State University, March.  
 Colloquium on Scientific Computing, Bell Labs, Murray Hill, N. J., March.  
 International Conference on Dynamical Systems and Differential Equations, Spring-field, MO, May.  
 Mathematics Colloquium, Universite Louis Pasteur, Strasbourg, France, June.  
 2nd International Conference on Inverse Problems in Engineering: Theory and Practice, Le Croisic, France, June.  
 6th International Conference on Hyperbolic Problems, Hong Kong, June.  
 '96 Conference on Computational Physics and Applied Mathematics, Beijing, June.  
 Mathematics Colloquium, Harbin Institute of Technology, Harbin, China, July.  
 Minisymposium on Inverse Problems in Optical Sciences, SIA Manual meeting, Kansas City, Mo, July.  
 CAAM Colloquium, Rice University, November.
- 1997** International Conference on PDE and Applications, Chongqing, China, May.  
 Mathematics Colloquium, Jilin University, Changchun, China, June.  
 Mathematics Colloquium, Chinese Academia Sinica, Beijing, China, June.  
 Third Midwest-Southeastern Atlantic Joint Regional Conference on Differential Equations, Vanderbilt University, Nashville, TN, November.  
 Applied Mathematics Seminar, Courant Institute of Mathematical Sciences, NYU, New York, December.
- 1998** Physics Colloquium, Army Weapon Labs and University of Alabama, Huntsville, February.  
 Applied Mathematics Seminar, University of Michigan, Ann Arbor, February.  
 Mathematics Colloquium, Michigan State University, February.  
 Dynamical Systems Seminar, Georgia Institute of Technology, February.  
 Mathematics Colloquium, Georgia Institute of Technology, February.  
 Mathematics Colloquium, Texas A & M University, March.  
 Center for Applied Mathematics Seminar, Ecole Polytechnique, France, April.  
 Mathematics Colloquium, INRIA, Rocquencourt, France, April.  
 1998 Summer Topical Meetings of Optical Society of America, Kailua-Kona, Hawaii, June.  
 AMS-IMS-SIAM Joint Summer Research Conference on Mathematical Methods in Inverse Problems for Partial Differential Equations, South Hadley, MA, July.  
 Air Force Institute of Technology Distinguished Lecturers Series, Dayton, OH, July.  
 Mathematics Colloquium, Beijing University, Beijing, China, August.  
 Mathematics Colloquium, Jilin University, Changchun, China, August.

- Mathematics Colloquium, University of Florida, November.
- 1999** Applied Mathematics Colloquium, California Institute of Technology, Pasadena, CA, January.
- Mathematics Colloquium, University of Delaware, February.
- Mathematics Colloquium, Michigan State University, February.
- International Conf. on Diff. Eqns and Comput. Simulations, Chengdu, China, June.
- Minisymposium on Mathematical Modeling of Electromagnetics, ICIAM, Edinburgh, Scotland, July.
- Minisymposium on Medical Applications of Inverse Problems, ICIAM, Edinburgh, Scotland, July.
- Weierstrass Institute for Applied Analysis and Stochastics, Berlin, Germany, December.
- 2000** Plenary speaker, The 3rd Forum on Numerics and Modeling for Partial Differential Equations, SIAM Great Lake Section, Dearborn, MI, April.
- Conference on Optima IControl of Complex Dynamical Structures, Mathematisches Forschungsinstitut Oberwolfach, Lorenzenhof, Germany, June.
- (with L. Kempel), PIERS2000, Progress in Electromagnetics Research Symposium, Cambridge, MA, July.
- Fifth International Conference on Mathematical and Numerical Aspects of Wave Propagation, Santiagode Compostela, Spain, July.
- IAPCM Workshop on Computational Electromagnetics and Applications, Beijing, China, July.
- IAPCM Workshop on Electromagnetic and Wave Propagation, Beijing, China, August.
- Mathematics Colloquium, University of Memphis, November.
- Mathematics Colloquium, Mississippi State University, November.
- 2001** International Conference on Scientific & Engineering Computing, Beijing, China, March.
- Applied Mathematics Seminar, U.S. Naval Academy, Annapolis, MD, May.
- International Conference on Computational Mathematics, Pohang, Korea, July.
- International Conference on Differential Equations and Dynamical Systems with Applications, Lhasa, Tibet, China, July.
- Department of Computational Mathematics Colloquium, National University of Singapore, Singapore, July.
- Mathematics Colloquium, University of Chongqing, Chongqing, China, July.
- A Two-Week Series of Lectures on Math and Computation of Diffractive Optics, the Morningside Center for Mathematics, Academia Sinica, Beijing, China, August.
- Two Minisymposium talks at The Third International ISAAC Congress, Berlin, August.
- Mathematics Colloquium, Brigham Young University, Provo, UT, November.
- MSRI Workshop on Inverse Problems and Applications, Berkeley, CA, November.
- Department of Computational Science Seminar, National University of Singapore, Singapore, December.
- 2nd International Congress of Chinese Mathematicians, Taipei, Taiwan, December.

- 2002** Plenary talk, International Conference on Inverse Problems, Hong Kong, January.  
 Appl. Math. Seminar, Wayne State University, March.  
 Special Session on Inverse Problems, UAB International Conference on Differential Equations and Mathematical Physics, Birmingham, Alabama, March.  
 Mathematics Colloquium, Lanzhou University, Lanzhou, China, May.  
 Mathematics Colloquium, Zhongshan University, Guangzhou, China, June.  
 CTS Workshop on Multiscale Modeling and Simulation, Hsin-Chu, Taiwan, June.  
 IMS Workshop on PDEs and Their Numerical Methods, the Chinese University of Hong Kong, Hong Kong, July.  
 Five One-hour Lectures, Jilin University Summer School, Changchun, China, July.  
 Special Applied Math Seminar, Hong Kong Baptist University, Hong Kong, September.  
 Mathematics Colloquium, Hong Kong Baptist University, Hong Kong, October.  
 Special Applied Math Seminar, Hong Kong Baptist University, Hong Kong, October.  
 Mathematics Colloquium, City University of Hong Kong, Hong Kong, October.  
 Plenary talk, International Conference on Mathematical Modelling of Wave Phenomena, Vaxjo University, Sweden, November.  
 Mathematics Colloquium, Hong Kong University of Science and Technology, Hong Kong, November.  
 Special Applied Math Seminar, Hong Kong Baptist University, Hong Kong, November.  
 Mathematics Colloquium, Jilin University, December.  
 2nd IIRC Workshop on Impedance Imaging, Seoul, Korea, December.  
 2nd International Symposium on Scientific Computing, Guangzhou, China, December.
- 2003** LSEC Seminar, Chinese Academy of Sciences, Beijing, China, January.  
 Workshop on Applied and Computational PDEs, Beijing University, Beijing, China, January.  
 3rd International Workshop on Scientific Computing and Applications, City University of Hong Kong, January.  
 OWTNM 2003, Prague, CZECH Republic, April.  
 IPAM/SIAM/EMS Conference on Applied Inverse Problems, Arrowhead Lake, CA, May.  
 Applied Math Seminar, Univ. of California, Irvine, CA, May.  
 Future Directions in Applied Mathematics, Institute Henri Poincare, Paris, France, June.  
 Mathematics Colloquium, IMAG, Grenoble, France, June.  
 Two minisymposium talks at ICIAM 2003, Sydney, Australia, July.  
 2nd Workshop on Multiscale Computation, Beijing University, Beijing, China, August.  
 1st Symposium on Science and Engineering in Biomedicine, Amelia Island, FL, September.  
 Plenary talk, The 7th Conference on Computational Mathematics, Nanjing, China, October.

- One hour lecture, Inverse Problem Workshop II, IPAM, UCLA, Los Angeles, November.
- International Workshop on Scientific Computing, Chinese Academy of Sciences, Beijing, China, December.
- Mathematics Colloquium, Jilin University, Changchun, China, December.
- 2004** International Conference on Partial Differential Equations and Applications, Fuzhou, China, January.
- Colloquium, Institute for Computational Mathematics, Chinese Academy of Sciences, Beijing, China, January.
- Workshop on Computational Methods in Multiscale Analysis and Applications, University of Florida, Gainesville, FL, February.
- International Conference on Mathematics and Its Applications, Hong Kong City University, Hong Kong, May.
- International Workshop on Nonlinear Waves, The Chinese University of Hong Kong, June.
- Plenary talk, 2nd International Conference on Inverse Problems, Recent Theoretical Development and Numerical Approaches, Fudan University, Shanghai, China, June.
- Four Eighty-minute Lectures, Special Year on Elliptic and Parabolic PDEs, Jilin University, Changchun, China, July.
- Plenary talk, International Symposium on Computing and Information, Zhuhai, China, August.
- Kansas Center for Advanced Scientific Computing Seminar, University of Kansas, Lawrence, November.
- 2005** Special Session on Inverse Problems, Joint Mathematical Meetings, Atlanta, January.
- Plenary talk, the Midwest Numerical Analysis Conference, Univ. of Iowa, May.
- DoD Applied Math Workshop, Delaware State University, August.
- International Workshop on Computational Science and Its Education, Beijing, China, August.
- Plenary talk, New Trends in Simulation and Control of PDEs, Beilin, September.
- Minisymposium talk, SIAM Conference on Mathematics for Industry, Detroit, October. Mathematics Colloquium, Ecole Polytechnique, Paris, November.
- 2006** Appl. Math. Seminar, US Naval Academy, Annapolis. MD, March.
- Appl. Math. Seminar, Univ. of Michigan, Ann Arbor, April.
- Mathematics Colloquium, Wayne State University, Detroit, April.
- Appl. Math. Seminar, UC at Irvine, Irvine, May.
- International Conference on Recent Advances in Scientific Computing, Beijing, June.
- Plenary speaker, International Conference of Analysis and Applications, University of Science and Technology of China, Hefei, June.
- Workshop on Scientific Computing, Tsinghua Univ., Beijing, July.
- International Workshop on Scientific Computing, Chinese Academy of Sciences, Beijing, July.
- BIRS workshop on Inverse Problems and Applications, Ban., Canada, August.
- Mathematics Colloquium, Tulane University, October.
- Applied Math Seminar, Tulane University, October.

- 2007** Plenary talk, SIAM Great Lakes Section 2007 Spring Meeting, Oakland University, April.  
 The Second International Conference on Recent Advance in Applied Dynamical Systems, Zhejiang Normal University, Jinhua, Zhejiang, China, June.  
 International Workshop on Computational Methods in Geosciences, Xian, China, July.  
 Applied Math. Colloquium, Weierstrass Institute for Applied Analysis and Stochastics, Berlin, Germany, July.  
 Special Session on Control and Optimization of Nonlinear PDE Systems, 1st Joint International Meeting between AMS and PTM, Warsaw, Poland, July.  
 Plenary talk, International Conference on Applied Mathematics and Interdisciplinary Research, Lijiang, China, August.  
 Mathematics Colloquium, Harbin Institute of Technology, Harbin, China, August.  
 Mathematics Colloquium, Florida State University, Tallahassee, FL, September.  
 Mathematics Colloquium, Georgia Institute of Technology, Atlanta, October.  
 Applied Mathematics Colloquium, University of Pennsylvania, Philadelphia, October.  
 Mathematics Colloquium, IUPUI, Indianapolis, October.  
 Mathematics Colloquium, Chinese University of Hong Kong, Hong Kong, November.  
 Mathematics Colloquium, City University of Hong Kong, Hong Kong, November.  
 Mathematics Colloquium, Harbin Institute of Technology, Harbin, China, December.
- 2008** ONR Workshop on Inverse Problems, Washington DC, January.  
 SAMSI Workshop on Waves and Imaging, NC, January.  
 Mathematics Colloquium, RPI, NY, February.  
 Mathematics Colloquium, Georgia Tech, Atlanta, April.  
 Applied Math Seminar, Courant Institute, NY, April.  
 A Workshop on Scientific Computing, Institute of Comput. Math., Chinese Academy of Sciences, Beijing, China, June.  
 Workshop on High Performance Scientific Computing, Wuyishan, China, June.  
 Imaging Microstructures: Mathematical and Computational Challenges, Institute Henri Poincare, Paris, June.  
 A series of 6 three-hour lectures on Mathematical Methods in Optical Science, Chinese Academy of Sciences, Beijing, China, July, August.  
 The First US-China Workshop on Nano Science, Northwestern University, October.  
 Plenary talk, The Third International Conference on Scientific Computing and Partial Differential Equations, Hong Kong Baptist University, Hong Kong, December.
- 2009** Mathematics Colloquium, UNLV, Las Vegas, March.  
 Plenary talk, Joint Midwest Numerical Analysis Day & SIAM Great Lakes Numerical PDEs Conference, Wayne State University, April.  
 Mathematics Colloquium, University of Utah, Salt Lake City, April.  
 Applied Math Seminar, BYU, April.  
 Special Session on the Interface Problem and its Applications, International Conference on Engineering and Computational Mathematics, Hong Kong Polytech University, Hong Kong, May.  
 International Conference on Nonlinear and Stochastic Dynamics, Shichuang University, Chengdu, June.

- Special Session on Inverse Problems, 1st PRIMA Congress, Sydney, Australia, July 8.  
 Mathematics Colloquium, Zhejiang University, Hanzhou, China, July.  
 Mathematics Colloquium, Harbin Institute of Technology, Harbin, China, July..
- 2010** International Conference on Inverse Problems, Wuhan University, Wuhan, China, April .  
 William Benter Prize Minisymposium, International Conference on Applied Mathematics, City University of Hong Kong, June.  
 A Series of 8 Lectures, IMA Summer School on Computational Wave Propagation, Michigan State University, June.  
 Special Session on Electromagnetics, 5th Pacific Rim Conference on Mathematics, Stanford University, June, 2010.  
 A Series of 10 Lectures, Fudan Summer School on Maxwell's Equations, Fudan University, Shanghai, China, July.  
 International Workshop on Maxwell's Equations, Fudan University, China, July.  
 Changjiang Forum on Mathematics, Sichuan University, China, August.  
 Workshop on Mathematical and Statistical Methods for Imaging, Inha University, Seoul, Korea, August.  
 International Workshop on Computational Mathematics and Scientific Computing, Academy of Sciences, Beijing, China, September.  
 Plenary talk, Sixth Shanghai Conference on Scientific and Engineering Computing, Shanghai University, Shanghai, China, November.  
 2nd International Workshop on Interdisciplinary Applied Mathematics, Zhejiang University, Hangzhou, China, December.
- 2011** Minisymposium on Interactions of Inverse Problems, Signal Processing, and Imaging, AMS Joint Mathematics Meetings, New Orleans, Louisiana, January.  
 Plenary talk, Applied Inverse Problems Conference, College Station, Texas, May.  
 Plenary talk, Forum on Scientific and Engineering Computing, LSEC, Academy of Sciences, Beijing, China, June.  
 ONR Program Review Meeting, Arlington, VA, June.  
 Minisymposium on Recent Advances in Inverse Problems for Partial Differential Equations, ICIAM, Vancouver, CA, July.  
 Plenary talk, The 2011 International Workshop on Recent Advances in Biomedical Imaging, Shanghai Jiao Tong University, Shanghai, China, August.  
 Mathematics Colloquium, School of Mathematics, Sichuan University, China, October.  
 Workshop on Imaging, wave propagation in complex media, and optima control under uncertainties, Ecole Normale Supérieure, Paris, December.  
 Mathematics Colloquium, Department of Mathematics, Guangxi Minzhu University, China, December.
- 2012** Minisymposium on Inverse Problems and Control Theory, AMS Joint Mathematics Meetings, Boston, January.  
 Plenary talk. The Eighth International Conference on Scientific Computing and Applications, Las Vegas, April.  
 Mathematics Colloquium, School of Mathematics, Sichuan University, China, April.  
 Plenary talk, International Conference on Applied Mathematics 2012, Liu Bie Ju

- Centre for mathematical Sciences, City University of Hong Kong, May.
- Invited talk, Workshop on Mathematical and Numerical Analysis of Electronic Structure Models, Chinese Academy of Sciences, Beijing, June.
- Invited talk, A conference on inverse problems in honor of Gunther Uhlmann, UC Irvine, June.
- Plenary talk, International Conference on Computational Science, Shanghai Normal University, Shanghai, China, July.
- Mathematics Colloquium, School of Mathematics, Xiamen University, December.
- 2013** Plenary talk, 8<sup>th</sup> International Conference on Computational Physics, Hong Kong, January.
- Physics Colloquium, Department of Physics, Zhejiang University, March.
- Mathematics Colloquium, Department of Mathematics, NJIT, April.
- Invited talk, IFIP TC 7.2 Workshop on Electromagnetics, Weierstrass Institute, Berlin, Germany, June.
- Minisymposium speaker, 2013 Pacific Rim Conference in Mathematics, SJTU, Shanghai, July.
- Minisymposium speaker, Applied Inverse Problems, South Korea, July.
- Mathematics Colloquium, Department of Mathematics, Harbin University of Engineering, Harbin, China, August
- Invited talk, China-Japan-Korea workshop on scientific computing, Chengdu, China, September.
- Mathematics Colloquium, Wuhan University, Wuhan, China, December.
- 2014** Plenary talk, Inverse Problems- from Theory to Applications, a conference celebrating 30 years of Inverse Problems, Institute of Physics, Bristol, UK, August
- Mathematics Colloquium, National University of Singapore, October.
- Mathematics Colloquium, Fudan University, October
- Mathematics Colloquium, University of Macau, November
- Invited talk, International Conference on Applied Mathematics, City University of Hong Kong, December
- Plenary talk, International Conference on Inverse problems and Optimal Control, Chinese University of Hong Kong, Hong Kong, December
- 2015** Invited talk, International Workshop on Mathematics in the Life and Physical Sciences, Renmin University, May
- Plenary talk, 10th East China PDE Conference, Shanghai, June
- Mathematics Colloquium, Beijing Institute of Applied and Computational Mathematics, Beijing, July
- Invited talk, Annual Conference of the Computational Mathematics Society of China, Guangzhou, September
- Distinguished Lecture Series, The AMSS-PolyU Joint Research Institute, HK Polytechnic University, Hong Kong, September
- Mathematics Colloquium, Sichuan University, Chengdu, October
- Mathematics Colloquium, Peking University, Beijing, October.
- Mathematics Colloquium, Harbin Institute of Technology, Harbin, China, December
- 2016** Mathematics Colloquium, LSU, USA, February



Mathematics Colloquium, Hangzhou Normal University, Hangzhou, April  
 Invited talk, Mathematics in Imaging Conference, OSA Imaging and Applied  
 Optics Congress, Heidelberg, Germany, July.  
 Plenary talk. CSIAM Annual Conference, Xiangtan, August.  
 Invited talk. 4th Workshop on Thin Structures, Naples, Italy, September.

**REFEREED JOURNAL PUBLICATIONS** (Published, accepted, submitted)

1. (with W. W. Symes), *A trace theorem for solutions of linear partial differential equations*, Math. Meth. in the Appl. Sci. **14** (1991), 553-562.
2. (with W. W. Symes), *Trace regularity for a second order hyperbolic equation with nonsmooth coefficients*, J. Math. Anal. Appl. **174** (1993), 370-389.
3. *A uniqueness theorem for an inverse problem in periodic diffractive optics*, Inverse Problems **10** (1994), 335-340.
4. (with D. Dobson), *Second harmonic generation in nonlinear optical films*, J. Math. Phys. **35** (4) (1994), 1622-1633.
5. (with W. W. Symes), *Time like trace regularity of the wave equation with a nonsmooth principal part*, SIAM J. Math. Anal., Vol. 26, No. 1 (1995), 129-146.
6. (with D. Dobson, J. A. Cox), *Mathematical studies in the rigorous grating theory*, J. Opt. Soc. Am. A, Vol. 12, No. 5 (1995), 1029-1042.
7. *Finite element approximation of time harmonic waves in periodic structures*, SIAM J. Numer. Anal., Vol. 32, No. 4 (1995), 1155-1169.
8. (with A. Friedman), *Inverse problems for scattering by periodic structures*, Arch. Rat. Mech. Anal. **132** (1995), 49-72.
9. (with D. Dobson), *Diffractive optics in nonlinear media with periodic structure*, Euro. J. Appl. Math. **6** (1995), 573-590.
10. (with W. W. Symes), *Computation of pseudo-differential operators*, SIAM J. Sci. Comput., Vol. 17, No. 2 (1996), 416-429.
11. (with W. W. Symes), *On the sensitivity of solutions of hyperbolic equations to the coefficients*, Comm. In P.D. E. **21** (3&4) (1996), 395-422.
12. *Numerical analysis of diffraction by periodic structures: TM polarization*, Numerische Mathematik **75** (1996), 1-16.
13. (with Y. Chen), *A nonlinear grating problem in diffractive optics*, SIAM J. Math. Anal., Vol. 28, No. 2 (1997), 322-337.
14. *Variational approximation of Maxwell's equations in biperiodic structures*, SIAM J. Appl. Math., Vol. 57, No. 2 (1997), 364-381.
15. (with Z. Zhou), *Inverse diffraction by a doubly periodic structure*, C. R. Acad. Sci., Paris, t **324**, S érie I (1997), 627-632.
16. *Smoothness between coefficients and boundary values for the wave equation*, SIAM J. Math. Anal., Vol. 29, No. 2 (1998), 380-394.
17. *On the relation between the coefficients and solutions for a diffraction problem*, Inverse Problems **14** (1998), 787-798.
18. (with H. Ammari), *Analysis of the diffraction by periodic chiral structures*, C. R. Acad. Sci., Paris, t **326**, S érie I (1998), 1371-1376.

19. (with Z. Zhou), *An inverse problem for scattering by a doubly periodic structure*, Trans. Ameri. Math. Soc. **350** (1998), 4089-4103.
20. (with H. Ammari), *Une étude mathématique de la localisation d'une tumeur cancéreuse dans le cerveau humain*, C. R. Acad. Sci., Paris, t. **327**, Série I (1998), 601-606.
21. (with D. Dobson), *Modeling and optimal design of diffractive optical structures*, Survey on Industrial Math. **8** (1998), 37-62.
22. (with H. Ammari and K. Hamdache), *The effect of thin coatings on second harmonic generation*, Electronic J. Diff. Eq., Vol. **1999** (1999), No. 36, 1-13.
23. (with H. Ammari), *Identification of cracks by boundary measurements at low frequencies*, Inverse Problems **16** (2000), 133-143.
24. (with H. Yang), *A least-squares finite element analysis of diffraction problems*, SIAM J. Numer. Anal., Vol. 37, No. 2 (2000), 665-682.
25. (with H. Ammari), *Scattering by a subwavelength object embedded in a periodic structure*, C. R. Acad. Sci., Paris, t. **330**, Série I (2000), 333-338.
26. (with Y. Chen and F. Ma), *Regularity and stability for the scattering map of a linearized inverse medium problem*, J. Math. Anal. Appl., Vol. 247, No. 1 (2000), 255-271.
27. (with D. Dobson), *On the scattering by a biperiodic structure*, Proc. Amer. Math. Soc. **128** (2000), 2715-2723.
28. (with T. Van), *Modeling of the evanescent energy in optical fibers*, J. Comput. Phys., Vol. 161, No. 2 (2000), 700-717.
29. (with H. Ammari and A. Wood), *An integral equation method for the electromagnetic scattering from cavities*, Math. Meth. Appl. Sci., Vol. 23 (2000), 1057-1072.
30. (with Y. Cao and H. Yang), *Numerical solution of diffraction problems by a least-squares finite element method*, Math. Meth. in the Appl. Sci., Vol. 23 (2000), 1073-1092.
31. (with X. Fang, W. Tan and T. Van), *Evanescent energy in square and circular fibers*, J. Math. Chem., v. 27, no. 4 (2000), 12-19.
32. (with H. Ammari), *Analysis of the scattering map of a linearized inverse medium problem for electromagnetic waves*, Inverse Problems **17** (2001), 219-234.
33. (with E. Bonnetier), *Optimal design of periodic diffractive structures*, Appl. Math. Optim. **43** (2001), 103-116.
34. (with H. Ammari), *Mathematical modeling of near-field optics*, J. Math. Anal. Appl. **265** (2002), 430-446.
35. (with D. Dobson and K. Ramdani), *A constraint on the maximum reflectance of rapidly oscillating dielectric gratings*, SIAM J. Control. Opt. **40** (2002), 1858-1866.
36. (with H. Ammari), *Maxwell's equations in a perturbed periodic structure*, Adv. Comput. Math. **16** (2002), 99-112.
37. (with H. Ammari and J. Fleming), *An inverse source problem for Maxwell's equations in magnetoencephalography*, SIAM J. Appl. Math. **62** (2002), 1369-1382.
38. (with K. Ramdani), *Resonant frequencies for diffraction gratings*, Appl. Math. Lett. **16** (2002), 755-760.
39. (with H. Ammari and A. Wood), *Analysis of the electromagnetic scattering from a cavity*, Japan J. Indust. Appl. Math. **19** (2002), 301-310.
40. (with H. Ammari and K. Hamdache), *Analysis of thin coatings on nonlinear diffraction gratings*, Nonlinear Analysis: Series B Real World Appl. **3** (4) (2002), 485-502.

41. (with H. Ammari and A. Wood), *A cavity problem for Maxwell's equations*, Meth. & Appl. Anal. **9** (2002), 249-260.
42. (with K. Huang and G. Schmidt), *Optimal design of nonlinear diffraction gratings*, J. Comput. Phys. **184** (2003), 106-121.
43. (with H. Ammari), *Maxwell's equations in periodic chiral structures*, Math. Nachr. **251** (2003), 3-18.
44. (with G. W. Wei and S. Zhao), *Local spectral time-domain method for electromagnetic wave propagation*, Opt. Lett. **28** (7) (2003), 513-515.
45. (with A. Minut and Z. Zhou),  *$L^p$  estimates for Maxwell's equations in stratified media*, C. R. Acad. Sci., Paris, 337 (2003), 365-370.
46. (with J. Liu), *Numerical solution of inverse scattering problems with multi-experimental limited aperture data*, SIAM J. Sci. Comput., Vol. 25, No. 3 (2003), 1102-1117.
47. (with K. Huang), *Optimal design of guided mode grating resonance filters*, IEEE Photonic Tech. Lett., Vol 16, No. 1 (2004), 141-143.
48. (with G. W. Wei and S. Zhao), *Numerical solution of the Helmholtz equation with high wave number*, Int. J. Numer. Meth. Engng. 59 (2004), 389-408.
49. (with P. Li), *Inverse medium scattering for three-dimensional time harmonic Maxwell's equations*, Inverse Problems, Vol. 20 (2) (2004), L1 - L7.
50. *Recent mathematical studies in the modeling of optics and electromagnetics*, J. Comput. Math., Vol. 22 (2) (2004), 148-155.
51. (with A. Zhou), *Analysis of finite dimensional approximations to a class of partial differential equations*, Math. Meth. Appl. Sci. **27** (2004), 2055-2066.
52. (with Z. Chen and H. Wu), *Adaptive finite element method for diffraction gratings*, J. Opt. Soc. Amer. A, Vol. 22, No. 6 (2005), 1106-1114.
53. (with K. Huang), *Computational design of guided-mode grating resonances*, J. Opt. Soc. Amer. A, Vol. 22, No. 7 (2005), 1408-1413.
54. (with P. Li), *Inverse medium scattering problems for electromagnetic waves*, SIAM J. Appl. Math., Vol. 65, No. 6 (2005), 2049-2066.
55. (with P. Li), *Inverse medium scattering for the Helmholtz equation at fixed frequency*, Inverse Problems, Inverse Problems **21** (2005), 1621-1644.
56. (with H. Wu), *Convergence analysis of the perfectly matched layer problems for time-harmonic Maxwell's equations*, SIAM J. Numer. Anal., Vol. 43, No. 5 (2005), 2121-2143.
57. (with W. Zhang), *An improved mode matching method for large cavities*, IEEE Antennas and Wireless Propagation Letters, Vol. 4 (2005), 393-396.
58. (with W. Sun), *A fast algorithm for the electromagnetic scattering from a large cavity*, SIAM J. Sci. Comput., Vol. 27, No. 2 (2005), 553-574.
59. (with Y. Li and H. Wu), *Numerical solution of nonlinear diffraction problems*, J. Comput. Appl. Math. **190** (2006), 170-189.
60. (with P. Li), *Numerical solution of inverse scattering for near-field optics*, Optics Lett., Vol. 32, Issue 11 (2007), 1465-1467.
61. (with P. Li), *Inverse medium scattering problems in near-field optics*, J. Comput. Math., Vol. 25, No. 3 (2007), 252-265.
62. (with S. Hou and P. Li), *Inverse scattering by a continuation method with initial guesses*

- from a direct imaging algorithm*, J. Comput. Phys., **227** (2007), 755-762.
63. (with A. Minut and Z. Zhou),  $L^p$  estimates for Maxwell's equations with source term, Comm. in P.D.E. **32** (2007), 1449-1471.
  64. (with H. Ammari), *Coupling of finite element and boundary element methods for the electromagnetic diffraction by a periodic chiral structure*, J. Comput. Math., Vol. 26, No. 3 (2008), 261-283.
  65. (with Y. Sun and H. Ajiki), *Computational modeling of optical response from excitons in a nano optical medium*, Comm. Comput. Phys. 4 (2008), 1051-1068.
  66. (with Y. Li and Z. Zhou),  $L^p$  estimates of time-harmonic Maxwell's equations in a bounded domain, J. Diff. Equ. 245 (2008), 3674-3686.
  67. (with K. Yun), *On the stability of an inverse problem for the wave equation*, Inverse Problems 25 (2009), 045003, 7pp.
  68. (with P. Li), *Numerical solution of an inverse medium scattering problem for Maxwell's equations at fixed frequency*, J. Comput. Phys. 228 (2009), 4638-4648.
  69. (with Y. Sun), *Modeling and computation of the scattering by a nano optical medium*, Contemp. Math. 494 (2009), 27-41.
  70. (with Y. Sun), *Optical polariton modes in a nanoscale semiconductor*, Optics Lett., Vol. 34, No. 21 (2009), 3436-3438.
  71. (with P. Li and H. Wu), *An adaptive edge element method with perfectly matched absorbing layers for wave scattering by periodic structures*, Math. Comp. **79**(2010), 1-34.
  72. (with F. Triki), *Error estimates for the recursive linearization for solving inverse medium problems*, J. Comput. Math., 28(6) (2010), 725-744.
  73. (with J. Lin and F. Triki), *A multi-frequency inverse source problem*. J. Diff. Eqn. 249(12) (2010), 3443-3465.
  74. (with S-N Chow, P. Li, and H-M Zhou), *Numerical solution of an inverse medium scattering problem with a stochastic source*, Inverse Problems, 26 (2010), 7-29.
  75. (with Z. Xu ), *A numerical scheme for nonlinear Helmholtz equation in nonlinear optics*, J. Opt. Soc. Amer. A. 27(11) (2010), 2347-2353.
  76. (with L. Dou, T. Ehlers, P. Li, Y. Wang, and Z. Xu), *Quantifying tectonic and geomorphic interpretations of thermochronometer data: The reconstruction of mountain surface*. Comm. Comput. Phys., 9(1) (2011), 129-146.
  77. (with H. Zhang and J. Zou), *Unique determination of periodic polyhedral structures by scattered electromagnetic fields*, Trans. Amer. Math. Soc. 363 (2011), 4527-4551.
  78. (with Z. Xu, J. Yuan), *Continuation finite element simulation of second harmonic generation in photonic crystals*, Comm. Comput. Phys., 10 (2011), 57-69.
  79. (with J. Gao, and P. Li), *Analysis of direct and inverse problems for electromagnetics scattering from cavities*, Numer. Math. Theor. Meth. Appl., 4 (2011), 335-358.
  80. (with J. Lin and F. Triki), *Numerical solution of the inverse source problem for the Helmholtz equation with multiple frequency data*, Contemp. Math., AMS, 548 (2011), 45-60.
  81. (with J. Lin), *Imaging of local surface displacement on an infinite ground plane: the multiple frequency case*, SIAM J. Appl. Math., **71** (2011), 1733-1752.
  82. (with J. Lin and F. Triki), *An inverse source problem with multiple frequency data*, C. R.

- Math. Acad. Sci. Paris 349 (2011), 855-859.
83. (with P. Li and H. Wu), *A computational inverse diffraction grating problem*, J. Opt. Soc. Am. A., Vol. 29, No. 4 (2012), 394-399.
  84. (with J. Gao, J. Lin, and W. Zhang), *Mode matching for the electromagnetic scattering from three dimensional large cavities*, IEEE Trans. Antennas & Wave Propagation, Vol. 60, No. 4 (2012), 1-7.
  85. (with K. Yun, and Z. Zhou), *Stability of the scattering from a large electromagnetic cavity in two dimensions*, SIAM J. Math. Anal. 44(1) (2012), 383-404.
  86. (with X. Xu), *An inverse diffusivity problem for the helium production-diffusion equation*, Inverse Problems 28 (2012) 085002 (15pp).
  87. (with G. Hu, and D. Liu), *A h-adaptive FEM solver for the calculations of the electronic structures*, J. Comput. Phys., 231 (2012), 4967-4979.
  88. (with G. Hu, and D. Liu), *Numerical solution of the Kohn-Sham equation by finite element methods with an adaptive mesh redistribution technique*, J. Sci. Comput., DOI 10.1007/s10915-012-9636-1, 2012.
  89. (with J. Lin) *Imaging of reflective surfaces by near-field optics*, Optics Lett., 37(24)(2012), 5027-9. doi: 10.1364/OL.37.005027.
  90. (with T. Ehlers, and P. Li), *Radiogenic source identification for the helium production-diffusion equation*, Comm. Comput. Phys., 14 (1) (2013), 1-20.
  91. (with J. Qian, L. Ying, and H. Zhang), *A convergent multiscale Gaussian-beam parametrix for wave equations*, Comm. in P.DE., 38(2013), 92-134.
  92. (with P. Li, and J. Lv) *Reconstruction of perfectly reflecting gratings from intensity data*, J. Opt. Soc. Am. A., Vol. 30 (3)(2013), 293-299.
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  94. (with X. Xu) *An inverse random source problem in quantifying the elastic modulus of nano-materials*, Inverse Problems 29 (1)(2013), 015006.
  95. (with J. Lin), *Near-field imaging of the surface displacement on an infinite ground plane*, Inverse Problems and Imaging, Vol. 7, No. 2 (2013), 377-396.
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  98. (with F. Triki), *Reconstruction of a defect in an open waveguide*, Sci. China Math., Vol. 56, No. 12 (2013), 2539-2548.
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  100. (with S-N Chow, P. Li, and H-M Zhou), *An inverse random source problem for the Helmholtz equation in one dimension*, Math. Comp., 83 (2014), No. 285, 215-233.
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  102. (with J. Lai and J. Qian) *Fast multiscale Gaussian beam methods for wave equations in bounded domains*, J. Comput. Phys., 261 (2014), 36-64.

- 103.(with J. Lai), *Radar cross section reduction of a cavity in the ground plane*, *Comm. Comput. Phys.*, 15 (2014), 895-910.
- 104.(with J. Lin and S. Mefire) *Numerical reconstruction of electromagnetic inclusions in three dimensions*, *SIAM J. Imag. Sci.*, Vol. 7, No. 1 (2014), 558-577.
- 105.(with T. Cui and P. Li) *Inverse diffraction grating of Maxwell's equations in biperiodic structures*, *Optics Express*, Vol. 22, Issue 4 (2014), 4799-4816.
- 106.(with H. Liu and J. Zou) *On near-cloak in electromagnetic scattering*, *J. Math. Pures Appl.* 101(2014), 716-733.
- 107.(with P. Li) *Near-field imaging of infinite rough surfaces in dielectric media*, *SIAM J. Imaging Sci.* 7 (2014), no. 2, 867–899.
- 108.(with H. Liu) *Nearly cloaking the electromagnetic fields*, *SIAM J. Appl. Math.* 74 (2014), no. 3, 724–742.
- 109.(with H. Zhang) *Sensitivity analysis of an inverse problem for the wave equations in the presence of caustics*, *J. Amer. Math. Soc.* 27 (2014), 953-981.
- 110.(with P. Li) *Convergence analysis in near-field imaging*, *Inverse Problems* 30 (2014), No. 8, 085008, 26pp.
- 111.(with J. Lai) *Optimal shape design of a cavity for radar cross section reduction*, *SIAM J. Control and Opt.* Vol 52, no. 4(2014), 2122-2140.
- 112.(with K. Huang, P. Li, and H. Zhao) *A direct imaging method for inverse scattering using the generalized Foldy-Lax formulation*, *Contemp. Math.*, AMS, Vol. 615 (2014), 49-70.
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