

Jianwei (John) Miao

Department of Physics & Astronomy
and California NanoSystems Institute
University of California, Los Angeles
www.physics.ucla.edu/research/imaging

Office phone: 310-206-2645
Cell phone: 310-889-8217
E-mail: miao@physics.ucla.edu

Education:

- Ph. D., Physics, State University of New York, Stony Brook, 12/1999
- M. S., Computer Science, State University of New York, Stony Brook, 5/1999
- Advanced Graduate Certificate, Biomedical Engineering, State University of New York, Stony Brook, 5/1999
- M. S., Physics, Chinese Academy of Sciences, 7/1994
- B. S., Physics, Hangzhou University (now Zhejiang University), China, 7/1991

Professional Experience:

- 7/2009-Present Professor, Department of Physics & Astronomy and California NanoSystems Institute, University of California, Los Angeles
- 7/2007-7/2009 Associate Professor, Department of Physics & Astronomy and California NanoSystems Institute, University of California, Los Angeles
- 8/2004-7/2007 Assistant Professor, Department of Physics & Astronomy and California NanoSystems Institute, University of California, Los Angeles
- 1/2000-7/2004 Staff Scientist, Stanford Synchrotron Radiation Lightsource, SLAC National Accelerator Laboratory, Stanford University

Honors and Awards:

- Innovation in Materials Characterization Award, Materials Research Society, 2021 (Citation: “*For pioneering coherent diffractive imaging for a wide range of material systems and atomic electron tomography for determining atomic positions without assuming crystallinity*”)
- Special NSF Creativity Award, 2018
- Fellow, American Physical Society, 2016 (Citation: “*For pioneering contributions to the development of diffractive imaging methods for characterizing a wide range of material systems and a general electron tomography method for three-dimensional imaging of crystal defects at atomic resolution*”)
- University of Strasbourg Institute for Advanced Study (USIAS) Fellowship, France, 2015-2017.
- Microscopy Today Innovation Award, 2013.
- Theodore von Kármán Fellowship, RWTH Aachen University, Germany, 2013.
- Outstanding Teaching Award, Dept. of Physics & Astronomy, UCLA, 2012-2013 and 2015-2016.
- Kavli Frontiers Fellow, 2010.
- Outstanding Teacher of the Year Award, Dept. of Physics & Astronomy, UCLA, 2006-2007.
- Alfred P. Sloan Research Fellow, 2006-2008.
- Guest Scientist, RIKEN, Japan, 2004 – Present.
- Werner Meyer-Ilse Memorial Award, 1999.
- Whitaker Foundation Scholarship, 1997-1999.
- Outstanding Student of the Year Award, Physics Department, Hangzhou University, 1990-1991.

Professional Activities:

- Deputy Director, STROBE NSF Science and Technology Center, Oct. 2016 – Present.
- Associate Editor, *Science Advances*, Jan. 2017 – Present.
- Associate Editor, *Crystallography Reviews*, Dec. 2012 – present.
- Main Organizer, NSF-funded IPAM Long Program on Computational Microscopy (www.ipam.ucla.edu/CMS2022), consisting of four international workshops: i) *Diffractive Imaging with Phase Retrieval*; ii) *Mathematical Advances for Multi-Dimensional Microscopy*; iii) *Cryo-Electron*

Microscopy and Beyond; iv) *Multi-Modal Imaging with Deep Learning and Modeling*. UCLA, Sept. 12 to Dec. 16, 2022.

- Theme Advisory Panel on Correlated Imaging, Rosalind Franklin Institute, UK, Oct. 2020 – Present.
- Topical Group on Instrumentation and Measurement Science Program Committee, American Physical Society, July 2022 – present.
- Co-organizer, International Workshop and Short Course on the Frontiers of Electron Tomography in the Physical Sciences, Berkeley, Oct. 23 – 26, 2017.
- Organizer, Brainstorming Meeting on Live Cell Imaging with XFELs, Los Angeles, CA, Feb. 25-26, 2016.
- Cross-Cutting Characterization and Instrumentation Panel for the DOE BES Workshop on Basic Research Needs for Quantum Materials for Energy Relevant Technology, Gaithersburg Marriott Washingtonian Center, MD, Feb. 8 – 10, 2016.
- NSF STC Site Visit Panel, University of Buffalo, New York, June 3 - 5, 2015.
- CATERETE Beamline Advisory Team, Brazilian Synchrotron Light Laboratory, Campinas, Brazil, Dec. 2014 – present.
- Advances in Imaging: Resolution and Tomography Panel for the DOE BES-Sponsored Workshop on Future of Electron Scattering and Diffraction, Washington DC, Feb. 25-26, 2014.
- NSF panel on the renewal site visit of the Cornell High Energy Synchrotron Source (CHESS), Ithaca, NY, April 28 – 30, 2013.
- Main Editor, *Acta Crystallographica Section A: Foundations of Crystallography*, Nov. 2012-Jan. 2017.
- NSF STC Competition Site Visit Panel, University of Buffalo, New York, Oct. 11-12, 2012.
- NIH Review Panel - Small Business: Basic and Integrative Bioengineering, March 2012.
- COSMIC Advisory Panel, Advanced Light Source, Lawrence Berkeley National Laboratory, Feb. 2012 – 2013.
- Co-Editor, *Acta Crystallographica Section A: Foundations of Crystallography*, Jan. 2011 – Nov. 2012.
- Chair, Kavli Frontiers of Science Symposium on “Imaging the Nanoworld with X-rays”, Irvine, CA, Nov. 4-6, 2010.
- Co-organizer, Conference on X-ray Science in the 21st Century, the Kavli Institute for Theoretical Physics, University of California, Santa Barbara, Aug. 2 - Sep. 10, 2010.
- Organizer, Workshop on Coherent Diffractive Imaging for Biological Applications at NSLS-II, Brookhaven National Laboratory, May 17-18, 2010.
- NIH Advisory Panel for National Synchrotron Light Source II (NSLS-II) beamline development, 2010-2011.
- Chair, Scientific Program Committee, Workshop on X-ray Science at the Femtosecond to Attosecond Frontier, Los Angeles, May 18-20, 2009.
- International Advisory Committee for Phase Retrieval and Coherent Scattering Workshop, Asilomar, California, June 25-28, 2007.
- Co-chair, Workshop on Coherent X-ray Microscopy, Argonne National Laboratory, Chicago, May 8-9, 2007.
- Co-chair, Workshop on Nanometrology for Beyond CMOS, San Francisco, California, Dec. 14-15, 2006.
- Co-team leader, Single Particle Imaging Experiment, the Linac Coherent Light Source (LCLS), SLAC, 2005 – 2010.
- International Advisory Committee for Phase Retrieval / Coherent Scattering Workshop, Porquerolles, France, June 15-17, 2005.
- Proposal Review Panel, Advanced Photon Source, Argonne National Laboratory, 2002 – 2004.
- International Advisory Board for the 2nd International Workshop on Non-Crystallographic Phase Retrieval, Australia, July, 2003.
- Chair, X-ray Imaging and Spectro-Microscopy Workshop, SLAC, Stanford, Oct. 8-9, 2002.
- Chair, Microsymposium on Holography and X-ray Microscopy, XIX Congress and General Assembly of the International Union of Crystallography, Geneva, Switzerland, Aug. 8-15, 2002.

- Co-chair, International Phasing Workshop: New Approaches to the Phase Problem, Berkeley, May 17-19, 2001.

Publications:

1. M. Pham, Y. Yuan, A. Rana, S. Osher and J. Miao, “RESIRE: Accurate tomography with real space iterative reconstruction”, submitted.
2. J.-H. Park, A.-Y. Lu, M. M. Tavakoli, N. Y. Kim, M.-H. Chiu, H. Liu, T. Zhang, Z. Wang, J. Wang, Z. Luo, M. Chi, J. Miao and J. Kong, “Revealing variable dependencies in hexagonal boron nitride synthesis via machine learning”, submitted.
3. H. Y. Chao, Y. Jiang, S. Moniri, K. Venkatraman, X. Tang, S. Dai, W. Gao, J. Miao and M. Chi, “In situ and Emerging Electron Microscopy for Catalyst Research”, *Chem. Rev.*, in review (invited).
4. Y. Yang, J. Zhou, Z. Zhao, G. Sun, S. Moniri, C. Ophus, Y. Yang, Z. Wei, Y. Yuan, C. Zhu, Y. Liu, Q. Sun, Q. Jia, H. Heinz, J. Ciston, P. Ercius, P. Sautet, Y. Huang and J. Miao, “Atomic-scale identification of the active sites of nanocatalysts”, *Nature Mater.*, in review.
5. A. Rana, C.-T. Liao, E. Iacocca, J. Zou, M. Pham, X. Lu, E.-E. Cating Subramanian, Y. H. Lo, S. A. Ryan, C. S. Bevis, R. M. Karl Jr, A. J. Glaid, J. Rable, P. Mahale, J. Hirst, T. Ostler, W. Liu, C. M. O’Leary, Y.-S. Yu, K. Bustillo, H. Ohldag, D. A. Shapiro, S. Yazdi, T. E. Mallouk, S. J. Osher, H. C. Kapteyn, V. H. Crespi, J. V. Badding, Y. Tserkovnyak, M. M. Murnane and J. Miao, “Three-dimensional topological magnetic monopoles and their interactions in a ferromagnetic meta-lattice”, *Nature Nanotechnol.*, in press.
6. D. J. Chang, C. M. O’Leary, C. Su, S. Kahn, A. Zettl, J. Ciston, P. Ercius and J. Miao, “Deep-Learning Electron Diffractive Imaging”, *Phys. Rev. Lett.* **130**, 016101 (2023).
7. J. Miao and M. M. Murnane, “A closer look at spin textures”, *Nature Nanotechnol.* (2022). <https://doi.org/10.1038/s41565-022-01262-6>
8. Y. Yao, Q. Dong, A. Brozena, J. Luo, J. Miao, M. Chi, C. Wang, I. G. Kevrekidis, Z. J. Ren, J. Greeley, G. Wang, A. Anapolsky and L. Hu, “High Entropy Nanoparticles: Synthesis-Structure-Property Relationships and Data-Driven Discovery”, *Science* **376**, eabn3103 (2022).
9. Y. Yuan, D.S. Kim, J. Zhou, D.J. Chang, F. Zhu, Y. Nagaoka, Y. Yang, M. Pham, S. J. Osher, O. Chen, P. Ercius, A. K. Schmid and J. Miao, “Three-dimensional atomic packing in amorphous solids with liquid-like structure”, *Nature Mater.* **21**, 95–102 (2022).
10. Q. Ji, C. Su, N. Mao, X. Tian, J.-C. Idrobo, J. Miao, W. A. Tisdale, A. Zettl, J. Li and J. Kong “Revealing the Brønsted-Evans-Polanyi relation in halide-activated fast MoS₂ growth toward millimeter-sized 2D crystals”, *Sci. Adv.* **7**, eabj3274 (2021).
11. X. Tian, X. Yan, G. Varnavides, Y. Yuan, D. S. Kim, C. J. Ciccarino, P. Anikeeva, M.-Y. Li, L.-J. Li, P. Narang, X. Pan and J. Miao, “Capturing 3D atomic defects and phonon localization at the 2D heterostructure interface”, *Sci. Adv.* **7**, eabi6699 (2021).
12. Y. Yang, J. Zhou, F. Zhu, Y. Yuan, D. Chang, D. S. Kim, M. Pham, A. Rana, X. Tian, Y. Yao, S. Osher, A. K. Schmid, L. Hu, P. Ercius and J. Miao, “Determining the three-dimensional atomic structure of an amorphous solid”, *Nature* **592**, 60–64 (2021).
13. Y. H. Lo, J. Zhou, A. Rana, D. Morrill, C. Gentry, B. Enders, Y.-S. Yu, C.-Y. Sun, D. Shapiro, R. Falcone, H. Kapteyn, M. Murnane, P. U. P. A. Gilbert and J. Miao, “X-ray linear dichroic ptychography”, *Proc. Natl. Acad. Sci. USA* **118**, e2019068118 (2021).
14. M. Tanksalvala, C.L. Porter, Y. Esashi, B. Wang, N.W. Jenkins, Z. Zhang, G.P. Miley, J.L. Knobloch, B. McBennett, N. Horiguchi, S. Yazdi, J. Zhou, M.N. Jacobs, C.S. Bevis, R.M. Karl Jr., P. Johnsen, D. Ren, L. Waller, D.E. Adams, S.L. Cousin, C.-T. Liao, J. Miao, M. Gerrity, H.C. Kapteyn, and M.M. Murnane, “Nondestructive, high-resolution, chemically specific 3D nanostructure characterization using phase-sensitive EUV imaging reflectometry”, *Sci. Adv.* **7**, eabd9667 (2021).
15. M. Bian, A.N. Kamenskii, M. Han, W. Li, S. Wei, X. Tian, D.B. Eason, F. Sun, K. He, H. Hui, F. Yao, R. Sabirianov, J. P. Bird, C. Yang, J. Miao, J. Lin, S.A. Crooker, Y. Hou, and H. Zeng, “Covalent 2D Cr₂Te₃ ferromagnet”, *Mater. Res. Lett.* **9**, 205–212 (2021).
16. J. B. Rosenzweig, N. Majernik, R. R. Robles, G. Andonian, O. Camacho, A. Fukasawa, A. Kogar, G. Lawler, J. Miao, P. Musumeci, B. Naranjo, Y. Sakai, R. Candler, B. Pound, C. Pellegrini, C. Emma, A. Halavanau, J. Hastings, Z. Li, M. Nasr, S. Tantawi, P. Anisimov, B. Carlsten, F. Krawczyk, E. Simakov,

- L. Faillace, M. Ferrario, B. Spataro, S. Karkare, J. Maxson, Y. Ma, J. Wurtele, A. Murokh, A. Zholents, A. Cianchi, D. Cocco, S. B. van der Geer, “An ultra-compact x-ray free-electron laser”, *New J. Phys.* **22** 093067 (2020).
17. P. Ci, X. Tian, J. Kang, A. Salazar, K. Eriguchi, S. Warkander, K. Tang, J. Liu, Y. Chen, S. Tongay, W. Walukiewicz, J. Miao, O. Dubon and J. Wu, “Chemical trends of deep levels in van der Waals semiconductors”, *Nat. Commun.* **11**, 5373 (2020).
 18. A. Rana, J. Zhang, M. Pham, A. Yuan, Y. H. Lo, H. Jiang, S. Osher and J. Miao, “Potential of attosecond coherent diffractive imaging”, *Phys. Rev. Lett.* **125**, 086101 (2020).
 19. J. Liu, J. Zeng, C. Zhu, J. Miao, Y. Huang and H. Heinz, “Interpretable Molecular Models for Molybdenum Disulfide and Insight into Selective Peptide Recognition”, *Chem. Sci.* **11**, 8708 (2020).
 20. J. Zhou, Y. Yang, P. Ercius and J. Miao, “Atomic electron tomography in three and four dimensions”, *MRS Bulletin* **45**, 290 (2020).
 21. X. Tian, D. S. Kim, S. Yang, C. J. Ciccarino, Y. Gong, Yo. Yang, Ya. Yang, B. Duschatko, P. M. Ajayan, J. C. Idrobo, P. Narang and J. Miao, “Correlating 3D crystal defects and electronic properties of 2D materials”, *Nature Mater.* **19**, 867–873 (2020).
 22. Y. Yao, Z. Liu, P. Xie, Z. Huang, T. Li, D. Morris, Z. Finprock, J. Zhou, M. Jiao, J. Gao, Y. Mao, J. Miao, P. Zhang, R. Shahbazian-Yassar, C. Wang, G. Wang and L. Hu, “Computationally aided, entropy-driven synthesis of highly efficient and durable multi-elemental alloy catalysts”, *Sci. Adv.* **6**, eaaz0510 (2020).
 23. C. C. Dharmawardhana, J. Zhou, M. Taylor, J. Miao, J. H. Perepezko, H. Heinz, “Reactive modeling of Mo₃Si oxidation and resulting silica morphology”, *Acta Mater.* **187**, 93-102 (2020).
 24. M. Pham, A. Rana, J. Miao and S. Osher, “A semi-implicit relaxed Douglas-Rachford algorithm (sDR) for Ptychography”, *Opt. Express.* **22**, 31246 (2019).
 25. Y. H. Lo, C.-T. Liao, J. Zhou, A. Rana, C. S. Bevis, G. Gui, B. Enders, K. Cannon, D. Shapiro, H. Kapteyn, R. Falcone, C. Bennett, M. Murnane and J. Miao, “Multimodal x-ray and electron microscopy of Allende meteorite”, *Sci. Adv.* **5**, eaax3009 (2019).
 26. J. Zhou, Y. Yang, Y. Yang, D. S. Kim, A. Yuan, X. Tian, C. Ophus, F. Sun, A. K. Schmid, M. Nathanson, H. Heinz, Q. An, H. Zeng, P. Ercius & J. Miao. “Observing crystal nucleation in four dimensions using atomic electron tomography”, *Nature* **570**, 500-503 (2019).
 27. Z. Zhao, M. E. Flores, J. Zhou, W. Xue, X. Duan, J. Miao and Y. Huang, Yu, “Surface Controlled Nickel/Palladium Hydride Nanodendrites with High Activity and Selectivity Towards Benzaldehyde in Benzyl Alcohol Oxidation”, *Nano Res.* **12**, 1467–1472 (2019).
 28. Y. Ihm, D. H. Cho, D. Seong, D. Nam, T. Sato, S. Kim, J. Park, S. Kim, M. Gallagher-Jones, Y. Kim, S. Owada, K. Tono, J. H. Shim, M. Yabashi, T. Ishikawa, J. Miao, D. Y. Noh, C. Song, “Direct observation of picosecond melting and disintegration of metallic nanoparticles”, *Nat. Commun.* **10**, 2411 (2019).
 29. M. Pham, P. Yin, A. Rana, S. Osher and J. Miao, “Generalized proximal smoothing (GPS) for phase retrieval”, *Opt. Express* **27**, 2792-2808 (2019).
 30. M. Nathanson, K. Kanhaiya, A. Pryor, Jr., J. Miao and H. Heinz, “Atomic-Scale Structure and Stress Release Mechanism in Core–Shell Nanoparticles”, *ACS Nano* **12**, 12296–12304 (2018).
 31. J. Deng, Y. H. Lo, M. Gallagher-Jones, S. Chen, A. Pryor Jr, Q. Jin, Y. P. Hong, Y. S. G. Nashed, S. Vogt, J. Miao, and C. Jacobsen, “Correlative 3D x-ray fluorescence and ptychographic tomography of frozen-hydrated green algae”, *Sci. Adv.* **4**, eaau4548 (2018).
 32. J. Liu, E. Tennessen, J. Miao, Y. Huang, J. M. Rondinelli and H. Heinz, “Understanding Chemical Bonding in Alloys and the Representation in Atomistic Simulations”, *J. Phys. Chem. C* **122**, 14996-15009 (2018).
 33. J. Zhou, M. Taylor, G. A. Melinte, A. J. Shahani, C. C. Dharmawardhana, H. Heinz, P. W. Voorhees, J. H. Perepezko, K. Bustillo, P. Ercius and J. Miao, “Quantitative characterization of high temperature oxidation using electron tomography and energy-dispersive X-ray spectroscopy”, *Sci. Rep.* **8**, 10239 (2018).
 34. A. Pryor, Jr, A. Rana, R. Xu, J. A. Rodriguez, Y. Yang, M. Gallagher-Jones, H. Jiang, J. Park, S. Kim, S. Kim, D. Nam, Y. Yue, J. Fan, Z. Sun, B. Zhang, D. F. Gardner, C. S. Baraldi Dias, Y. Joti, T. Hatsui, T. Kameshima, Y. Inubushi, K. Tono, J. Y. Lee, M. Yabashi, C. Song, T. Ishikawa, H. C. Kapteyn, M.

- M. Murnane and J. Miao, “Single-Shot 3D Diffractive Imaging of Core-Shell Nanoparticles with Elemental Specificity”, *Sci. Rep.* **8**, 8284 (2018).
35. Y. H. Lo, L. Zhao, M. Gallagher-Jones, A. Rana, J. Lodico, W. Xiao, B. C. Regan and J. Miao “In situ coherent diffractive imaging”, *Nat. Commun.* **9**, 1826 (2018).
 36. J. Miao, “Multi-model imaging of the interaction of nanomaterials with cells”, *IUCrJ* **5**, 122-123 (2018).
 37. A. Pryor Jr., C. Ophus and J. Miao, “A streaming multi-GPU implementation of image simulation algorithms for scanning transmission electron microscopy”, *Adv. Struct. Chem. Imag.* **3**, 15 (2017).
 38. A. Pryor, Jr., Y. Yang, A. Rana, M. Gallagher-Jones, J. Zhou, Y. H. Lo, G. Melinte, W. Chiu, J. A. Rodriguez and J. Miao “GENFIRE: A generalized Fourier iterative reconstruction algorithm for high-resolution 3D imaging”, *Sci. Rep.* **7**, 10409 (2017).
 39. M. Gallagher-Jones, C. S. Baraldi-Dias, A. Pryor, Jr., K. Bouchmella, L. Zhao, Y. H. Lo, M. B. Cardoso, D. Shapiro, J. Rodriguez and J. Miao, “Correlative cellular ptychography with functionalized nanoparticles at the Fe L-edge”, *Sci. Rep.* **7**, 4757 (2017).
 40. C. C. Dharmawardhana, K. Kanhaiya, T. Z. Lin, M. R. Knecht, J. Zhou, J. Miao and H. Heinz, “Reliable Computational Design of Biological and Inorganic Materials to the Large Nanometer Scale Using the Interface Force Field”, *Mol. Simul.* **43**, 1394-1405 (2017).
 41. Y. Yang, C.-C. Chen, M. C. Scott, C. Ophus, R. Xu, A. Pryor Jr, L. Wu, F. Sun, W. Theis, J. Zhou, M. Eisenbach, P. R. C. Kent, R. F. Sabirianov, H. Zeng, P. Ercius and J. Miao, “Deciphering chemical order/disorder and material properties at the single-atom level”, *Nature* **542**, 75-79 (2017).
 42. M. Gallagher-Jones, J. A. Rodriguez and J. Miao, “Frontier Methods in Coherent X-ray Diffraction for High-Resolution Structure Determination”, *Q. Rev. Biophys.* **49**, e20 (2016).
 43. Z. Zhao, M. Feng, J. Zhou, Z. Liu, M. Li, Z. Fan, O. Tsen, J. Miao, X. Duand and Y Huang, “Composition Tunable Ternary Pt-Ni-Co Octahedra for Optimized Oxygen Reduction Activity”, *Chem. Commun.* **52**, 11215 (2016).
 44. J. Miao, P. Ercius and S. J. L. Billinge, “Atomic electron tomography: 3D structures without crystals”, *Science* **353**, aaf2157 (2016).
 45. B. D.A. Levin, E. Padgett, C.-C. Chen, M. C. Scott, R. Xu, W. Theis, Y. Jiang, Y. Yang, C. Ophus, H. Zhang, D.-H. Ha, D. Wang, Y. Yu, H. D. Abruña, R. D. Robinson, P. Ercius, L. F. Kourkoutis, J. Miao, D. A. Muller and R. Hovden, “Nanomaterial datasets to advance tomography in scanning transmission electron microscopy”, *Sci. Data* **3**, 160041 (2016).
 46. B. Leshem, R. Xu, Y. Dallal, J. Miao, B. Nadler, D. Oron, N. Dudovich and O. Raz, "Direct single-shot phase retrieval from the diffraction pattern of separated objects", *Nature Commun.* **7**, 10820 (2016).
 47. M. Odstrcil, J. Bussmann, D. Rudolf, R. Bressenitz, J. Miao, W. S. Brocklesby and L. Juschk, “Ptychographic imaging with a compact gas– discharge plasma extreme ultraviolet light source”, *Opt. Lett.* **40**, 5574-5577 (2015).
 48. R. Xu, C.-C. Chen, L. Wu, M. C. Scott, W. Theis, C. Ophus, M. Bartels, Y. Yang, H. Ramezani-Dakhel, M. R. Sawaya, H. Heinz, L. D. Marks, P. Ercius and J. Miao, “Three-Dimensional Coordinates of Individual Atoms in Materials Revealed by Electron Tomography”, *Nature Mater.* **14**, 1099-1103 (2015).
 49. J. A. Rodriguez, R. Xu, C.-C. Chen, Z. Huang, H. Jiang, A. L. Chen, K. S. Raines, A. Pryor, Jr., D. Nam, L. Wiegart, C. Song, A. Madsen, Y. Chushkin, F. Zontone, P. J. Bradley and J. Miao, “Three-dimensional Coherent X-ray Diffractive Imaging of Whole, Frozen-Hydrated Cells”, *IUCrJ* **2**, 575–583 (2015).
 50. Z. Huang, M. Bartels, R. Xu, M. Osterhoff, S. Kalbfleisch, M. Sprung, A. Suzuki, Y. Takahashi, T. N. Blanton, T. Salditt and J. Miao, “Grain rotation and lattice deformation during photoinduced chemical reactions revealed by in-situ X-ray nanodiffraction”, *Nature Mater.* **14**, 691–695 (2015).
 51. J. Miao, T. Ishikawa, I. K. Robinson and M. M. Murnane, “Beyond crystallography: Diffractive imaging using coherent x-ray light sources”, *Science* **348**, 530-535 (2015).
 52. Y. Shechtman, Y. C. Eldar, O. Cohen, H. N. Chapman, J. Miao and M. Segev, “Phase Retrieval with Application to Optical Imaging: A contemporary overview”, *IEEE Signal Processing Mag.* **32**, 87-109 (2015).

53. S. J. L. Billinge and J. Miao, "Celebrating the past, looking to the futures", *Acta Cryst. A* **71**, 1–2 (2015).
54. O. Raz, B. Leshem, J. Miao, B. Nadler, D. Oron and N. Dudovich, "Direct phase retrieval in double blind Fourier holography", *Opt. Express* **22**, 24935-24950 (2014) .
55. R. Xu, H. Jiang, C. Song, J. A. Rodriguez, Z. Huang, C.-C. Chen, D. Nam, J. Park, M. Gallagher-Jones, S. Kim, S. Kim, A. Suzuki, Y. Takayama, T. Oroguchi, Y. Takahashi, J. Fan, Y. Zou, T. Hatsui, Y. Inubushi, T. Kameshima, K. Yonekura, K. Tono, T. Togashi, T. Sato, M. Yamamoto, M. Nakasako, M. Yabashi, T. Ishikawa and J. Miao, "Single-shot three-dimensional structure determination of nanocrystals with femtosecond X-ray free-electron laser pulses", *Nature Commun.* **5**, 4061 (2014).
56. J. Miao and J. A. Rodriguez, "Phasing tiny crystals", *IUCrJ* **1**, 3-4 (2014).
57. J. Miao, C. C. Chen, C. Zhu, M. C. Scott, E. R. White, C. Y. Chiu, B. C. Regan, Y. Huang, and L. D. Marks, "Reply to 'Three-dimensional imaging of dislocations'", *Nature* **503**, E2 (2013).
58. S. J. L. Billinge and J. Miao, "A new vision for Acta Crystallographica Section A" (Editorial), *Acta Cryst. A* **69**, 533–534 (2013).
59. C. Zhu, C.-C. Chen, J. Du, M. R. Sawaya, M. C. Scott, P. Ercius, J. Ciston, and J. Miao, "Towards three-dimensional structural determination of amorphous materials at atomic resolution", *Phys. Rev. B (Rapid Commun.)* **88**, 100201 (2013).
60. R. L. Sandberg, Z. Huang, R. Xu, J. A. Rodriguez and J. Miao, "Studies of Materials at the Nanometer Scale using Coherent X-Ray Diffraction Imaging". *JOM* **65**, 1208-1220 (2013).
61. H. Jiang, R. Xu, C.-C. Chen, W. Yang, J. Fan, X. Tao, C. Song, Y. Kohmura, T. Xiao, Y. Wang, Y. Fei, T. Ishikawa, W. L. Mao and J. Miao, "Three-Dimensional Coherent X-Ray Diffraction Imaging of Molten Iron in Mantle Olivine at Nanoscale Resolution", *Phys. Rev. Lett.* **110**, 205501 (2013).
62. C. C. Chen, C. Zhu, E. R. White, C.-Y. Chiu, M. C. Scott, B. C. Regan, L. D. Marks, Y. Huang and J. Miao, "Three-dimensional imaging of dislocations in a nanoparticle at atomic resolution", *Nature* **496**, 74–77 (2013).
63. A. Marinelli, M. Dunning, S. Weathersby, E. Hemsing, D. Xiang, G. Andonian, F. O'Shea, J. Miao, C. Hast, and J. B. Rosenzweig, "Single-shot coherent diffraction imaging of microbunched relativistic electron beams for free-electron laser applications", *Phys. Rev. Lett.* **110**, 094802 (2013).
64. J. A. Rodriguez, R. Xu, C. C. Chen, Y. Zou and J. Miao, "Oversampling smoothness: an effective algorithm for phase retrieval of noisy diffraction intensities", *J. Appl. Cryst.* **46**, 312-318 (2013).
65. B. P. Fahimian, Y. Zhao, Z. Huang, R. Fung, Y. Mao, C. Zhu, M. Khatonabadi, J. J. DeMarco, S. J. Osher, M. F. McNitt-Gray and J. Miao, "Radiation dose reduction in medical x-ray CT via Fourier-based iterative reconstruction", *Med. Phys.* **40**, 031914 (2013).
66. C. C. Chen, H. Jiang, L. Rong, S. Salha, R. Xu, T. G. Mason and J. Miao, "Reply to 'Comment on 'Three-dimensional imaging of a phase object from a single sample orientation using an optical laser'", *Phys. Rev. B*, **86**, 226102 (2012).
67. J. Kirz, C. Jacobsen and J. Miao, "David Sayre", *Physics Today*, June 22, 65 - 66 (2012).
68. Y. Zhao, E. Brun, P. Coan, Z. Huang, A. Sztórkay, P. C. Diemoz, S. Lieberhardt, A. Mittone, S. Gasilov, J. Miao and A. Bravin, "High resolution, low dose phase contrast x-ray tomography for 3D diagnosis of human breast cancers", *Proc. Natl. Acad. Sci. USA* **109**, 18290–18294 (2012).
69. I. Schlichting and J. Miao, "Emerging opportunities in structural biology with X-ray free-electron lasers", *Curr. Opin. Struct. Biol.* **22**, 613–626 (2012).
70. J. Kirz and J. Miao, "David Sayre (1924–2012): Crystallographer who pioneered methods of X-ray imaging and modern computing", *Nature* **484**, 38 (2012).
71. M. C. Scott, C. C. Chen, M. Mecklenburg, C. Zhu, R. Xu, P. Ercius, U. Dahmen, B. C. Regan and J. Miao, "Electron tomography at 2.4-ångström resolution", *Nature* **483**, 444–447 (2012).
72. J. Miao, R. L. Sandberg and C. Song "Coherent X-ray Diffraction Imaging", *IEEE J. Sel. Top. Quant. Electron.* **18**, 399-410 (2012).
73. C.-C. Chen, H. Jiang, L. Rong, S. Salha, R. Xu, T. G. Mason and J. Miao, "Three-dimensional imaging of a phase object from a single sample orientation using an optical laser", *Phys. Rev. B* **84**, 224104 (2011).
74. M. D. Seaberg, D. E. Adams, E. L. Townsend, D. A. Raymondson, W. F. Schlotter, Y. Liu, C. S. Menoni, L. Rong, C.-C. Chen, J. Miao, H. C. Kapteyn and M. M. Murnane. "Ultrahigh 22 nm resolution

- coherent diffractive imaging using a desktop 13 nm high harmonic source”, *Opt. Express* **19**, 22470-22479 (2011).
75. C. C. Chen, C.-H. Lu, D. Chien, J. Miao and T.K. Lee, “Three-dimensional image reconstruction of radiation-sensitive samples with x-ray diffraction microscopy”, *Phys. Rev. B* **84**, 024112 (2011).
 76. R. Xu, S. Salha, K. S. Raines, H. Jiang, C. C. Chen, Y. Takahashi, Y. Kohmura, Y. Nishino, C. Song, T. Ishikawa, J. Miao, “Coherent Diffraction Microscopy at SPring-8: Instrumentation, Data Acquisition and Data Analysis”, *J. Synch. Rad.* **18**, 293–298 (2011).
 77. B. P. Fahimian, Y. Mao, P. Cloetens, J. Miao, “Low dose x-ray phase-contrast and absorption CT using Equally-Sloped Tomography”, *Phys. Med. Biol.* **55**, 5383-5400 (2010).
 78. H. Jiang, C. Song, C.-C. Chen, R. Xu, R., K. S. Raines, B. P. Fahimian, C. Lu., T.-H. Lee, A. Nakashima, J. Urano, T. Ishikawa, F. Tamanoi, J. Miao, “Quantitative 3D Imaging of Whole, Unstained Cells by Using X-ray Diffraction Microscopy”, *Proc. Natl. Acad. Sci. USA* **107**, 11234–11239 (2010).
 79. Y. Mao, B. P. Fahimian, S. J. Osher and J. Miao, “Development and Optimization of Regularized Tomographic Reconstruction Algorithms Utilizing Equally-Sloped Tomography”, *IEEE Trans. Image Processing* **19** (5), 1259-1268 (2010).
 80. K. S. Raines, S. Salha, R. L. Sandberg, H. Jiang, J. A. Rodríguez, B. P. Fahimian, H. C. Kapteyn, J. Du and J. Miao, “Three-dimensional structure determination from a single view”, *Nature* **463**, 214-217 (2010).
 81. R. L. Sandberg, D. A. Raymondson, W. F. Schlotter, K. S. Raines, C. La-O-Vorakiat, A. Paul, M. M. Murnane, H. C. Kapteyn and J. Miao, “Near diffraction limited coherent diffractive imaging with tabletop soft x-ray sources”, *J. Phys.: Conf. Series* **186**, 012058 (3 pp.) (2009).
 82. D. A. Raymondson, R. L. Sandberg, W. F. Schlotter, K. S. Raines, C. La-o-Vorakiat, E. Townsend, E., A. Sakdinawat, A. Paul, J. Miao, M. M. Murnane and H. C. Kapteyn, “Tabletop coherent diffractive microscopy with extreme ultraviolet light from high harmonic generation”, *Proc. SPIE* **7272**, 72720F (8 pp.) (2009).
 83. L. Baghaei, A. Rad, B. Dai, P. Pianetta, R. F. W. Pease and J. Miao, “Iterative phase recovery using wavelet domain constraints”, *J. Vac. Sci. Technol. B* **27**, 3192-3195 (2009)
 84. J. A. Rodríguez, M. Lopez, M. Thayer, Y. Zhao, M. Oberholzer, D. Chang, N. K. Kisalu, M. L. Penichet, G. Helguera, R. Bruinsma, K. L. Hill and J. Miao, “Propulsion of African Trypanosomes is Driven by Bihelical Waves with Alternating Chirality Separated by Kinks”, *Proc. Natl. Acad. Sci. USA* **106**, 19322-19327 (2009).
 85. M. M. Murnane and J. Miao, “Ultrafast X-ray photography”, *Nature* **460**, 1088-1090 (2009).
 86. R. L. Sandberg, D. A. Raymondson, C. La-o-vorakiat, A. Paul, K. S. Raines, J. Miao, M. M. Murnane, H. C. Kapteyn and W. F. Schlotter, “Closing the Gap to the Diffraction Limit: Tabletop Soft X-Ray Fourier Transform Holography”, *Opt. Lett.* **34**, 1618-1620 (2009).
 87. C. C. Chen, J. Miao and T. K. Lee, “Tomographic Image Alignment in 3D Coherent Diffraction Microscopy”, *Phys. Rev. B* **79**, 052102 (2009).
 88. E. Lee, B. P. Fahimian, C. V. Iancu, C. Suloway, G. E. Murphy, E. R. Wright, G. J. Jensen and J. Miao, “Radiation Dose Reduction and Image Enhancement in Biological Imaging through Equally Sloped Tomography”, *J. Struct. Biol.* **164**, 221–227 (2008).
 89. C. Song, H. Jiang, A. Mancuso, B. Amirbekian, L. Peng, R. Sun, S. S Shah, Z. H. Zhou, T. Ishikawa and J. Miao, “Quantitative Imaging of Single, Unstained Viruses with Coherent X-rays”, *Phys. Rev. Lett.* **101**, 158101 (2008).
 90. C. Song, R. Bergstrom, D. Ramunno-Johnson, H. Jiang, D. Paterson, M. D. de Jonge, I. McNulty, J. Lee, K. Wang and J. Miao, “Nanoscale Imaging of Buried Structures by Using Element Specific X-ray Diffraction Microscopy”, *Phys. Rev. Lett.* **100**, 025504 (2008).
 91. H. Jiang, D. Ramunno-Johnson, C. Song, B. Amirbekian, Y. Kohmura, Y. Nishino, Y. Takahashi, T. Ishikawa and J. Miao, “Nanoscale Imaging of Mineral Crystals inside Biological Composite Materials Using X-ray Diffraction Microscopy”, *Phys. Rev. Lett.* **100**, 038103 (2008).
 92. R. L. Sandberg, C. Song, P. W. Wachulak, D. A. Raymondson, A. Paul, B. Amirbekian, E. Lee, A. E. Sakdinawat, M. C. Marconi, C. S. Menoni, M. M. Murnane, J. J. Rocca, H. C. Kapteyn, J. Miao, “High

- Numerical Aperture Tabletop Soft X-ray Diffraction Microscopy with 70 nm Resolution”, *Proc. Natl. Acad. Sci. USA* **105**, 24-27 (2008).
93. J. Miao, T. Ishikawa, T. Earnest and Q. Shen, “Extending the Methodology of X-ray Crystallography to Allow Structure Determination of Non-Crystalline Materials, Whole Cells and Single Macromolecular Complexes”, *Annu. Rev. Phys. Chem.* **59**, 387–409 (2008).
 94. C. C. Chen, J. Miao, C. W. Wang and T. K. Lee, “Application of the optimization technique to non-crystalline X-ray diffraction microscopy - Guided Hybrid Input-Output Method (GHIO)”, *Phys. Rev. B.* **76**, 064113 (2007).
 95. R. L. Sandberg, A. Paul, D. Raymondson, S. Hädrich, D. Gaudiosi, J. Holtsnider, R. Tobey, O. Cohen, M. M. Murnane, H. C. Kapteyn, C. Song, J. Miao, Y. Liu and F. Salmassi, “Lensless diffractive imaging using tabletop, coherent, high harmonic soft x-ray beams”, *Phys. Rev. Lett.* **99**, 098103 (2007).
 96. C. Song, D. Ramunno-Johnson, Y. Nishino, Y. Kohmura, T. Ishikawa, C. C. Chen, T. K. Lee and J. Miao, “Phase Retrieval from Exactly Oversampled Diffraction Intensity Through Deconvolution”, *Phys. Rev. B.* **75**, 012102 (2007).
 97. J. Miao, C. C. Chen, C. Song, Y. Nishino, Y. Kohmura, T. Ishikawa, D. Ramunno-Johnson, T. K. Lee and S. H. Risbud, “Three-Dimensional GaN-Ga₂O₃ Core Shell Structure Revealed by X-ray Diffraction Microscopy”, *Phys. Rev. Lett.* **97**, 215503 (2006).
 98. Y. Nishino, J. Miao, Y. Kohmura, Y. Takahashi, C. Song, B. Johnson, M. Yamamoto, K. Koike, T. Ebisuzaki and T. Ishikawa, “Hard X-ray Diffraction Microscopy at SPring-8”, in *Proceedings of the 8th International Conference on X-ray Microscopy*, eds. by S. Aoki, Y. Kagoshima and Y. Suzuki, pp. 386-388 (2006).
 99. Y. Kohmura, Y. Nishino, T. Ishikawa and J. Miao, “Effect of Distorted Illumination Waves on Coherent Diffraction Microscopy”, in *Proceedings of the 8th International Conference on X-ray Microscopy*, eds. by S. Aoki, Y. Kagoshima and Y. Suzuki, pp. 414-416 (2006).
 100. Y. Kohmura, Y. Nishino, T. Ishikawa and J. Miao, “Effect of Fresnel Illumination on Oversampling Iteration Method”, *J. App. Phys.* **98**, 123105 (2005).
 101. J. Miao, Y. Nishino, Y. Kohmura, B. Johnson, C. Song, S. H. Risbud, T. Ishikawa, “Quantitative Image Reconstruction of GaN Quantum Dots from Oversampled Diffraction Intensities Alone”, *Phys. Rev. Lett.* **95**, 085503 (2005).
 102. J. Miao, F. Förster and O. Levi, “Equally Sloped Tomography with Oversampling Reconstruction”, *Phys. Rev. B.* **72**, 052103 (2005).
 103. J. Miao, C. Song, Y. Nishino, Y. Kohmura, B. Johnson and T. Ishikawa, “3D Microscopy Provides the First Deep View”, *IEEE Tech Digest Transducers’05*, pp. 1304-1305 (2005).
 104. I. K. Robinson and J. Miao, “Three Dimensional Coherent X-ray Diffraction Microscopy”, *MRS Bulletin* **29**, 177-181 (2004).
 105. J. Miao, H. N. Chapman, J. Kirz, D. Sayre and K. O. Hodgson, “Taking X-ray Diffraction to the Limit: Macromolecular Structures from Femtosecond X-ray Pulses and Diffraction Microscopy of Cells with Synchrotron Radiation”, *Annu. Rev. Biophys. Biomol. Struct.* **33**, 157-176 (2004).
 106. Y. Nishino, J. Miao and T. Ishikawa, “Image Reconstruction of Nanostructured Non-Periodic Objects Only from Oversampled Hard X-ray Diffraction Intensities”, *Phys. Rev. B (Rapid Commun.)* **68**, 220101 (2003).
 107. G. S. Edwards, R. H. Austin, F. E. Carroll, M. L. Copeland, M. E. Couprie, W. E. Gabella, R. F. Haglund, B. A. Hooper, M. S. Hutson, E. D. Jansen, K. M. Joos, D. P. Kiehart, I. Lindau, J. Miao, H. S. Pratisto, J. H. Shen, Y. Tokutake, L. van der Meer and A. Xie, “Free-electron-laser-based biophysical and biomedical instrumentation”, *Rev. Sci. Instru.* **74**, 3207-3245 (2003).
 108. J. Miao, J. Amonette, Y. Nishino, T. Ishikawa and K. O. Hodgson, “Direct Determination of the Absolute Electron Density of Nanostructured and Disordered Materials at Sub-10 nm Resolution”, *Phys. Rev. B* **68**, 012201 (2003).
 109. J. Miao, T. Ishikawa, E. H. Anderson and K. O. Hodgson, “Phase retrieval of diffraction patterns from noncrystalline samples using the oversampling method”, *Phys. Rev. B* **67**, 174104 (2003).
 110. J. Miao, K. O. Hodgson, T. Ishikawa, C. A. Larabell, M. A. LeGros and Y. Nishino, “Imaging Whole *Escherichia Coli* Bacteria by Using Single Particle X-ray Diffraction”, *Proc. Natl. Acad. Sci. USA* **100**, 110-112 (2003).

111. J. Miao, T. Ohsuna, O. Terasaki, K. O. Hodgson and M. A. O'Keefe, "Atomic Resolution Three-Dimensional Electron Diffraction Microscopy", *Phys. Rev. Lett.* **89**, 155502 (2002).
112. J. Miao, T. Ishikawa, B. Johnson, E. H. Anderson, B. Lai and K. O. Hodgson, "High Resolution 3D X-ray Diffraction Microscopy", *Phys. Rev. Lett.* **89**, 088303 (2002). (Cover Story)
113. J. Miao, K. O. Hodgson and D. Sayre, "An approach to three-dimensional structures of biomolecules by using single-molecule diffraction images", *Proc. Natl. Acad. Sci. USA* **98**, 6641-6645 (2001).
114. J. C. H. Spence, M. Howells, L. D. Marks and J. Miao, "Lensless imaging: a workshop on new approaches to the phase problem for non-periodic objects", *Ultramicroscopy* **90**, 1-6 (2001).
115. B. Winn, H. Ade, C. Buckley, M. Feser, M. Howells, S. Hulbert, C. Jacobsen, K. Kaznatcheyev, J. Kirz, A. Osanna, J. Maser, I. McNulty, J. Miao, T. Oversluizen, S. Spector, B. Sullivan, Y. Wang, S. Wirick and H. Zhang, "Illumination for coherent soft X-ray applications: The new X1A beamline at the NSLS", *J. Synch. Rad.* **7**, 395-404 (2000).
116. J. Miao and D. Sayre, "On possible extensions of X-ray crystallography through diffraction pattern oversampling", *Acta Cryst. A* **56**, 596-605 (2000).
117. J. Miao, J. Kirz and D. Sayre, "The oversampling phasing method", *Acta Cryst. D* **56**, 1312-1315 (2000).
118. D. Sayre, J. Miao, J. Kirz and P. Charalambous, "An extension of the methodology of X-ray crystallography allowing imaging of micron-size non-crystalline specimens", in *Proceedings of 2000 Erice conference on Methods in Macromolecular Crystallography* (D. Turk, ed.).
119. J. Miao, P. Charalambous, J. Kirz and D. Sayre, "An Extension of the Methodology of X-Ray Crystallography to Allow X-Ray Microscopy without X-Ray Optics", in *X-ray Microscopy*, eds. by W. Meyer-Ilse, T. Warwick and D. Attwood, pp. 581-586 (2000).
120. J. Miao, P. Charalambous, J. Kirz and D. Sayre, "Extending the methodology of X-ray Crystallography to Non-Crystalline Specimens", in *Synchrotron Radiation Instrumentation*, eds. by P. Pianetta, J. Arthur, and S. Brennan, pp. 3-6 (2000).
121. J. Miao, P. Charalambous, J. Kirz and D. Sayre, "Extending the methodology of X-ray crystallography to allow imaging of micrometre-sized non-crystalline specimens", *Nature* **400**, 342-344 (1999).
122. H. N. Chapman, S. Vogt, C. Jacobsen, J. Kirz, J. Miao, Y. Wang, B. Winn and T. Oversluizen, "A Shutter-Photodiode combination for UV and soft X-ray beamline", *J. Synch. Rad.* **6**, 50 (1999).
123. J. Miao, D. Sayre and H. N. Chapman, "Phase Retrieval from the Magnitude of the Fourier transform of Non-periodic Objects", *J. Opt. Soc. Am. A* **15**, 1662-1669 (1998).
124. D. Sayre, H. N. Chapman and J. Miao, "On the Extendibility of X-ray Crystallography to Non-crystals", *Acta Cryst. A* **54**, 232-239 (1998).
125. J. Miao, H. N. Chapman and D. Sayre, "Image Reconstruction from the Oversampled Diffraction Pattern", *Microscopy and Microanalysis* **3**, supplement 2, 1155-1156 (1997).
126. B. Winn, H. Ade, C. Buckley, M. Howells, S. Hulbert, C. Jacobsen, J. Kirz, I. McNulty, J. Miao, T. Oversluizen, I. Pogorelsky and S. Wirick, "X1A: Second Generation Undulator Beamline Serving Soft X-ray Spectromicroscopy Experiment at the NSLS", *Rev. Sci. Instru.* **67**, 3359 (1996).
127. B. Winn, X. Hao, C. Jacobsen, J. Kirz, J. Miao, S. Wirick, H. Ade, C. Buckley, M. Howell, S. Hulbert, I. McNulty and T. Oversluizen, "Consideration for Soft X-ray Spectromicroscopy Beamline", *SPIE Proc.* **2856**, 100-109 (1996).
128. N. V. Andronova, V. G. Kohn, A. I. Chechin, E. Tang, J. Miao and M. Cui, "Computer Simulation and Experimental Investigation of X-ray Multilayer Mirrors", *Nucl. Instru. Methods A* **359**, 135-137 (1995).
129. M. Cui, J. Miao, J. Wang, Y. Huang, E. Tang, J. Shao, S. Xue, Z. Xu and J. Sun, "Synchrotron radiation soft X-ray reflectometer and its physics results", *Nucl. Instru. Methods A* **359**, 151-154 (1995).
130. L. Yuan, Z. Yin, J. Shao, K. Yi, M. Cui, J. Miao, L. Liu, G. Chen and X. Shen, "Diffractive Efficiency Study of Soft X-ray Multilayer Grating with Sub-micron Grating Period", *Acta Physica Sinica (in Chinese)* **44**, 184-188 (1995).
131. J. Miao, M. Cui, J. Wang and E. Tang, "Studies of the multilayer mirror reflectivity in soft x-ray region", *Acta Physica Sinica (oversea edition)* **4**, 130-138 (1995).

132. M. Cui, J. Wang, J. Miao, Y. Huang, E. Tang, D. Xian, J. Shao, S. Xue, Z. Xu and J. Su, “A Soft X-ray Reflectometer at the Beijing Synchrotron Radiation Facility and Its Results”, *High Energy Phys. and Nucl. Phys. (in Chinese)* **19**, 82-86 (1995).
133. L. Yuan, Z. Fan, G. Yin, K. Yi, J. Shao, M. Cui, L. Liu, J. Miao, G. Chen and X. Shao, “Development and Optical Performance of Soft X-ray Multilayer Phase Laminate Grating”, *Acta Optica Sinica (in Chinese)* **14**(6), 642-645 (1994).
134. J. Miao, M. Cui and E. Tang, “The Factors of Interfering with Reflectivity of Multilayer Mirrors in the Soft X-ray Region”, in *X-ray Microscopy IV* (eds. by V. V. Aristov & A. I. Erko) 573-577 (Bogorodskii, Pechnatnik, 1994).
135. J. Miao, M. Cui, E. Tang and L. Xiu, “Thickness Measurement of Non-Transparent Dielectric Thin Films by Using an Ellipsometer”, *Opt. Mech. Eng. (in Chinese)* **41**, 135-140 (1992).

Patents:

1. J. Miao, Y. Mao and B. P. Fahimian and, “System and Method for Fast Implementation of Equally-Sloped Tomography”, US Patent No. 8,611,626 (2013).
2. B. P. Fahimian and J. Miao, “Dose Reduction and Image Enhancement in Tomography through the Utilization of the Object’s Surroundings as Dynamic Constraints”, US Patent No. 8,532,350 (2013).
3. J. Miao and B. P. Fahimian, “Incorporation of Mathematical Constraints in Methods for Dose Reduction and Image Enhancement in Tomography”, US Patent No. 8442353 B2 (2013).
4. J. Miao and B. P. Fahimian, “Iterative Methods for Dose Reduction and Image Enhancement in Tomography”, US Patent No. 8270760 (2012).

Plenary, Keynote and Named Lectures:

1. “Atomic electron tomography: Adding new dimensions to pinpoint single defects in materials”, Gordon Research Conference 2022: Defects in Semiconductors, New London, NH, USA, Aug. 14 - 19, 2022. (Keynote Lecture)
2. “Solving a Century-Old Problem: Three-dimensional Atomic Structure of Amorphous Materials”, the Advanced Photon Source and the Center for Nanoscale Materials Joint Virtual Users Meeting, Argonne National Laboratory, May 9, 2022. (Plenary Lecture)
3. “Determining the 3D Atomic Structure of Non-Crystalline Materials”, College of Chemistry and Molecular Engineering, Peking University, Dec. 10, 2021. (Xingda Lecture, remote)
4. “Beyond Crystallography: Diffractive Imaging with Coherent X-ray Sources”, Symposium on Coherent Diffractive Imaging, Phase Retrieval and Their Applications, ShanghaiTech University, Nov. 13-14, 2021. (Keynote Lecture, remote)
5. “Atomic Electron Tomography: Capturing the Structure and Dynamics of Materials at 4D Atomic Resolution”, Molecular Foundry User Meeting - A Nanoscience Conference at Lawrence Berkeley National Laboratory, August 20-21, 2020. (Plenary Lecture, remote)
6. “Coherent Diffractive Imaging: Past, Present and Future”, the 13th International Conference on Biology and Synchrotron Radiation, Shanghai, China, Sept. 21 – 24, 2019. (Plenary Lecture)
7. “Visualizing the 3D Nano and Atomic World with Computational Microscopy”, the Computational Cameras and Displays Workshop at the Conference on Computer Vision and Pattern Recognition, Long Beach, CA, USA, June 17, 2019. (Keynote Lecture)
8. “Atomic Electron Tomography: Adding a New Dimension to See Single Atoms in Materials”, Princeton – Nature Conference: Frontiers in Electron Microscopy for the Physical and Life Sciences, Princeton University, Princeton, NJ, USA, July 11-13, 2018. (Plenary Lecture)
9. “Atomic Electron Tomography: Probing 3D Structure and Material Properties at the Single-Atom Level”, the 92nd American Chemical Society (ACS) Colloid & Surface Science Symposium, Pennsylvania State University, State College, PA, USA, June 10 to 13, 2018. (Keynote Lecture)
10. “Beyond Crystallography: Coherent X-ray Diffractive Imaging and Atomic Electron Tomography”, The APS/CNM Users Meeting, Argonne National Laboratory, IL, USA, May 8, 2017. (Plenary Lecture)
11. “Imaging at the X-ray Frontier: Diffractive Imaging Using Coherent X-ray Sources”, International Workshop on Shanghai X-ray Free Electron Laser, Shanghai, China, Jan. 25, 2016. (Keynote Lecture)

12. “Beyond Crystallography: Coherent Diffractive Imaging and Atomic Resolution Electron Tomography”, International Conference on Extreme Light (ICEL 2015) Bucharest, Romania, Nov. 23 - 27, 2015. (Plenary Lecture)
13. “Atomic Resolution Electron Tomography”, French Microscopy Congress SFMu, Nice, France, June 30 – July 3, 2015. (Plenary Lecture)
14. “Coherent Diffractive Imaging with X-ray Free Electron Lasers”, Workshop on XFEL Experiments and Applications, Shanghai Institute of Applied Physics, Chinese Academy of Sciences, Shanghai, China, Dec. 29, 2014. (Keynote Lecture)
15. “Beyond Crystallography: Coherent Diffraction Imaging and Atomic Resolution Electron Tomography”, Twenty-Third Congress and General Assembly of the International Union of Crystallography, Montreal, Canada, Aug. 5 – 12, 2014. (Plenary Lecture)
16. “Advances in Imaging: Resolution and Tomography”, Future of Electron Scattering & Diffraction Workshop, organized by the U.S. Department of Energy - Office of Basic Science, Feb. 25-26, 2014. (Plenary Lecture)
17. “Three-Dimensional Diffraction Microscopy and Its Applications in Nanoscience and Structural Biology”, Institute of Physics, CAS, Beijing, China, July 8, 2004. (60th Zhongguancun Forum)
18. “Crystallography without Crystals”, the 6th Conference of the Asian Crystallographic Association, Hong Kong, June 27-30, 2004. (Plenary Lecture)
19. “X-ray Crystallography without Crystals and Its Applications in Nanoscience and Structural Biology”, NSLS Users’ Meeting, Brookhaven National Lab., New York, May 19-21, 2003. (Plenary Lecture)
20. “Single-Shot 3D Imaging of Metallic Nanocrystals with Femtosecond X-ray Free Electron Laser Pulses”, TMS 2013 142nd Annual Meeting, San Antonio, TX, USA March 3-7, 2013. (Keynote Lecture)

Invited Talks, Colloquia and Seminars:

1. “Solving a Century-Old Problem: Three-dimensional Atomic Structure of Amorphous Materials”, 2022 MRS Fall Meeting & Exhibit (Virtual), Dec. 6-8, 2022.
2. “Computational Microscopy: Coherent Diffractive Imaging with Photons and Electrons”, Shawlow-Townes Symposium on Photonics, University of Ottawa and National Research Council of Canada, Oct. 13, 2022 (remote).
3. “Computational Microscopy: From Coherent Diffractive Imaging to Atomic Electron Tomography”, IPAM Long Program on Computational Microscopy - Workshop I: Diffractive Imaging with Phase Retrieval, UCLA, CA, Oct. 10 - 14, 2022
4. “Atomic Electron Tomography: Capturing the 3D Atomic Structure of Non-Crystalline Materials”, IPAM Long Program on Computational Microscopy Tutorial Talk, UCLA, CA, Sept. 13 - 16, 2022.
5. “Coherent Diffractive Imaging: A Unification of Microscopy, Diffraction and Computation”, IPAM Long Program on Computational Microscopy Tutorial Talk, UCLA, CA, Sept. 13 - 16, 2022.
6. “Computational Microscopy: Coherent Diffractive Imaging with Photons and Electrons”, IEEE International Conference on Computational Photography, Caltech, CA, August 1 – 3, 2022.
7. “Solving A Century-Old Problem: Three-dimensional Atomic Structure of Amorphous Solids”, Physics and Astronomy Colloquium, UCLA, May 12, 2022.
8. “Exploring the 3D Nano and Atomic World: Coherent Diffractive Imaging and Atomic Electron Tomography”, Physics Colloquium, University at Buffalo, April 14, 2022 (remote).
9. “Exploring the 3D Nano and Atomic World: Coherent Diffractive Imaging and Atomic Electron Tomography”, STROBE Research Advances Seminar, April 7, 2022 (remote).
10. “Determining the 3D Atomic Structure of Metallic Glass”, TMS 2022 Annual Meeting, Anaheim, CA, Feb. 27 - March 3, 2022 (remote).
11. “Atomic Electron Tomography: Determining the 3D Atomic Structure of Non-Crystalline Materials”, Department of Chemistry Seminar, Hong Kong University of Science and Technology, Feb. 23, 2022 (remote).
12. “Determining the 3D Atomic Structure of Non-Crystalline Materials”, Materials Research Meeting, Yokohama, Japan, Dec. 13-17, 2021 (remote).

13. "Determining the Three-Dimensional Atomic Structure of Non-Crystalline Materials", Symposium on Advanced TEM for *In Situ* Study of Materials, Korean Society of Microscopy, Nov. 3, 2021 (remote).
14. "Determining the Three-Dimensional Atomic Structure of Non-Crystalline Materials", Pre-Meeting Congress for Recent Developments in Advanced Imaging and Spectroscopy, August 1, 2021 (remote).
15. "Determining the 3D Atomic Structure of Non-Crystalline Materials", The Fourth International Symposium on Advanced Microscopy and Spectroscopy (ISAMS-4), University of California, Irvine, July 26-27, 2021 (remote).
16. "Frontiers in Coherent Diffractive Imaging", Towards An Ultra-Compact X-Ray Free-Electron Laser Workshop, UCLA, July 17-19, 2021.
17. "Determining the Three-Dimensional Atomic Structure of Metallic Glass", Virtual Conference on Frontiers in Glass II: At the Interface of Earth Science & Synthetic Materials, June, 30 2021.
18. "Beyond Crystallography: Coherent Diffractive Imaging and Atomic Electron Tomography", Data Science for Materials Discovery I-AIM Seminar Series, May 14, 2021 (remote).
19. "Frontiers in Coherent Diffractive Imaging", 2021 MRS Spring Meeting - April 17-23, 2021 (remote).
20. "Exploring the 3D Nano and Atomic World: Coherent Diffractive Imaging and Atomic Electron Tomography", Physical & Astronomy Colloquium, Clemson University, April 7, 2021 (remote).
21. "Atomic Electron Tomography: Capturing the Structure and Dynamics of Materials at 3D Atomic Resolution", Materials Science and Engineering Seminar, UCLA, Oct. 19, 2020 (remote).
22. "Atomic Electron Tomography: Capturing the Structure and Dynamics of Materials at 4D Atomic Resolution", The FIB-SEM Technology and Electron Tomography for Materials Science and Engineering Symposium, M&M Virtual Meeting, August 2-6, 2020.
23. "Atomic Electron Tomography: Adding New Dimensions to Pinpoint Single Atoms in Materials", MRS OnDemand Webinar on "Nanoscale Tomography Using X-rays and Electrons", April 22, 2020.
24. "Advanced Imaging with the XFEL and Potential of Attosecond Coherent Diffractive Imaging", The FUture of SEeded free Electron lasers (FUSEE) Workshop Trieste, Italy, Dec. 11-12, 2019
25. "Capturing Crystal Nucleation in 4D at Atomic Resolution", MRS Fall Meeting, Boston, Dec. 1 – 6, 2019.
26. "Capturing Crystal Nucleation in 4D at Atomic Resolution", UCLA Physical Chemistry Seminar, Los Angeles, Oct. 14, 2019.
27. "Capturing Crystal Nucleation in 4D at Atomic Resolution", ShanghaiTech University, Shanghai, China, Sept. 23, 2019.
28. "Correlating 3D atomic defects and electronic properties of 2D materials with picometer precision", ARO MURI Ab-Initio Solid-State Quantum Materials: Design, Production, and Characterization at the Atomic Scale, Adelphi, MD, Sept. 18, 2019.
29. "Capturing crystal nucleation in 4D at atomic resolution", Microscopy & Microanalysis 2019 Meeting, Portland, Oregon, August 4-8, 2019.
30. "Capturing Nucleation at 4D Atomic Resolution", Crystal Growth and Assembly Gordon Research Conference, Southern New Hampshire University, Manchester, NH, June 23-28, 2019.
31. "Advanced Imaging with the XFEL and Potential of Attosecond Coherent Diffractive Imaging", Towards An Ultra-Compact X-Ray Free-Electron Laser Workshop, UCLA, Jan. 22-25, 2019.
32. "Capturing the Structure and Dynamics of Materials at 4D Atomic Resolution", 2018 Electron and Scanning Probe Microscopies Principal Investigators' Meeting, Office of Basic Energy Sciences, U. S. Department of Energy, Nov. 14 – 16, 2018.
33. "Atomic Electron Tomography: Adding a New Dimension to See Single Atoms in Materials", Materials Science and Engineering Seminar, Johns Hopkins Univ., Nov. 14, 2018.
34. "Atomic Electron Tomography: Adding a New Dimension to See Single Atoms in Materials", Distinguished Guest Lecture at the 11th LEEM/PEEM workshop, Chongqing, China, Oct. 30 – Nov. 3, 2018.
35. "Probing the Structure and Properties of 2D Quantum Materials at the Single-Atom Level", ARO MURI Kickoff Meeting, MIT, Cambridge, MA, Sept. 27, 2018.
36. "GENFIRE: from Precisely Localizing Single Atoms in Materials to High-Resolution 3D Imaging of Cellular Structures", Microscopy & Microanalysis 2018 Meeting, Baltimore, August 5-9, 2018.

37. “Atomic Electron Tomography: Adding a New Dimension to See Single Atoms in Materials”, Microscopy & Microanalysis 2018 Meeting, Baltimore, August 5-9, 2018.
38. “Atomic Electron Tomography: Adding a New Dimension to See Single Atoms in Materials”, the Inauguration of Centre for High-resolution Electron Microscopy, ShanghaiTech University, China, May 27-29, 2018.
39. “Atomic Electron Tomography: Adding a New Dimension to See Single Atoms in Materials”, Frontiers in Functional Imaging in Aberration-Corrected Electron Microscopy Symposium, MRS Spring Meeting, Phoenix, April 2 – 6, 2018.
40. “Exploring the 3D Nano and Atomic World: Coherent Diffractive Imaging and Atomic Electron Tomography”, Physics Colloquium, University of Central Florida, Orlando, March 23, 2018.
41. “Exploring the 3D Nano and Atomic World: Coherent Diffractive Imaging and Atomic Electron Tomography”, Physics Colloquium, University of Colorado, Boulder, March 21, 2018.
42. “Exploring the 3D Nano and Atomic World: Coherent Diffractive Imaging and Atomic Electron Tomography”, Physics Colloquium, UCSD, February 1, 2018.
43. “Atomic Electron Tomography: Adding a New Dimension to See Individual Atoms in Materials”, The 3rd SALVE Symposium, Ulm, Germany, Dec. 12 – 14, 2017.
44. “Atomic Electron Tomography: Probing 3D Structures and Material Properties at the Single-Atom Level”, “Design, Control and Advanced Characterization of Functional Defects in Materials” Symposium, MRS Fall Meeting, Boston, Nov. 26 - Dec. 1, 2017.
45. “Coherent X-ray Diffractive Imaging”, “In Situ Studies of Materials Transformations” Symposium, MRS Fall Meeting, Boston, Nov. 26 - Dec. 1, 2017.
46. “Atomic Electron Tomography: Adding a New Dimension to See Individual Atoms in Materials”, International Workshop on the Frontiers of Electron Tomography in the Physical Sciences, Berkeley, Oct. 23 and 24, 2017.
47. “Exploring the 3D Nano and Atomic World: Coherent Diffractive Imaging and Atomic Electron Tomography”, Physics and Astronomy Colloquium, UC Riverside, Riverside, CA, Sept. 28, 2017.
48. “Atomic Electron Tomography: Probing 3D Structures and Material Properties at the Single-Atom Level”, the 16th Frontiers of Electron Microscopy in Materials Science International Conference, Johannesburg, South Africa, Sept. 10 – 15, 2017.
49. “Beyond Crystallography: Coherent Diffractive Imaging and Atomic Electron Tomography”, Electron Microscopy Workshop at ShanghaiTech, Shanghai, China, May 30, 2017.
50. “Atomic Electron Tomography: Probing 3D Structures and Material Properties at the Single-Atom Level”, Nature conference: Electron Microscopy for Materials — The Next Ten Years”, organized by Nature, Nature Materials and Zhejiang University, Hangzhou, China, May 27-29, 2017.
51. “Beyond Crystallography: Coherent X-ray Diffractive Imaging and Atomic Electron Tomography”, Physics Colloquium, Zhejiang University, Hangzhou, China, May 26, 2017.
52. “Beyond Crystallography: Diffractive Imaging with Coherent X-ray Sources”, the Xiangshan Science Conference, Beijing, China, April 27 and 28, 2017.
53. “Beyond Crystallography: Coherent X-ray Diffractive Imaging and Atomic Electron Tomography”, Physics and Astronomy Colloquium, USC, April 17, 2017.
54. “Beyond Crystallography: Coherent Diffractive Imaging and Atomic Electron Tomography”, CNSI/STROBE Lunch Seminar, UCLA, Jan 24, 2017.
55. “Atomic Electron Tomography: 3D Structures without Crystals”, STROBE Seminar, a virtual seminar among Univ. Colorado, Boulder, UCLA and UC Berkeley, Dec. 6, 2016.
56. “Atomic Electron Tomography: 3D Structures without Crystals”, Southern California Society for Microscopy and Microanalysis Fall Meeting, City of Hope, CA, Nov. 7, 2016.
57. “Atomic Electron Tomography: 3D Structures without Crystals”, Environmental Molecular Sciences Laboratory, Pacific Northwest National Laboratory, WA, Sept. 19, 2016.
58. “Atomic Electron Tomography: 3D Structures without Crystals”, the USIAS seminar, Université de Strasbourg, France, Sept. 9, 2016.
59. “Beyond Crystallography: Coherent Diffractive Imaging and Atomic Electron Tomography”, ePSIC Launch Event, Diamond Light Source, Oxfordshire, UK, Sep. 5 - 6, 2016.

60. “Three-Dimensional Determination of the Coordinates of Individual Atoms in Materials”, Microscopy & Microanalysis 2016 Meeting, Columbus, Ohio, July 24 – 26, 2016.
61. “Multi-Dimensional Characterization of Oxidized Mo-Si-B, Ni-Cr and Ni-Cr-Mo Systems”, MURI Annual Meeting on Understanding Atomic Scale Structure in Four Dimensions to Design and Control Corrosion Resistant Alloys, University of Virginia, Charlottesville, VA, June 30 - July 1, 2016.
62. “Three-dimensional Structure Determination of Nanometals at Atomic Resolution”, American Chemical Society 2016 Spring Meeting, San Diego, March 13-17, 2016.
63. “Beyond Crystallography: Diffractive Imaging Using Coherent X-ray Sources”, Senri Life Science International Symposium J6, Osaka, Japan, Jan. 22, 2016.
64. “Beyond Crystallography: Atomic Resolution Electron Tomography”, 23rd International Congress on X-ray Optics and Microanalysis Brookhaven National Laboratory, New York, Sept. 14 – 18, 2015.
65. “Beyond Crystallography: Coherent Diffractive Imaging and Atomic Resolution Electron Tomography”, Physical/Theoretical Chemistry Seminar, Department of Chemistry, University of Southern California, Aug. 31, 2015.
66. “Beyond Crystallography: Diffractive Imaging With Coherent X-ray Sources”, ShanghaiTech University, Shanghai, China, Aug. 12, 2015.
67. “Beyond Crystallography: Coherent Diffractive Imaging and Atomic Resolution Electron Tomography”, Institute of High Energy of Physics, Chinese Academy of Sciences, Beijing, China, Aug. 10, 2015.
68. “Beyond Crystallography: Coherent Diffractive Imaging and Atomic Resolution Electron Tomography”, International Workshop on Advanced X-ray Imaging with XFELs and Synchrotron Sources, Weihai, China, Aug. 7, 2015.
69. “Beyond Crystallography: Coherent Diffractive Imaging and Atomic Resolution Electron Tomography”, Brazilian Nanotechnology National Laboratory, Campinas-SP, Brazil, July 17, 2015.
70. “Tomography: Principle, Implementation and Applications”, São Paulo School of Advanced Sciences on Recent Developments in Synchrotron Radiation, Brazil, July 13 – 24, 2015.
71. “Imaging at the X-ray Frontier: Coherent Diffractive Imaging for Physical and Biological Sciences”, São Paulo School of Advanced Sciences on Recent Developments in Synchrotron Radiation, Brazil, July 13 – 24, 2015.
72. “Beyond Crystallography: Coherent Diffractive Imaging and Atomic Resolution Electron Tomography”, Department of Materials and Environmental Chemistry Seminar, Stockholm University, Sweden, July 3, 2015.
73. “3D Characterization of Oxidation of the A15 Phase in the Mo-Si-B System with Elemental Specificity”, MURI Review Meeting: Understanding Atomic Scale Structure in Four Dimensions to Design and Control Corrosion Resistant Alloys, Northwestern University, IL, June 17, 2015.
74. “Atomic Resolution Electron Tomography”, the 59th International Conference on Electron, Ion, and Photon Beam Technology and Nanofabrication, San Diego, CA, May 26-29, 2015.
75. “Beyond Crystallography: Coherent Diffractive Imaging and Atomic Resolution Electron Tomography”, Physics Colloquium, University of Colorado, Boulder, CO, Feb. 25, 2015.
76. “Lensless Imaging with Synchrotron Radiation”, International Symposium on Synchrotron Radiation” (The Opening Ceremony of the T. D. Lee Library), Shanghai Jiao Tong University, Shanghai, China, Dec 27, 2014.
77. “Atomic Resolution Electron Tomography”, KAUST Research Conference: Electron Microscopy Frontiers, Jeddah, Saudi Arabia, Dec. 9 – 11, 2014.
78. “Atomic Resolution Electron Tomography”, 2014 Electron and Scanning Probe Microscopies Principal Investigators’ Meeting, Sponsored by the U.S. Department of Energy Office of Basic Energy Sciences, Gaithersburg, MD, Oct. 20-22, 2014.
79. “4D Characterization of Materials with Atomic Resolution Electron Tomography and In Situ X-ray Nanodiffraction”, 2014 MURI Kickoff Meeting, Northwestern University, Evanston, IL, Oct. 2, 2014.
80. “Coherent Diffraction Imaging and Atomic Resolution Electron Tomography”, Institute of Physics Academia Sinica, Taiwan, Aug 21, 2014.

81. “Coherent Diffraction Imaging (CDI): From Plane-Wave CDI to Ptychography”, The 5th Summer School on X-ray Science: Coherent X-ray Scattering, National Sun Yat-Sen University, Taiwan, Aug. 19 - 22, 2014.
82. “Three-Dimensional Imaging of Dislocations and Defects in Materials at Atomic Resolution Using Electron Tomography”, Microscopy & Microanalysis 2014 Meeting, Hartford, CT, August 3-7 2014.
83. “Coherent Diffraction Imaging “, Microscopy & Microanalysis 2014 Meeting, Hartford, CT, August 3-7 2014.
84. “Coherent Diffraction Imaging and Atomic Resolution Electron Tomography”, Physics Colloquium, Weizmann Institute of Science, Rehovot, Israel, April 10, 2014.
85. “Coherent Diffraction Imaging and Atomic Resolution Electron Tomography”, Russell Berrie Nanotechnology Institute Monthly Seminar, Technion – Israel Institute of Technology, Israel, April 9, 2014.
86. “Coherent Diffraction Imaging and Atomic Resolution Electron Tomography”, Joint Seminar at the National Research Council and University of Ottawa, Canada, March 19, 2014.
87. “Coherent Diffraction Imaging and Atomic Resolution Electron Tomography”, RIKEN SPring-8 Center, Japan, Dec. 17, 2013.
88. “Coherent Diffraction Imaging and Atomic Resolution Electron Tomography”, Department of Materials Science and Metallurgy, University of Cambridge, UK, Nov. 22, 2013.
89. “Coherent Diffraction Imaging, X-ray Phase-Contrast and Electron Tomography”, Fraunhofer-Institut für Lasertechnik ILT, RWTH Aachen University, Germany, Nov. 20, 2013.
90. “Coherent Diffraction Imaging and Atomic Resolution Electron Tomography”, Ernst Ruska-Centre Juelich, Germany, Nov. 19, 2013.
91. “Single-Shot 3D Structure Determination and Atomic Resolution Electron Tomography”, the 6th International Workshop on FEL Science: New Horizon of XFEL Science, Tainan, Taiwan, Nov. 3-7, 2013.
92. “Coherent Diffraction Imaging and Atomic Resolution Electron Tomography”, Condensed Matter Physics Seminar, University of California, San Diego, Oct. 30, 2013.
93. “Three-Dimensional imaging of nanoparticles at atomic resolution”, American Chemical Society 246th National Meeting, Indianapolis, Indiana, Sep. 8-12, 2013.
94. “Coherent X-ray Diffraction Imaging and Atomic Resolution Electron Tomography”, ICMR Summer School on Materials in 3D: Modeling and Imaging at Multiple Length Scales, University of California, Santa Barbara, Aug. 19 - 30, 2013.
95. “Coherent Diffraction Imaging and Atomic Resolution Electron Tomography”, Beijing National Center for Electron Microscopy, Tsinghua University, China, July 16, 2013.
96. “Coherent Diffraction Imaging with X-ray Free Electron Lasers”, the 38th International conference on Vacuum Ultraviolet and X-ray Physics, Hefei, China, July 12-19, 2013.
97. “Lensless X-ray Imaging and Atomic Resolution Electron Tomography”, ASM International San Fernando Valley Chapter, May 23, 2013.
98. “Lensless X-ray Imaging and Atomic Resolution Electron Tomography”, Materials Department Colloquium, University of California, Santa Barbara, April 26, 2013.
99. “Imaging at the X-ray Frontier: Coherent Diffraction Imaging for Bio- and Nano-Science”, International Symposium Nanoscale Photonic Imaging, Max-Planck-Campus, Göttingen, Germany, April 4-5, 2013.
100. “Imaging at the X-ray Frontier: Coherent Diffraction Imaging (CDI) for Biological and Nanoscience”, the American Physical Society March Meeting 2013, Baltimore, Maryland, March 18-22, 2013.
101. “Coherent Diffraction Imaging of Biological Materials: Present Status and Future Perspectives”, Workshop on ‘From Functional Soft Matter to Biology - Future Challenges’, European Synchrotron Radiation Facility, Grenoble, France, Feb 4, 2013.
102. “Electron Tomography at Atomic Resolution”, the NCEM / MF Electron Tomography Workshop, LBNL, Berkeley, CA, Jan. 16-18, 2013.
103. “Three-Dimensional Imaging of Local Structure in Materials at Atomic Resolution”, UCLA Physical Chemistry Seminar, Nov. 26, 2012.

104. "Coherent Diffraction Imaging with Synchrotron Radiation and an X-ray Free Electron Laser", the 5th Workshop on FEL Science - Creation of New Science, Gyeongju, Korea, Oct. 28 - Nov. 1, 2012.
105. "Electron Tomography at Atomic Resolution", National Center for Electron Microscopy DOE Review Meeting, Lawrence Berkeley National Laboratory, Aug. 22-23, 2012.
106. "High-Resolution Coherent Diffraction Imaging with High Harmonic and Soft X-ray Laser Sources", The PULSE Proposer's Day Workshop, DARPA, Arlington, VA, July 17, 2012.
107. "Coherent Diffraction Imaging", Ultrafast Dynamic Imaging of Matter Conference, Banff, Alberta, Canada, July 1-3, 2012.
108. "Coherent Diffraction Imaging", International Workshop on Phase Retrieval and Coherent Scattering, Fukuoka, Japan, June 18-21, 2012. (Opening talk)
109. "Three-Dimensional Imaging of Biological Materials Using Coherent X-rays and Electrons", the Future of Structural Biology, Max Planck Symposium, Hamburg, Germany, May 23-24, 2012.
110. "Coherent Diffraction Imaging of Biological Systems", BioMedicine in 4D Conference, Oregon Health and Science University, Portland, March 21-23, 2012.
111. "Coherent Diffraction Imaging of Biological Materials", European Synchrotron Radiation Facility Users' Meeting, Grenoble, France, Feb. 7-8, 2012.
112. "Lensless X-ray Microscopy and Low-Dose X-ray Phase Contrast Tomography", Stanford Molecular Imaging Seminar Series, Stanford University, Feb. 2, 2012.
113. "Coherent Diffraction Imaging and Its Application in Materials Science and Biology", UCLA Optics & Photonics Seminar, Jan. 12, 2012.
114. "Coherent X-ray Diffraction Imaging and Its Applications in Materials Science, Nanoscience and Biology", Advanced Light Source Seminar, LBNL, Berkeley, Nov. 30, 2011.
115. "Three-Dimensional Imaging of Human Breast Cancer and Atomic Structure of Nanomaterials by Using Equally Sloped Tomography", Physics & Astronomy Colloquium, UCLA, Sep. 29, 2011.
116. "Coherent Diffraction Imaging of Biological Materials", Workshop on Science with Free Electron Lasers, SINAP, Shanghai, Aug. 20-21, 2011.
117. "Advanced Experimental Methods with Synchrotron Radiation and X-FELs: Past, Present and Future", Public Talk at the SSRF/SINAP, Chinese Academy of Sciences, Shanghai, Aug. 20, 2011.
118. "Coherent Diffraction Imaging and Its Application in Materials Science and Biology", DESY, Hamburg, Germany, June 28, 2011.
119. "Coherent Diffraction Imaging and Low-dose X-ray Tomography", European Synchrotron Radiation Facility Seminar, Grenoble, France, June 22, 2011.
120. "Three-Dimensional Coherent Diffraction Imaging of Materials and Cells", Workshop on Diffraction Microscopy, Holography and Ptychography using Coherent Beams, Ithaca, NY, June 6-7, 2011.
121. "Coherent Diffraction Imaging", The 55th International Conference on Electron, Ion, and Photon Beam Technology and Fabrication, Las Vegas, May 31- June 3, 2011.
122. "Three-Dimensional Coherent X-ray Diffraction Imaging of Biological Specimens", Workshop on Biology with X-FELs, LBNL, Berkeley, Jan 18 - 21 2011.
123. "Towards Atomic-Resolution Electron Tomography", NCEM Seminar, Lawrence Berkeley National Laboratory, Nov. 18, 2010.
124. "3D View of the Nano-World with Coherent X-rays", the 22nd Annual Kavli Frontiers of Science Symposium, National Academy of Sciences Arnold and Mabel Beckman Center, Irvine, CA, Nov. 4-6, 2010.
125. "3D Coherent Diffractive Imaging of Biological Specimens", Workshop on Frontiers in Biology with X-FELs, Joint ALS/SSRL, SLAC, Oct. 20-21, 2010.
126. "Coherent X-ray Diffraction Imaging of Biological Materials", Keck Site Visit Meeting, UCLA, Sep. 28, 2010.
127. "Coherent Diffraction Microscopy and Its Application in Materials Science and Structural Biology", Physics Division Colloquium, Los Alamos National Laboratory, Sep. 9, 2010.
128. "Ankylography: Three-Dimensional Structure Determination from a Single View", KITP Conference on X-ray Science in the 21st Century, UC, Santa Barbara, Aug. 2-6, 2010.

129. “Coherent Diffractive Imaging for Biology and Materials/Nano-Science (CDI)”, NSLS-II, Brookhaven National Laboratory, July 28, 2010.
130. “Ankylography: Three-Dimensional Structure Determination from a Single View”, X-rays, Neutrons, Complex Fluids and Magnetism: A Satellite Symposium Dedicated to Sunil K. Sinha's 70th Birthday, Northwestern University, Evanston, Illinois, July 13, 2010.
131. “Coherent Diffractive Imaging: Past, Present and Future”, the 4th Yamada Symposium on APSE2010, Osaka, Japan, June 14-18, 2010.
132. “Coherent Diffractive Imaging of Biological Samples”, Workshop on Coherent Diffractive Imaging for Biological Applications at NSLS-II, Brookhaven National Lab, May 17 - 18, 2010.
133. “Medical Multidetector X-ray CT (MDCT): Computational Issues and Opportunities”, Computer Science Seminar, UCLA, May 12, 2010.
134. “Coherent Diffraction Microscopy and Its Applications in Structural Biology”, the 5th International Conference on Structural Analysis of Supermolecular Assemblies by Hybrid Methods, Lake Tahoe, March 10-14, 2010.
135. “Coherent Diffraction Microscopy and Its Applications in Materials and Nanoscience”, the TMS 2010 Annual Meeting, Seattle, Feb. 14–19, 2010.
136. “Ankylography: Three-Dimensional Structure Determination from a Single View”, the 2nd Workshop on FEL Science “Emerging X-ray Applications in Biological Systems”, Kenting, Taiwan, Dec. 6 – 9, 2009.
137. “Coherent Diffraction Microscopy and Its Applications in Nanoscience and Biology”, COSI Seminar, University of Colorado, Boulder, Oct. 26, 2009.
138. “Ankylography: Three-Dimensional Structure Determination from a Single View”, Workshop on Next Generation Light Source: Nanoscale Coherent Imaging and Microscopy with a soft X-ray Laser, Lawrence Berkeley National Lab., Oct. 16–17, 2009.
139. “Ankylography: Three-Dimensional Structure Determination from a Single View”, Frontiers in Optics (FiO) 2009/Laser Science (LS) XXV, San Jose, Oct. 11-15, 2009.
140. “Ankylography: Three-Dimensional Structure Determination from a Single View”, Symposium on “Coherent X-ray Diffraction and Imaging in Biology”, 25th European Crystallographic Meeting, Istanbul, Aug. 16-21, 2009.
141. “Three-Dimensional Coherent Diffraction Microscopy and Its Applications Nanoscience and Biology”, Zhejiang California International NanoSystems Institute, Zhejiang University, Aug. 10, 2009.
142. “Coherent X-ray Scattering, Oversampling and Application of X-ray Free Electron Lasers”, OCPA6 Conference, Lanzhou, China, August 3 - 7, 2009.
143. “Coherent Diffraction Microscopy and Its Applications”, High Pressure Synchrotron Science Workshop, Advanced Photon Source, Argonne National Lab., May 6-8, 2009.
144. “Coherent Diffraction Microscopy: Seeing the Invisible with Computational Algorithms”, Materials Department Colloquium, UC Santa Barbara, April 3, 2009.
145. “Coherent Diffraction Microscopy and Its Potential Applications with ERLs”, Photon Factory, KEK, Japan, March 17, 2009.
146. “Recent Topics of Materials and Biological Research”, Technology and Instrumentation in Particle Physics (TIPP09), Tsukuba, Japan, March 12-17, 2009
147. “Lensless Diffraction Microscopy: Seeing the Invisible with Oversampling Iterative Algorithms”, Current Trends in Structural Biology on the Single Molecule Level, Luzern, Switzerland, Jan. 26-29, 2009.
148. “Lensless Diffraction Microscopy: Seeing the Invisible with Computational Algorithms”, Dept. of Electrical & Computer Engineering, UC San Diego, Jan. 12, 2009.
149. “Lensless Diffraction Microscopy: Seeing the Invisible with Computational Algorithms”, 39th Winter Colloquium on the Physics of Quantum Electronics, Snowbird, Utah, Jan. 4-8, 2009.
150. “Quantitative 3D Imaging of Nanoscale Materials Using X-ray Diffraction Microscopy”, the Materials Research Society Fall Meeting, Boston, MA, Dec. 1-5, 2008.
151. “Lensless Diffraction Microscopy: Seeing the Invisible with Computational Algorithms”, Department of Physics & Astronomy Colloquium, UCLA, Nov. 20, 2008.

152. "Coherent Diffraction Microscopy: Present and Future", the XXI-IUCr Congress in Osaka, Japan, Aug. 23-31, 2008.
153. "X-ray Diffraction Microscopy", DARPA, Arlington, VA, April 24, 2008.
154. "Oversampling, Lensless Imaging and Application of X-ray Free Electron Lasers", the University of Rome "Tor Vergata", Rome, Italy, Apr. 12, 2008.
155. "3D X-ray Diffraction Microscopy Applied in Nanoscience and Biology", Heraeus-Seminar 'Matter in Coherent Light', the Physikzentrum Bad Honnef, Germany, March 17 - 20, 2008.
156. "Three-Dimensional X-ray Diffraction Microscopy: Present and Future", Workshop on Coherent X-ray Diffraction Imaging at NSLS-II, Brookhaven National Lab, March 14, 2008.
157. "Dose Reduction and Image Enhancement in Biological and Medical Imaging through Equally-Sloped Tomography", CNSI, UCLA - ASMeW, Waseda Joint Symposium, Los Angeles, March 5 - 6, 2008.
158. "Quantitative 3D X-ray Microscopy: A Versatile Tool for Non-Destructive Characterization of Materials at the Nanometer Level", UCLA-Northrop Grumman Meeting, UCLA, Oct. 29, 2007.
159. "3D X-ray Diffraction Microscopy Applied to Nanoscience", X-ray and Neutron Scattering Contractor's Meeting, Arlie Center, Warrenton, VA, Oct. 17 - 19, 2007.
160. "Three-Dimensional X-ray Diffraction Microscopy and Its Applications in Nanoscience and Biology", Shanghai Synchrotron Radiation Facility, Shanghai Institute of Applied Physics, Chinese Academy of Sciences, Aug. 31, 2007.
161. "Three-Dimensional Coherent Diffraction Microscopy and Its Applications in Nanoscience and Biology", Zhejiang University, China, Aug. 27, 2007.
162. "X-ray Diffraction & Imaging Lab", California NanoSystems Institute Lunch Seminar, UCLA, Feb. 15, 2007.
163. "3D X-ray Diffraction Microscopy and Its Applications in Nanoscience and Biology", Department of Physics and Astronomy, Nov. 15, 2006.
164. "3D X-ray Diffraction Microscopy: A Versatile Tool for Nondestructive and Quantitative Characterization of Materials at the Nanometer Resolution", DARPA/DSRC Workshop on Nondestructive Femtosecond Laser Based Evaluation of Materials and Structures, Arlington, VA, Nov. 7-8, 2006.
165. "Lensless Imaging and Equally Sloped Tomography for Nanoscience and Biology", Workshop on Hard and Soft X-ray Tomography, Berkeley, California, Oct. 11, 2006.
166. "3D Coherent Diffraction Microscopy and Its Applications in Nanoscience and Biology", Institut für Röntgenphysik, Georg-August University of Göttingen, Germany, Sep. 13, 2006.
167. "Coherent Imaging of Biological Structures", Workshop on Biological Imaging at PETRA III, Hamburg, Germany, Sep. 11-12, 2006.
168. "Lensless Imaging and Equally Sloped Tomography of Cellular Structure and Large Macromolecules", Baylor College of Medicine, Houston, Sep. 7, 2006.
169. "3D Coherent Diffraction Microscopy and Its Applications in Structural Biology", Large Macromolecular Assemblies Session, American Crystallographic Association Meeting, Honolulu, Hawaii, July 22-27, 2006.
170. "Oversampling, Lensless Imaging and Application of X-ray Free Electron Lasers", Workshop on X-ray Free Electron Lasers: Challenges for Theory, Institute for Theoretical Atomic, Molecular and Optical Physics, Harvard-Smithsonian Center, Cambridge, MA, June 19-21, 2006.
171. "Quantitative 3D Imaging of Nanomaterials by Using Coherent X-rays", Workshop on Almost Impossible Materials Science: Pushing the Frontier with ERL X-ray Beams, Cornell University, June 16-17, 2006.
172. "3D Coherent Diffraction Microscopy and Its Applications in Nanoscience and Biology", School of Physics, Peking University, June 9, 2006.
173. "Lensless Imaging and Equally Sloped Tomography for Nanoscience and Biology", International Symposium on the Methodological Study of Phase Contrast Hard X-Ray Imaging of Nanobiological and Medical Samples with Synchrotron Radiation, Beijing, June 5-9, 2006.
174. "Oversampling, Lensless Imaging and Application of X-ray Free Electron Lasers", JILA, University of Colorado at Boulder, May 16, 2006.

175. "Coherent Scattering, Oversampling and the Application of X-ray Free Electron Lasers", Joint ETH and University of Zurich Colloquium, Switzerland, May 10, 2006.
176. "The Principle and Implementation of the Oversampling Method", Physik Institut Seminar, University of Zurich, Switzerland, May 8, 2006.
177. "Quantitative 3D Imaging of Nanostructured Materials by Using Coherent X-rays", Workshop on Microscopy and Imaging in Materials Science, Argonne National Laboratory, Chicago, May 2, 2006.
178. "Coherent Imaging of Biological Samples", Workshop on Coherent X-ray Imaging in Biology, Melbourne, Australia, April 20-21, 2006.
179. "3D Coherent Diffraction Microscopy and Its Applications in Nanoscience and Structural Biology", Symposium on Synchrotron Radiation for the International Chemical Congress of Pacific Basin Societies, Honolulu, Hawaii, Dec. 15-20, 2005.
180. "3D Coherent X-ray Diffraction Microscopy: the Present and the Future", PSI Workshop on Pixel- and Microstrip-Detectors for Synchrotron Radiation, Paul Scherrer Institut, Switzerland, Oct. 18-19, 2005.
181. "3D Coherent X-ray Diffraction Microscopy: the Present and the Future", The 27th International Free Electron Laser Conference, Stanford, California, Aug. 21-26, 2005.
182. "3D Coherent X-ray Diffraction Microscopy: the Present and the Future", The Ministry of Education, Culture, Sports, Science and Technology Committee Meeting, Tokyo, Japan, July 19, 2005.
183. "3D Coherent Diffraction Microscopy and Its Applications in Nanoscience", National Nanoscience Initiative workshop on X-rays and Neutrons, Washington D.C. June 16-18, 2005.
184. "3D Coherent Diffraction Microscopy: Present and Future", The 3rd International Symposium of X-ray and Neutron Scattering on Integrated Molecular Systems, Pohang, Republic of Korea, June 27-29, 2005.
185. "3D Microscopy Provides the First Deep View", The 13th International Conference on Solid-State Sensors, Actuators and Microsystems, Seoul, Republic of Korea, June 5-9, 2005.
186. "3D Coherent Diffraction Microscopy and Its Application in Nanoscience", the 2nd US-Japan Workshop on Synchrotron Radiation and Nanoscience, San Diego, California, April 4-6, 2005.
187. "3D Diffraction Microscope Provides a First Deep View", 2005 American Physical Society March Meeting, Los Angeles, California, March 21-25, 2005.
188. "3D Coherent X-ray Diffraction Microscopy: The Present and the Future", International Workshop on New Science with New Detectors", Grenoble, France, Feb. 9-10, 2005.
189. "3D Diffraction Microscopy for Nanoscience and Bio-Imaging", California NanoSystems Institute Advisory Board Meeting, Santa Barbara, California, Jan. 27-28, 2005.
190. "Coherent Diffraction Microscopy and Its Applications", 35th Winter Colloquium on The Physics of Quantum Electronics, Snowbird, Utah, Jan. 2-6, 2005.
191. "Crystallography without Crystals and the Potential of Imaging Single Biomolecules", Stanford Synchrotron Radiation Laboratory, SLAC, April 14, 2005.
192. "Three-Dimensional Diffraction Microscopy and Its Applications", Physics and Astronomy Colloquium, UCLA, Dec. 9, 2004.
193. "Coherent X-ray Imaging and Its Applications", Frontiers in Soft X-ray and Infrared Research, Madison, Wisconsin, Sept. 16-18, 2004.
194. "3D Diffraction Microscopy and Its Application in Structural Biology", the 8th International Conference on Biology and Synchrotron Radiation, Himeji, Japan, Sep. 7-11, 2004.
195. "Three-Dimensional Diffraction Microscopy and Its Applications in Structural Biology", Physics Colloquium, Ohio State University, March 18, 2004.
196. "Towards Atomic Resolution 3D Diffraction Microscopy with Coherent X-rays and Electrons", the 4th International Symposium on Atomic Level Characterizations for New Materials and Devices, Kauai, Hawaii, Oct. 5-10, 2003.
197. "Diffraction Imaging with Coherent X-rays", Workshop on X-ray Science with Coherent Radiation, Berkeley, California, Aug. 22-23, 2003.
198. "Coherent X-ray Imaging", the 2nd PSI Summer School on Structure and Dynamics of Soft Condensed Matter, Zuoz, Switzerland, Aug. 9-16, 2003.

199. “Coherent X-ray imaging with the Oversampling Method”, Gordon Research Conference on X-ray Physics, Rhode Island, July 13-18, 2003.
200. “Crystallography without Crystals and the Potential of Imaging Single Biomolecules”, International Workshop on Non-Crystallographic Phase Retrieval, Queensland, Australia, June 30 – July 2, 2003.
201. “Crystallography without Crystals and Its Applications in Structural Biology”, International Symposium on Diffraction Structural Biology, Tsukuba, Japan, May 28-31, 2003.
202. “Crystallography without Crystals and Its Applications in Nanoscience and Structural Biology”, Physics Colloquium, University of Texas at Austin, Jan. 18, 2003.
203. “X-ray Crystallography without Crystals and the Potential of Imaging Single Biomolecules”, SLAC Scientific Policy Committee Meeting, Stanford, California, Dec. 6-7, 2002.
204. “Crystallography without Crystals and the Potential of Imaging Single Biomolecules”, Materials Science and Engineering Colloquium, Stanford University, Nov. 20, 2002.
205. “Single Particle X-ray Diffraction: the Present and Future”, Workshop on X-ray Imaging and Spectro-Microscopy, Stanford, California, Oct. 8-9, 2002.
206. “Single Particle Diffraction with Coherent X-rays”, Workshop on Exploiting the Coherence of X-rays, Motzen, Germany, Sept. 23-24, 2002.
207. “High Resolution Diffraction Microscopy with Coherent X-rays and Electrons”, 15th International Congress on Electron Microscopy, Durban, South Africa, Sep. 1-6, 2002.
208. “High Resolution 3D X-ray Diffraction Microscopy and Its Potential of Imaging Single Biomolecules”, XIX Congress and General Assembly of the International Union of Crystallography, Geneva, Switzerland, Aug. 8-15, 2002.
209. “High Resolution 3D X-ray Diffraction Microscopy and Its Potential of Imaging Single Biomolecules”, The 5th SPring-8 International Workshop on 30-m Long Straight Section – on the use of Coherent Soft X-rays from Super-Brilliant Sources, Mikazuki, Japan, May 10 - 12, 2002.
210. “High Resolution 3D X-ray Diffraction Microscopy and Its Potential of Imaging Single Biomolecules”, Photon Factory Symposium, KEK, Japan, March 19-20, 2002
211. “A New Approach to 3D Structures of Biomolecules Utilizing X-FELs”, Workshop on Frontiers in Structural Biology at High-Brightness X-ray Source, Brookhaven National Lab., New York, May 21, 2001.
212. “Extending X-ray Crystallography to Non-Crystalline Specimens by the Oversampling Method”, International Phasing Workshop: New Approaches to the Phase Problem, Berkeley, California, May 17-19, 2001.
213. “On Possible Extensions of X-ray Crystallography through Oversampling and X-FEL Sources”, Workshop on Methods & Instrumentation for X-FEL, DESY, Germany, June 26-27, 2000.
214. “Extending X-ray Crystallography by Using the Linac Coherent Light Source”, LCLS Scientific Advisory Committee Meeting, SLAC, Stanford, March 30-31, 2000.
215. “Solving the Phase Problem by Using the Oversampling Technique”, CCP4 2000 Study Weekend, York University, England, Jan. 7-8, 2000.
216. “Extending the Methodology of X-Ray Crystallography to Non-Crystalline Specimens”, the 11th U.S. National Synchrotron Radiation Instrumentation Conference, Stanford, California, Oct. 13-15, 1999.
217. “An Extension of the Methodology of X-Ray Crystallography to Allow X-Ray Microscopy without X-Ray Optics”, the 6th International Conference on X-Ray Microscopy, Berkeley, California, Aug. 1-6, 1999.

Seminars before 2004:

Stanford University; MIT; University of Chicago; University of Illinois at Urbana-Champaign; UCLA; UCSD; SUNY at Stony Brook; SUNY at Buffalo; Michigan State University; University of Minnesota Twin Cities; University of California, Davis; University of Cincinnati; University of Florida; University of Wisconsin - Milwaukee; University of Central Florida; McGill University; University of Zurich; University of Melbourne; Waseda University; Tohoku University; SLAC National Accelerator Laboratory; Cornell High Energy Synchrotron Source; Lawrence Berkeley National Laboratory; Argonne National Laboratory;

Brookhaven National Laboratory; Lawrence Livermore National Laboratory; Hauptman-Woodward Institute; SPring-8/RIKEN; European Synchrotron Radiation Facility; HASYLAB, DESY; Beijing Synchrotron Radiation Facility, Chinese Academy of Sciences; Shanghai Institute of Applied Physics, Chinese Academy of Sciences; Institute of Physics, Academia Sinica.