

Biographical Sketch

Margaret Mary Murnane

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Education

Ph.D. in Physics, University of California at Berkeley (1989)
M.Sc. in Physics, University College Cork, Ireland (1983)
B.Sc. Honors in Physics, University College Cork, Ireland (1981)

Professional Experience

Professor of Physics and ECE, University of Colorado, Boulder, CO (August 1999 - present)
Associate Professor, EECS and Physics, University of Michigan, Ann Arbor, MI (1996 - 1999)
Associate Professor of Physics, Washington State University, Pullman, WA (1995)
Assistant Professor of Physics, Washington State University, Pullman, WA (1990 - 1995)
Postdoctoral Fellow, University of California at Berkeley (1989 - 1990)
Research Assistant, University of California at Berkeley, Ph.D. Research (1984-1989)

Honors

2008 Distinguished Professor, University of Colorado
2007 Fellow of the Association for Women in Science
2006 Fellow of the American Academy of Arts and Sciences
2005 Distinguished Alumnus Award, University College Cork (Ireland)
2004 Member, National Academy of Sciences (USA)
2003 Fellow of the American Association for the Advancement of Science
2003 Richtmyer Memorial Lecturer of the American Association of Physics Teachers
2001 Fellow of the American Physical Society
2001 Loeb Lecturer, Harvard University
2000 John D. and Catherine T. MacArthur Fellow
1998 Fellow of the Optical Society of America
1997 Maria Goeppert-Mayer Award of the American Physical Society
1993 Presidential Faculty Fellowship of the National Science Foundation
1992 Sloan Foundation Fellowship
1991 Presidential Young Investigator Award of the National Science Foundation
1990 Simon Ramo Award of the American Physical Society
1989 University of California President's Postdoctoral Fellowship
1984 Regents Fellowship, University of California at Berkeley
1983 University Fellowship, University of California at Berkeley
1983 Pfizer Postgraduate Scholarship, Pfizer Chemical, Ireland
College Scholarship, University College Cork, Ireland (1977-81)

Professional Affiliations

American Physical Society (APS); Optical Society of America (OSA); Institute of Electrical and Electronic Engineers (IEEE); American Association for the Advancement of Science (AAAS); National Academy of Sciences (US); Association for Women in Science (AWIS)

Professional Activities

Reviewer for the NSF, NRC, OSA, IEEE, APS, Science, Nature.
President and Founding member, AWIS Palouse, 1993 -1995.
Program Subcommittee Chair of Physics of Laser Sources, APS DLS Meeting, Portland, OR 1995.
Program Subcommittee Chair of Ultrafast Phenomena, IQEC Meeting, Sydney, Australia 1996.
Conference Chair: OSA Conference on Short Wavelength Sources (Santa Fe, NM, March 1997).

Margaret M. Murnane

Member, R.W. Wood Prize Committee of the Optical Society of America (1995 and 1997).
Member, Schawlow Prize Committee of the American Physical Society (1996 and 1997).
Member, Max Born Prize Committee of the Optical Society of America (1999).
Topical Editor for Optics Letters in Ultrafast Phenomena (Optical Society of America) ('96 – '04)
Editorial Board of Review of Scientific Instruments (American Institute of Physics) (1995-1998)
Optical Society of America Representative on the Joint Council on Quantum Electronics ('97-'99)
Faculty Advisor, Society of Women Engineers (SWE), University of Michigan (1996-1998)
Faculty Advisor, OSA Student Chapter, CU Boulder (2000 – 2001)
Member, APS Site Visit Team to Improve the Climate for Women in Physics ('96 – '03)
Chair, National Research Council Committee on Atomic, Molecular & Optical Science ('99-'02)
Conference co-Chair, Gordon Conference on Nonlinear Optics (1999 and 2001)
Centennial Speaker, American Physical Society (1998-1999)
Executive Committee Member, American Physical Society Division of Laser Science (1997-1999)
Conference Chair, APS Division of Laser Science Annual Meeting (1999)
Conference Co-Chair, OSA International Conference on Ultrafast Phenomena (2000 and 2002)
Board of Directors of the Optical Society of America (2000 - 2002)
Executive Committee Member, APS Division of AMO Physics (2001-2003)
NRC Committee Member for Report on "Atoms, Molecules, and Light" (2000-2002)
Council Member, American Physical Society (2000-2003)
Committee on Committees Member, American Physical Society (2002)
Member, Review of Accelerator & Fusion Division, Lawrence Berkeley Labs (2002)
Member, American Physical Society Committee on the Status of Women in Physics (2001-2002)
Chair, American Physical Society Committee on the Status of Women in Physics (2003-2004)
Coordinator, American Physical Society Committee on the Status of Women in Physics Site Visit Program to Improve the Climate for Women in Physics (2004-2005)
Executive Board Member, American Physical Society (2002-2003)
Member of the ITAMP External Review Committee (2002 – 2003)
Member of External Review Committee, Trinity College Dublin, Physics Dept. (2003)
Vice-Chair and Chair, Will Allis Prize, American Physical Society (2005-2007)
Associate Chair for Graduate Studies, Physics, CU Boulder (2002 – 2004)
Member, DOE-Basic Energy Sciences Council on Chemical Sciences (2004-2007)
Member at Large, Section on Physics of the AAAS (2003-)
Scientific Advisory Committee, LCLS, Stanford University (2004 -)
Chair, Lillienfeld Prize Committee of the American Physical Society (2005)
Member, NRC Decadal Report on AMO Physics (2005-2006)
Board of Directors, Tyndall National Institute, Cork Ireland (2004 -)
Board of Directors, Kavli Institute for Theoretical Physics, UC Santa Barbara (2007 -)
Vice-Chair and Chair, Nominating Committee, American Physical Society (2006-2007)
Member, American Physical Society Development Advisory Committee (2007 -)
Member, Advisory Committee for Education and Centers, NSF Division of Engineering (2006 -)
Member NAS Class Membership Committee (2006 and 2007)
Member, NSF Division of Engineering External Advisory Committee (2006 - 2010)
Chair, NSF Directorate for Engineering External Advisory Committee (2008 - 2009)
Member, Scientific Advisory Committee, PULSE Center, Stanford (2008 -)
Member, Reforming Graduate Education Committee, APS (2008)
Company member and President, Kapteyn-Murnane Labs. Inc. (www.kmlabs.com)

Funding

Past and current funding at various times from NSF Engineering, NSF Physics, NSF Materials, NSF Chemistry, DOE, ACS Petroleum Research Fund, NIST, DARPA, AFOSR, Sloan Foundation, MacArthur Foundation.

Margaret M. Murnane

PUBLICATION SUMMARY (*Updated June 15 2008*)

>140 publications in peer reviewed journals

> 6100 citations (average number of cites per journal article: 39)

> 100 additional publications in conference proceedings and books (many invited)

Hirsch index of 42 (42 publications with > 42 citations)

TALKS SUMMARY

185 Invited, Plenary and Keynote talks from group

594 total talks presented by group

> 75 Colloquia presented by Murnane

Peer Reviewed and Invited Publications

1. M. W. D. Mansfield and M. M. Murnane, "The Autoionising Spectra of Cadmium," *J. Phys. B: At. Mol. Phys.* **18** (1985).
2. H. C. Kapteyn, M. M. Murnane, and R. W. Falcone, "Time-resolved measurements of short-wavelength fluorescence from x-ray excited ions," *Optics Letters* **12**, 663 (1987).
3. R. M. More, Z. Zinamon, K. H. Warren, R. Falcone, and M. Murnane, "Heating of Solids with Ultra-Short Laser Pulses," *J. de Physique C7*, 43 (1988).
4. M. M. Murnane and R. W. Falcone, "High Power Femtosecond Dye Laser System," *J. Opt. Soc. Am. B* **5**, 1573 (1988).
5. M. M. Murnane, H. C. Kapteyn, and R. W. Falcone, "Sub-Picosecond Laser Produced Plasmas," *Nucl. Instr. and Meth. B* **43**, 463 (1989).
6. M. M. Murnane, H. C. Kapteyn, and R. W. Falcone, "High-Density Plasmas Produced by Ultrafast Laser Pulses," *Physical Review Letters* **62**, 155 (1989).
7. M. M. Murnane, H. C. Kapteyn, and R. W. Falcone, "Generation and Application of Ultrafast X-ray Sources," *IEEE J. Quantum Electron.* **25**, 2417 (1989).
8. M. M. Murnane, H. C. Kapteyn, and R. W. Falcone, "X-ray Streak Camera with 2 Picosecond Response," *Appl. Phys. Lett.* **56**, 1948 (1990).
9. M. M. Murnane, H. C. Kapteyn, M. D. Rosen, and R. W. Falcone, "Ultrafast X-ray Pulses from Laser-Produced Plasmas," *Science* **251**, 531 (1991). (invited paper)
10. H. C. Kapteyn, M. M. Murnane, A. Szoke, and R. W. Falcone, "Pre-Pulse Energy Suppression for High-Energy Ultrashort Pulses using Self-Induced Plasma Shuttering," *Opt. Lett.* **16**, 490 (1991).
11. H.C. Kapteyn, M.M. Murnane, "Relativistic Pulse Compression," *J. Opt. Soc. Am. B* **8**, 1657 (1991).
12. M. M. Murnane, H. C. Kapteyn, and R. W. Falcone, "Generation of Efficient Ultrafast Laser-Plasma X-Ray Sources," *Phys. Fluids B* **3**, 2409 (1991).
13. C. P. Huang, H. C. Kapteyn, J. McIntosh, and M. M. Murnane, "Generation of transform-limited 32 femtosecond pulses from a self-modelocked Ti:sapphire laser," *Opt. Lett.* **17**, 139 (1992).
14. C. P. Huang, M. Asaki, S. Backus, H. Nathel, M. M. Murnane, and H. C. Kapteyn, "17 femtosecond pulses from a modelocked Ti:sapphire laser," *Optics Letters* **17**, 1289 (1992).
15. S. Backus, H. C. Kapteyn, M. M. Murnane, D. Gold, H. Nathel, and W. White, "Self-Induced Plasma Shuttering using a Regenerating Fluid Target," *Optics Letters* **18**, 134 (1993).
16. M. Murnane, H. Kapteyn, E. Glytsis, J. Bokor, S. Gordon, and R. W. Falcone, "Efficient Coupling of High-Intensity Sub-Picosecond Laser Pulses into Solid Targets," *Appl. Phys. Lett.* **62**, 1068 (1993).

Margaret M. Murnane

17. M. Asaki, C. P. Huang, D. Garvey, J. Zhou, H. C. Kapteyn, and M. M. Murnane, "Generation of 11 femtosecond pulses from a modelocked Ti:sapphire laser," *Optics Letters* **18**, 977 (1993).
18. M.M. Murnane, H.C. Kapteyn, S.P. Gordon and R.W. Falcone, "Ultrashort X-Ray Pulses", *Applied Physics* **B58**, 261 (1994). (invited paper)
19. Jianping Zhou, Chung-Po Huang, Chengyu Shi, Margaret M. Murnane, and Henry C. Kapteyn, "Generation of 20fs, millijoule-energy pulses using Ti:sapphire," *Optics Letters* **19**, 126 (1994).
20. S. Backus, M.T. Asaki, C. Shi, H. C. Kapteyn, and M. M. Murnane, "Intracavity frequency doubling in a Ti:sapphire laser: generation of 14 femtosecond pulses at 416 nm," *Optics Letters* **19**, 399 (1994).
21. Henry C. Kapteyn, Margaret M. Murnane, "Femtosecond Lasers: The Next Generation", *Optics and Photonics News* **5**, 20 (1994). (**invited paper**)
22. Jianping Zhou, Greg Taft, Margaret M. Murnane, and Henry C. Kapteyn, "Pulse evolution in a broadband Ti:sapphire laser," *Optics Letters* **19**, 1149 (1994).
23. Ivan Christov, Margaret M. Murnane, Henry C. Kapteyn, Jianping Zhou, Chung-Po Huang, "Fourth-order dispersion limited solitary pulses", *Optics Letters* **19**, 1465 (1994).
24. Ivan Christov, Henry C. Kapteyn, Margaret M. Murnane, Chung-Po Huang, Jianping Zhou, "Space-Time Focusing of Femtosecond Pulses in Ti:sapphire", *Optics Letters* **20**, 309 (1995).
25. Jianping Zhou, Chung-Po Huang, Margaret M. Murnane, and Henry C. Kapteyn, "Amplification of 26 fs, 2 TW pulses near the gain narrowing limit in Ti:sapphire," *Optics Letters* **20**, 64 (1995).
26. Greg Taft, Andrew Rundquist, Margaret M. Murnane, Henry C. Kapteyn, Ken DeLong, Rick Trebino, Ivan Christov, "Ultrafast optical waveform measurements using Frequency Resolved Optical Gating," *Optics Letters* **20**, 743 (1995).
27. S. Backus, J. Peatross, M.M. Murnane, H.C. Kapteyn, "Ti:sapphire Amplifier Producing Millijoule-Level, 21 fs Pulses at 1 kHz", *Optics Letters* **20**, 2000 (1995).
28. "Ultrashort Light Pulses: Pushing the Limits", M.M. Murnane, H.C. Kapteyn, *IEEE LEOS Monthly Newsletter*, August 1995. (**invited paper**)
29. Ivan Christov, Vency Stoev, Margaret Murnane, Henry Kapteyn, "Modelocking with a Compensated Space-Time Astigmatism", *Optics Letters* **20**, 2111 (1995).
30. "Enhanced High-Harmonic Generation using 26 Femtosecond Laser Pulses", J. Zhou, J. Peatross, M.M. Murnane, H.C. Kapteyn, *Physical Review Letters* **76**, 752 (1996).
31. K. Read, F. Blonigen, N. Riccelli, M. Murnane, H. Kapteyn, "Low-threshold operation of an ultrashort-pulse modelocked Ti:sapphire laser", *Optics Letters* **21**, 489 (1996).
32. S. Backus, J. Peatross, M.M. Murnane, H.C. Kapteyn, "16 fs ultraviolet pulse generation in air: 1 μ J pulses at 257nm at 1 kHz", *Optics Letters* **21**, 665 (1996).
33. D. Yankelevich, A. Knoesen, G. Taft, M. Murnane, H. Kapteyn, R. Twieg, "Molecular Engineering of Polymer Films for Amplitude and Phase Measurements of Ti:sapphire FS Pulses", *Opt. Lett.* **21**, 1487 (1996).
34. I.P. Christov, J. Zhou, J. Peatross, A. Rundquist, M.M. Murnane, H.C. Kapteyn, "Non-Adiabatic Effects in High-Harmonic Generation with Ultrashort Pulses", *Physical Review Letters* **77**, 1743 (1996).
35. Z. Chang, A. Rundquist, J. Zhou, M. Murnane, H. Kapteyn, X. Liu, B. Shan, J. Niu, M. Gong, X. Zhang, "Demonstration of a Sub-Picosecond X-Ray Streak Camera", *Applied Physics Letters* **69**, 133 (1996).
36. Ivan Christov, Vency Stoev, Margaret Murnane, Henry Kapteyn, "Sub-10fs operation of Kerr-lens modelocked lasers", *Optics Letters* **21**, 1493 (1996).
37. G. Taft, A Rundquist, M.M. Murnane, H.C. Kapteyn, K.W. DeLong, D.N. Fittinghoff, R. Trebino, "Measurement of Sub-Ten-Femtosecond Laser Pulses" **invited paper**, *IEEE Journal of Selected Topics in Quantum Electronics* **2**, 575 (1996).

Margaret M. Murnane

38. I.P. Christov, M.M. Murnane, H.C. Kapteyn, "Attosecond Pulse Generation in the Single Cycle Regime", *Physical Review Letters* **78**, 1251 (1997).
39. J. Larsson, E. Judd, P. Schuck, R.W. Falcone, P. Heimann, H. Padmore, Z. Chang, H. Kapteyn, M. Murnane, R. Lee, A. Machacek, J. Wark, "Ultra-fast time-resolved x-ray diffraction detected by an averaging mode streak camera," *Optics Letters* **22**, 1012 (1997).
40. S. Backus, C. Durfee, G. Mourou, H.C. Kapteyn, M.M. Murnane, "0.2 Terawatt laser system at 1 kHz", *Optics Letters* **22**, 1256 (1997).
41. Z. Chang, A. Rundquist, H. Wang, H. Kapteyn, M. Murnane, "Generation of coherent x-rays at 2.7nm using high harmonic generation", *Physical Review Letters* **79**, 2967 (1997).
42. A. Rundquist, C. Durfee, Z. Chang, G. Taft, E. Zeek, S. Backus, M. Murnane, H. Kapteyn, I. Christov, V. Stoev, "Ultrafast Laser and Amplifier Sources" **invited paper**, **65**, 161, *Applied Physics B* (1997).
43. C. Durfee, S. Backus, M. Murnane H. Kapteyn, "Ultrabroadband phase-matched optical parametric generation in the uv using guided waves", *Optics Letters* **22**, 1565 (1997).
44. J. Peatross, S. Backus, J. Zhou, M. Murnane, H. Kapteyn, "Spectral-Spatial Measurements of Fundamental and Third Harmonic Light of Intense 25fs Laser Pulses focused in a gas cell" to be published in *J. Opt. Soc. Am. B* (1997).
45. I.P. Christov, M.M. Murnane, H.C. Kapteyn, "Dispersion-controlled hollow core fiber for phase matched harmonic generation", *Optics Express* **3**, 360 (1998).
46. I.P. Christov, M.M. Murnane, H.C. Kapteyn, "Generation of Single-Cycle Attosecond Pulses in the Vacuum Ultraviolet", *Optics Communications* **148**, 75 (1998).
47. I.P. Christov, M.M. Murnane, H.C. Kapteyn, "Generation and Propagation of Attosecond X-Pulses in Gaseous Media", *Physical Review A Rapid Communications* **57**, R2285 (1998).
48. C. G. Durfee III, S. Backus, M. M. Murnane, H. C. Kapteyn, "Design and Implementation of High Average Power, TW-class, Laser Systems", *IEEE Journal of Selected Topics in Quantum Electronics* **4**, 395 (1998).
49. Z. Chang, A. Rundquist, H. Wang, I. Christov, M. Murnane, H. Kapteyn, "Generation of Coherent, Femtosecond, X-Ray Pulses in the "Water Window"", *IEEE Journal of Selected Topics in Quantum Electronics* **4**, 266 (1998).
50. Z. Chang, A. Rundquist, H. Wang, H. Kapteyn and M. Murnane, "Temporal Phase Control of Soft-X-Ray Harmonic Emission", *Physical Review A Rapid Communications* **58**, R30 (1998).
51. I.P. Christov, V.D. Stoev, M.M. Murnane, and H.C. Kapteyn, "Absorber-assisted Kerr-lens mode locking," *JOSA B* **15**, p. 2631-2633 (1998).
52. A. Rundquist, C. Durfee, Z. Chang, C. Herne, H. Kapteyn and M. Murnane, "Phase Matching of Soft-X-Ray Harmonic Emission in Hollow-Core Fibers", *Science* **280**, 1412 (May 29, 1998).
53. C.G. Durfee, A. Rundquist, S. Backus, Z. Chang, C. Herne, H.C. Kapteyn, and M.M. Murnane, "Guided-wave phase-matching of ultrashort-pulse light," *J Nonlinear Opt. Phys.* **8**, p. 211-214 (1999).
54. S. Backus, C. Durfee, M.M. Murnane, H.C. Kapteyn, "High Power Ultrafast Lasers" **invited review article**, *Review of Scientific Instruments* **69**, 1207 (1998).
55. Henry Kapteyn and Margaret Murnane, "Ultrafast Optics: Life in the Fast Lane", **invited paper**, *Physics World* **12**, 31 (1999).
56. E. Zeek, K. Maginnis, S. Backus, U. Russek, M. Murnane, G. Mourou, H. Kapteyn, and G. Vdovin, "Pulse compression by use of deformable mirrors," *Optics Letters* **24**, p. 493-5 (1999).
57. C.G. Durfee, S. Backus, H. Kapteyn, and M. Murnane, "Intense 8-fs pulse generation in the deep ultraviolet," *Optics Letters* **24**, p. 697-699(1999).
58. A.C. Tien, S. Backus, H. Kapteyn, M. Murnane, and G. Mourou, "Short-pulse laser damage in transparent materials as a function of pulse duration," *Phys. Rev. Lett.* **82**, p.3883-6 (1999).

Margaret M. Murnane

59. C. Durfee, A. Rundquist, S. Backus, C. Herne, M. Murnane, and H. C. Kapteyn, "Phase Matching of High-Order Harmonics in Hollow Waveguides", *Physical Review Letters* **83**, 2187 (1999).
60. S. Lejnine G. Durfee, M. Murnane, H.C. Kapteyn, V.L. Makarov, J.P. Langmore, "Crosslinking of proteins to DNA in human nuclei using a 60 femtosecond 266 nm laser," *Nucleic Acids Research* **27**, 3676-3684 (1999).
61. "Generation of 10W average-power, 40TW peak power, 24fs pulses from a Ti:sapphire amplifier system", H. Wang, S. Backus, Z. Chang, R. Wagner, K. Kim, X. Wang, D. Umstadter, M. Murnane and H. Kapteyn, *JOSA B* **16**, 1790 (1999).
62. P E. Zeek, R. Bartels, M. M. Murnane, H. C. Kapteyn, and S. Backus, "Adaptive pulse compression for transform-limited 15fs high-energy pulse generation," *Opt. Lett.* **25**, 587 (2000).
63. I.P. Christov, H.C. Kapteyn, M.M. Murnane, "Quasi-phase matching of high harmonics and attosecond pulses in modulated waveguides", *Opt. Express* **7**, 362 (2000).
64. R. Bartels, S. Backus, E. Zeek, L. Misoguti, G. Vdovin, I. P. Christov, M. M. Murnane, H. C. Kapteyn, "Shaped-pulse optimisation of coherent soft-x-rays," *Nature* **406**, 164-166, 2000.
65. N. Anderson. C. Durfee, M. Murnane, H. Kapteyn and R. Sension, "The internal conversions of trans- and cis-1,3,5-hexatriene in cyclohexane solution studied with sub-50fs UV pulses," *Chemical Physics Letters*, **323**, pp. 365-371 (2000).
66. R. Bartels, S. Backus, I. P. Christov, M. M. Murnane, H. C. Kapteyn, "Attosecond timescale feedback control of coherent x-ray generation", *Chemical Physics* **267**, 277 (2001).
67. L. Ma, R. Shelton, M. Murnane, H. Kapteyn, J. Ye, "Sub-10-femtosecond active synchronization between two passively mode-locked Ti:Sapphire oscillators", *Physical Review A Rapid Communications* art. no. 021802, vol. **6402**, pp. 1802 (2001).
68. S. Backus, R. Bartels, S. Thompson, R. Dollinger, H. C. Kapteyn, M. M. Murnane, "High efficiency, single-stage, 7 kHz high average power ultrafast laser system", *Optics Letters* **26**, 465 (2001).
69. D. Reiss, M. DeCamp, P. Bucksbaum, R. Clarke, M. Hertlein, R. Merlin, E. Dufresne, E. Williams, R. Falcone, H. Kapteyn, M. Murnane, J. Larsson, J. Wark, "Picosecond Ultrasound Pulses Probed by Time and Frequency-Resolved X-Ray Diffraction", *Physical Review Letters* **86**, 3072 (2001).
70. K. Read, H.S. Karlsson, M.M. Murnane, H.C. Kapteyn, and R. Haight, "Excitation dynamics of dye doped tris(8-hydroxy quinoline) aluminum films studied using time-resolved photoelectron spectroscopy," *Journal of Applied Physics* **89**, 294 (2001).
71. L. Misoguti, S. Backus, C. Durfee, R. Bartels, M. Murnane and H. Kapteyn, "Generation of broadband VUV light using third-order cascaded processes", *Physical Review Letters* **87**, 13601 (July 2, 2001).
72. I.P. Christov, M. M. Murnane and H.C. Kapteyn, "Attosecond time-scale intra-atomic phase matching of high harmonic generation", *Physical Review Letters* **86**, No. 24, 5458 (2001).
73. M. Bauer, C. Lei, K. Read, R. Tobey, J. Gland, M. M. Murnane and H.C. Kapteyn, "Direct observation of surface chemistry using ultrafast soft-x-ray pulses", *Physical Review Letters* **87**, 25501 (2001).
74. T. Weinacht, R. Bartels, S. Backus, P. H. Bucksbaum, B. Pearson, JM Geremia, H. Rabitz, M. M. Murnane and H.C. Kapteyn, "Coherent "learning" control of vibrational motion in room-temperature molecular gases", *Chem. Phys. Lett.* **344**, 333 (2001).
75. Robert K. Shelton, Long-Sheng Ma, Henry C. Kapteyn, Margaret M. Murnane, John L. Hall, and Jun Ye, "Coherent optical pulse synthesis from separate femtosecond lasers", *Science* **293**, 1286 (2001).
76. R.A. Bartels, T.C. Weinacht, S. R. Leone, H.C. Kapteyn, and M.M. Murnane, "Non-resonant Control of Multimode Molecular Wavepackets at Room Temperature", *Physical Review Letters* **88**, 033001 (2002).
77. C. Durfee, L. Misoguti, S. Backus, R. Bartels, M. Murnane and H. Kapteyn, "Phase Matching in Cascaded Third-Order Processes, *JOSA B* **19** (4): 822-831 (2002).
78. R. A. Bartels, T. C. Weinacht, N. Wagner, M. Baertschy, Chris H. Greene, M. M. Murnane, and H.C. Kapteyn, "Phase Modulation of Ultrashort Light Pulses using Molecular Rotational Wavepackets", *Physical Review Letters* **88**, 019303 (2002).

Margaret M. Murnane

79. S. Christensen, H.C. Kapteyn, M.M. Murnane, and S. Backus, "Simple, high power, compact, intracavity frequency-doubled Q-switched Nd:YAG laser," *Review of Scientific Instruments*, **73** (5): 1994-1997 (2002).
80. Robert K. Shelton, Seth Foreman, John L. Hall, Henry C. Kapteyn, Margaret M. Murnane, Mark Notcutt, Jun Ye, "Sub-femtosecond timing jitter between two independent mode-locked lasers", *Optics Letters* **27**, 312 (2002).
81. J. Ye, S. T. Cundiff, S. Foreman, T. M. Fortier, J. L. Hall, K. W. Holman, J. Jost, H. C. Kapteyn, K. A. H. v. Leeuwen, L.-S. Ma, M. M. Murnane, J.-L. Peng, and R. K. Shelton, "Phase coherent synthesis of optical frequencies and waveforms," *Applied Physics B* **74**, S27-S34 (2002).
82. R. K. Shelton, L.-S. Ma, H. C. Kapteyn, M. M. Murnane, J. L. Hall and J. Ye, "Active synchronization and carrier phase locking of two separate mode-locked femtosecond lasers," *Journal of Modern Optics* **49** (3-4): 401-409 (2002).
83. R. A. Bartels, A. Paul, M. M. Murnane, H. C. Kapteyn, and S. Backus, "Absolute determination of the wavelength and spectrum of an EUV beam using a Young's double slit measurement", *Optics Letters* **27** (9): 707-709 (2002).
84. Randy Bartels, Ariel Paul, Henry Kapteyn, Margaret Murnane, Sterling Backus, Ivan Christov, Yanwei Liu, David Attwood, Chris Jacobsen, "Fully spatially coherent EUV beams generated using a small-scale laser", *Science* **297**, 376 (2002).
85. C. Lei, M. Bauer, K. Read, R. Tobey, Y. Liu, T. Popmintchev, M. Murnane and H. Kapteyn, "Hot electron driven charge transfer processes on surfaces," *Physics Review B* **66**, 245420 (2002).
86. M. Bauer, C. Lei, R. Tobey, M. M. Murnane, and H. Kapteyn, "Time-resolved UPS: a new experimental technique for the study of surface chemical reactions on femtosecond time-scales," *Surface Science* **532**, pp. 1159-1165, 2003.
87. X. F. Wang, N. Saleh, M. Krishnan, H. W. Wang, S. Backus, M. Murnane, H. Kapteyn, D. Umstadter, Q. D. Wang, and B. F. Shen, "Generation of mega-electron-volt electron beams by an ultrafast intense laser pulse," *Journal of the Optical Society of America B-Optical Physics* **20**, pp. 132-137, 2003.
88. Ariel Paul, Randy Bartels, Ivan Christov, Henry Kapteyn, Margaret Murnane, Sterling Backus, "Multiphoton photonics: quasi phase matching in the EUV", *Nature* **421**, 51 (2003).
89. R.A. Bartels, N.L. Wagner, M.D. Baertschy, J. Wyss, M.M. Murnane, and H.C. Kapteyn, "Phase-matching conditions for nonlinear frequency conversion by use of aligned molecular gases," *Optics Letters* **28**, 346 (2003).
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Margaret M. Murnane

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Margaret M. Murnane

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Margaret M. Murnane

Invited and Keynote Presentations of Kapteyn-Murnane Group

1. **Invited talk**, OSA Meeting on Short Wavelength Coherent Radiation: Generation and Applications, Cape Cod, MA, September 1988. "X-Ray Emission Studies of Sub-Picosecond Laser Produced Plasmas." (Presented by Margaret Murnane)
2. **Invited talk**, Workshop on Highly Charged Ions, Lawrence Berkeley Laboratory, Berkeley, CA, March 1989. "Sub-picosecond laser-produced plasmas." (Presented by Margaret Murnane)
3. **Invited talk**, APS Meeting of the Division of Atomic, Molecular, and Optical Physics, Windsor, Ontario, Canada, May 1989. (Presented by Margaret Murnane)
4. **Invited talk**, SPIE 33rd Annual International Symposium on Optical and Optoelectronic Applied Science and Engineering, San Diego, CA, August 1989. "Generation and Measurement of Sub-Picosecond X-Ray Pulses." (Presented by Margaret Murnane)
5. **Invited talk**, APS Meeting of the Division of Plasma Physics, Cincinnati, OH, November 1990. "High-density plasmas - generation of efficient sub-picosecond x-ray sources." (Presented by Margaret Murnane)
6. **Seminar**, Lawrence Livermore National Laboratory, 1990. "Relativistic Pulse Compression." (Presented by Henry Kapteyn)
7. **Invited talk**, Gordon Conference on Nonlinear Optics, Wolfboro, NH, July 1991. "Generation of efficient sub-picosecond x-ray sources." (Presented by Margaret Murnane)
8. **Colloquium**, University of Idaho, 1991. "Short-Wavelength Lasers." (Presented by Henry Kapteyn)
9. **Invited talk**, Oregon Center for Advanced Technology Education, March 1992. "High-Power Lasers and Applications." (Presented by Margaret Murnane)
10. **Invited talk**, American Physical Society March Meeting, Indianapolis, IN (1992). "Intense femtosecond x-ray emission from waveguides and clusters." (Presented by Margaret Murnane)
11. **Invited talk**, SPIE Annual International Symposium on Optical and Optoelectronic Applied Science and Engineering, Los Angeles, CA, January 1993. "Ultrashort-Pulse Solid-State Lasers." (Presented by Margaret Murnane)
12. **Colloquium**, Harvey Mudd College, Claremont, CA (1993). "Ultrashort Light Pulses - Generation and Applications." (Presented by Henry Kapteyn)
13. **Invited talk**, Columbia Chapter of the Optical Society of America, Portland, OR (1993). "Ultrashort Light Pulses - Generation and Applications." (Presented by Henry Kapteyn)
14. **Invited talk**, Workshop on Short Scale-length Plasmas, Ann Arbor, MI, April 1993. "Applications of Ultrashort X-Ray Pulses." (Presented by Margaret Murnane)
15. **Invited talk**, Workshop on Short Scale-length Plasmas, Ann Arbor, MI, April 1993. "Ultrashort-Pulse Plasmas using 20 fs pulses." (Presented by Henry Kapteyn)
16. **Invited talk**, Quantum Electronics and Laser Science Conference (QELS '93, Baltimore, MD (1993) "Advances in femtosecond pulse generation and amplification using solid state lasers." (Presented by Henry Kapteyn)
17. **Invited talk**, OSA Annual Meeting, Toronto, Canada, October 1993. "Generation and Amplification of Ultrashort Light Pulses." (Presented by Margaret Murnane)
18. **Invited talk**, IEEE Lasers and Electro-Optics Society Annual Meeting, San Jose, CA, November 1993. (Presented by Jianping Zhou) "Ultrashort-Pulse Generation and Amplification in Ti:sapphire."
19. Contributed talk, IEEE Lasers and Electro-Optics Conference, San Jose, CA (1993). (Presented by M.T. Asaki) "Frequency doubling of ultrashort pulses in a Ti:sapphire laser."

Margaret M. Murnane

20. **Invited talk**, SPIE Annual International Symposium on Optical and Optoelectronic Applied Science and Engineering, Los Angeles, CA, January 1994. (Presented by Chung-Po Huang) "Ultrashort-Pulse Amplification in Ti:sapphire."
21. **Invited talk**, International Conference Generation and Application of Ultrashort X-Ray Pulses, Salamanca, Spain, 1994. "High-Intensity Lasers with 20 fs Pulse Duration." (Presented by Henry Kapteyn)
22. **Invited talk**, International Conference on Lasers and Applications, Cairo, Egypt, 1994. "Ultrashort-Pulse Lasers." (Presented by Margaret Murnane)
23. **Invited talk**, International Conference on Lasers and Applications, Cairo, Egypt, 1994. "High-Intensity Lasers and Physics." (Presented by Henry Kapteyn)
24. **Colloquium**, CEA, Saclay, France (1994). "High-Intensity Lasers with 20 fs Pulse Duration." (Presented by Henry Kapteyn)
25. **Invited talk**, Optical Society of America Conference on High Field Interactions and Short-Wavelength Generation, San Malo, France (1994). "High-Intensity Lasers with 20 fs Pulse Duration." (Presented by Henry Kapteyn)
26. **Invited talk**, Optical Society of America Annual Meeting, Dallas, TX (1994). "Review of Ultrashort Pulse Generation in Solid-State Lasers - Capabilities and Limitations." (Presented by Margaret Murnane)
27. **Invited talk**, SPIE Annual Symposium OE/LASE, San Jose, CA, February 1995. (Presented by Jianping Zhou) "Generation of 26 fs, 2 TW pulses near the gain-narrowing limit in Ti:sapphire."
28. **Invited Tutorial**, APS March Meeting, San Jose, CA, March 1995. "Advances in Femtosecond Lasers." (Presented by Margaret Murnane)
29. **Invited talk**, NSF Forum on Optical Science and Engineering, SPIE Annual Meeting, San Diego, CA, July 1995. "Generation and Applications of High Power Ultrashort Pulses." (Presented by Henry Kapteyn)
30. **Invited Talk**, Canadian Association of Physicists Annual Meeting, Quebec 1995. "Advances in Short-Pulse Femtosecond Laser Technology." (Presented by Henry Kapteyn)
31. **Invited Talk**, NSF Forum on Optical Science and Engineering, SPIE Annual Meeting, San Diego, CA 1995. "Advances in Femtosecond Laser Technology" (Presented by Margaret Murnane)
32. **Invited Talk**, Canadian National Research Council, Ottawa, Canada 1995. "Recent Advances in Femtosecond Laser Technology." (Presented by Henry Kapteyn)
33. **Plenary Talk**, Australian Optical Society Annual Meeting, Brisbane, Australia, July 1995. "Advances in Femtosecond Lasers." (Presented by Margaret Murnane)
34. **Invited talk**, Gordon Conference on Nonlinear Optics, July 1995. "Dispersive Limits of Ultrashort-Pulse Generation." (Presented by Margaret Murnane)
35. **Invited talk**, Euroconference on Generation and Application of Ultrashort X-Ray Pulses II, Pisa, Italy 1995. "High Intensity Laser-Matter Interactions with sub-30fs Optical Pulses." (Presented by Margaret Murnane)
36. **Invited talk**, NATO Advanced Research Workshop on Super-Intense Laser Atom Physics (SILAP IV) Moscow 1995. "High-Order Harmonic Generation with a 25 Femtosecond Laser Pulse." (Presented by J. Peatross)
37. **Invited talk**, AAPT Summer Meeting, Spokane, WA 1995. "Advances in Femtosecond Lasers: Applications in Research, Teaching and Business." (Presented by H. Kapteyn)
38. **Invited talk**, "High-harmonic generation using 25 fs laser pulses." Gordon Conference on Multiphoton Processes, Tilton, NH 1996. (Presented by Henry Kapteyn)
39. **Invited talk**, "Enhanced high-harmonic generation using 25 fs laser pulses," International Quantum Electronics Conference, IQEC, Sydney Australia 1996. (Presented by Margaret Murnane)

Margaret M. Murnane

40. **Invited talk**, "Generation of 12 fs UV pulses by third-harmonic generation in air." Nonlinear Optics: Materials, Fundamentals, and Applications, Maui, HI, July 1996. (Presented by Margaret Murnane)
41. **Invited talk**, "Ultrafast X-Ray Generation with Sub-30 fs TW Pulses." APS Division of Atomic and Molecular Physics Meeting, DAMOP, Ann Arbor, MI 1996. (Presented by H. Kapteyn)
42. **Invited talk**, "Sub-20 fs Pulse Generation in the Ultraviolet." Conference on Lasers and Electro-optics, CLEO '96, Anaheim, CA May 1996. (Presented by S. Backus)
43. **Invited talk**, "XUV High-harmonic generation using 25 fs laser pulses." Quantum Electronics and Laser Science Conference, QELS '96, Anaheim, CA May 1996. (Presented by Margaret Murnane)
44. **Invited talk**, "Femtosecond X-ray generation using high-harmonic generation of 25 fs pulses." International Laser Science Conference, ILS XI, Rochester, NY 1996. (Presented by A. Rundquist)
45. **Prize talk**, "The Science of Ultrashort Pulse Generation in the Visible and X-Ray Regions." American Physical Society/AAPT Joint Meeting, Washington, DC 1997. (Presented by Margaret Murnane)
46. **Invited talk**, "Generation and Applications of Coherent Soft-X-Rays," European Femtochemistry Conference, Lund, Sweden 1997. (Presented by Margaret Murnane)
47. **Invited talk**, "High-harmonic generation using 25 fs laser pulses." Gordon Conference on Nonlinear Optics, Colby-Sawyer, NH 1997. (Presented by Henry Kapteyn)
48. **Invited Tutorial**, "The Physics of Ultrafast Lasers" Conference on Lasers and Electro-Optics, Baltimore, MD 1997. (Presented by Henry Kapteyn)
49. **Invited talk**, "Femtosecond superhigh, supershort, harmonics," Quantum Electronics and Laser Science Conference, QELS '97, Baltimore, MD, May 1997. (Presented by Margaret Murnane)
50. **Invited talk**, "Attosecond Pulse Generation using High Harmonic Emission," International Conference on Superstrong Fields in Plasmas, Varenna, Italy, August 1997. (Presented by Margaret Murnane)
51. **Invited talk**, C. Durfee et al., "Guided-Wave Phase-Matching in Hollow-Core Fibers", Conference on Ultrafast Optics, Monterey, CA, August 1997. (Presented by Margaret Murnane)
52. **Invited**, M. Murnane et al, "Extreme Nonlinear Optics: Generation of Coherent X-Rays below 2.7nm," XIth International Conference on Ultrafast Phenomena, Garmish-Partenkirchen, Germany, July 1998. (Presented by Margaret Murnane)
53. **Invited**, M. Murnane et al, "Generation of Coherent, Femtosecond Light in the UV and X-Ray Regions", SPIE Photonics West, San Jose, CA, January 1998. (Presented by Margaret Murnane)
54. **Invited**, M. Murnane et al, "Femtosecond Coherent X-Rays below 2.7nm," ICAP '98 (International Conference on Atomic Physics), Windsor, Canada, August 1998. (Presented by Margaret Murnane)
55. **Invited**, M. Murnane et al, "Ultrahigh E-fields and X-Rays", Winter Colloquium on Quantum Electronics, Snowbird, UT, January 1998. (Presented by Margaret Murnane)
56. **Invited**, H. Kapteyn et al, Tutorial on High Power Lasers, OSA Annual Meeting, Baltimore, MD, October 1998.
57. **Invited**, H. Kapteyn et al, "Phase Matching at Short Wavelengths", Conference on X-Ray Lasers, Kyoto, Japan, August 1998.
58. **Invited**, C. Durfee et al, "Measurement of Ultrashort Pulses", OSA Annual Meeting, Baltimore, MD, Oct. 1998.
59. **Invited**, C. Durfee et al, "Phase Matching at Short Wavelengths", Nonlinear Optics, Hawaii, Aug. 1998.
60. **Invited**, M. Murnane et al, "Extreme Nonlinear Optics", DOE Workshop, MD, Oct. 1998 and Jan. 1999.
61. **Invited**, M. Bauer et al, "Ultrafast Soft-X-Ray Sources", SPIE, San Jose, CA, Jan. 1999.
62. **Invited**, H. Kapteyn et al, "Phase Matching at Short Wavelengths", FOM Institute, Amsterdam, Feb. 1999.

Margaret M. Murnane

63. **Invited Centennial Talk**, M. Murnane et al, " New Physics with Femtosecond Lasers", APS Centennial Symposium, Atlanta, GA, March 1999.
64. **Invited**, H. Kapteyn et al, " Extreme Nonlinear Optics", QELS, Baltimore, MD, May. 1999.
65. **Invited**, H. Kapteyn et al, " Phase Matching in the X-Ray Region", SILAP (Super Intense Laser Atom Physics Conference), Baltimore, MD, May 1999.
66. **Invited talk**, H. Kapteyn et al, " Phase-matching at short wavelengths", UILA Euroconference, Crete, May 1999.
67. **Invited talk**, M. Murnane et al, " Extreme Nonlinear Optics", Gordon Conference on Atomic Physics, July 1999.
68. **Plenary Speaker**, M. Murnane et al, " Extreme Nonlinear Optics", OSA Conference on Generation and Application of Short Wavelength Sources, Potsdam, Germany, July 1999.
69. **Invited talk**, M. Murnane et al, "Ultrafast Coherent Soft-X-Ray Sources", International Conference on X-Ray Processes, Chicago, IL August 1999.
70. **Invited talk**, H. Kapteyn et al, "Ultrafast Coherent Soft-X-Ray Sources", International Conference on X-Ray Microscopy, Berkeley, CA August 1999.
71. **Invited talk**, M. Murnane et al, " Phase-matching at short wavelengths", International Conference on Ultrafast Spectroscopy, Taipei, Taiwan, October 1999.
72. **Plenary Speaker**, M. Murnane et al, " Extreme Nonlinear Optics", Israeli Optical Society, Tel Aviv, Israel, Nov 1999.
73. **Invited talk**, LEOS Annual Meeting, San Jose, CA, Nov. 1999. (Presented by Margaret Murnane)
74. **Invited talk**, APS Topical Conference on Atomic Processes in Plasmas, Reno, NM, March 2000. (Presented by Margaret Murnane)
75. **Invited talk**, Conference on Atoms, Molecules and Quantum Dots in Laser Fields, Pisa, June 2000. (Presented by Randy Bartels)
76. **Invited talk**, Advanced Accelerator Concepts Workshop, Santa Fe, NM, June 2000. (Presented by Margaret Murnane)
77. **Invited talk**, "Coherent control of x-ray generation", OSA Conference on Nonlinear Optics, Hawaii, July 2000. (Presented by Randy Bartels)
78. **Invited talk**, "Femtosecond pump-probe experiment using soft X-rays to study dynamics at surfaces", Colloquium at the University Kaiserslautern (Germany), July 2000 (presented by Michael Bauer).
79. **Invited talk**, "Time-resolved valence level photoemission spectroscopy: studying surface reactions with sub-picosecond time- resolution", Lasers in surface science conference, Trieste (Italy), September 2000. (presented by Michael Bauer).
80. **Invited talk**, "Femtosecond pump-probe experiment using soft X-rays to study dynamics at surfaces", Colloquium at the University of Essen (Germany), October 2000 (presented by Michael Bauer).
81. **Invited talk**, "Quantum Control in High Field Science", Winter Quantum Electronics Conference, Snowbird, UT, January 2001. (Presented by Henry Kapteyn)
82. **Invited talk**, "Direct observation of surface chemistry using ultrafast x-ray pulses", Winter Quantum Electronics Conference, Snowbird, UT, January 2001. (Presented by Margaret Murnane)
83. **Invited talk**, "Optics – where does it belong?", AAPT Meeting, San Diego, CA, January 2001. (Presented by Margaret Murnane)
84. **Invited talk**, "Feedback Optimization of Coherent X-Ray Generation using Shaped X-Ray Pulses", March Meeting of the American Physical Society, Seattle, WA, March 2001. (Presented by Margaret Murnane)

Margaret M. Murnane

85. **Invited talk**, "Coherent Control Techniques for Chemistry and High Field Science", March Meeting of the American Physical Society, Seattle, WA, March 2001. (Presented by Henry Kapteyn)
86. **Invited talk**, "Generation of coherent, ultrafast, EUV pulses", VUV 2001, Trieste, July 2001. (Presented by Margaret Murnane)
87. **Invited talk**, "Coherent learning control of vibrational motion in room temperature molecular gases", OSA Annual Meeting, Long Beach, CA, October 2001. (Presented by Tom Weinacht)
88. **Invited talk**, "Shaped-pulse optimization of soft-x-rays", Conference on Ultrafast Optics, Canada, July 2001. (Presented by Randy Bartels)
89. **Invited talk**, "Shaped-pulse optimization of soft-x-rays", Conference on Superstrong Fields and Plasmas, Varenna, Italy 2001. (Presented by Randy Bartels)
90. **Invited talk**, "Observation of ultrafast charge transfer processes on surfaces," Workshop on the generation and uses of VUV and XUV coherent pulses, Lund, Sweden (July 2001). (Presented by Timothy Lei)
91. **Invited talk**, "Coherent Control of Extreme Nonlinear Systems", ACMS Workshop, Cork, Ireland, September 2001. (Presented by Margaret Murnane)
92. **Invited talk**, Kapteyn, ACMS
93. **Invited talk**, International Workshop on Optimum Control of Quantum Dynamics: Theory and Experiment, Tegernsee, Germany, Dec. 2001. (Presented by Margaret Murnane)
94. **Invited talk**, "Coherent Control of Rotations and Vibrations in Molecules", International Workshop on Coherent Control and Cold Molecules, Gif-sur-Yvette, France, October 2001. (Presented by Tom Weinacht).
95. **Plenary talk**, "Coherent control techniques in quantum systems", Winter Quantum Electronics Conference, Snowbird, UT, January 2002. (Presented by Margaret Murnane)
96. **Science Innovation Topical Lecture**, "Can we make atoms sing and molecules dance? Using fast light pulses to observe and control nature", AAAS Annual Meeting, Boston, MA (2002). (Presented by Margaret Murnane)
97. **Invited speaker**, Launch event of new Graduate Research Fellowships for Science Foundation Ireland (April 2002) (Presented by Margaret Murnane)
98. **Invited tutorial**, American Physical Society Division of Atomic, Molecular, and Optical Physics, Williamsburg, VA, May 2002. (Presented by Margaret Murnane)
99. **Invited talk**, APS DAMOP Meeting, Williamsburg, VA, May 2002. (Presented by Henry Kapteyn)
100. **Invited talk**, Gordon Conference on Nonlinear Optics, New Hampshire, July 2002. (Presented by Margaret Murnane)
101. **Invited talk**, OSA Conference on Nonlinear Optics, Hawaii, July 2002. (Presented by Henry Kapteyn)
102. **Invited talk**, "Nonlinear Optics for Coherent EUV Generation", International Workshop on Photoionization, IWP2002, SPring-8, Japan, August 2002. (Presented by Margaret Murnane)
103. **Invited talk**, "Photonics with high-intensity laser pulses," ILE International Symposium on Strong-Laser Matter Interactions, Osaka, Japan August 2002. (Presented by Henry Kapteyn)
104. **Keynote Speaker**, "Multiphoton Photonics", OPTO-IRELAND, Galway, Ireland, September 2002. (Presented by Margaret Murnane)
105. **Invited talk**, AIP Industrial Physics Forum, October 2002. (Presented by Margaret Murnane)
106. **Invited talk**, Optical Society of America Annual Meeting, October 2002. (Presented by Margaret Murnane)
107. **Invited talk**, Optical Society of America Annual Meeting, October 2002. (Presented by Henry Kapteyn)
108. **Invited talk**, Optical Society of America Annual Meeting, October 2002. (Presented by Randy Bartels)
109. **Invited talk**, IEEE LEOS Annual Meeting, Glasgow, Nov. 2002. (Presented by Randy Bartels)

Margaret M. Murnane

110. **Invited talk**, “EUV Photonics”, Air Force Workshop on Strong Field Physics, December 2002. (Presented by Margaret Murnane)
111. **Invited talk**, Air Force Workshop on Strong Field Physics, December 2002. (Presented by Henry Kapteyn)
112. **Richtmeyer Memorial Lecturer of the AAPT**, Austin, TX, January 2003. (Presented by Margaret Murnane)
113. **Invited talk**, “Ultrafast, coherent, laser and x-ray science”, Western Spectroscopy Annual Meeting, Silamar, CA (January 2003). (Presented by Margaret Murnane)
114. **Invited talk**, “Ultrafast, coherent, laser and x-ray science”, AAAS Annual Meeting, Denver, CO (February 2003). (Presented by Margaret Murnane)
115. **Keynote Speaker**, “How to make atoms sing and molecules dance”, National Council of University Research Administrators”, Denver, CO (April 2003). (Presented by Margaret Murnane)
116. **Invited talk, to News Media**, “Probing adsorbate oscillation on metal surfaces using ultrafast extreme ultraviolet pulses”, American Physical Society March Meeting, Austin, TX, March 2003. (Presented by Timothy Lei)
117. **Invited talk**, “Multiphoton EUV Photonics: Quasi Phase Matching of EUV High Harmonic Generation”, CLEO/QELS Conference, Baltimore, MD (June 2003). (Presented by Ariel Paul)
118. **Invited talk**, “Quasi Phase Matching of EUV High Harmonic Generation at High Ionization Levels”, International Conference on Ultrafast Optics, Vienna, Austria (June 2003). (Presented by Emily Gibson)
119. **Invited talk**, Gordon Research Conference on Electronic Spectroscopy and Dynamics, Bates College, Lewiston, ME, July 6-11, 2003. (Presented by Margaret Murnane)
120. **Invited talk**, Gordon Research Conference on Photoions, Photoionization and Photodetachment, Queen's College, Oxford, England, 21-26 September 2003. (Presented by Margaret Murnane)
121. **Invited talk**, International Symposium on Ultrafast Intense Laser Science 2: propagation and interaction’, Quebec City, Canada, 27-29 September, 2003. (Presented by Henry Kapteyn)
122. **Invited talk**, “Ultrafast High Average Power Lasers”, DEPS Meeting, Sandia National Lab., Albuquerque, NM, October, 2003. (Presented by Henry Kapteyn)
123. **Invited talk**, “Multiphoton EUV Photonics”, Four Corners Section of the American Physical Society (Arizona, October 2003). (Presented by Margaret Murnane)
124. **Invited talk**, “Multiphoton EUV Photonics”, Annual IEEE LEOS Meeting, October 26-30, Tucson, Arizona (Presented by Margaret Murnane)
125. **Invited talk**, “Table-top EUV Sources”, ALFF Workshop, October 30-31, Argonne National Lab, Illinois (Presented by Margaret Murnane)
126. **Invited talk**, “Multiphoton EUV Photonics: Quasi Phase Matching at Short Wavelengths”, Applications of High Field & Short Wavelength Sources X, October 12-15, 2003 Biarritz, France. (Presented by Emily Gibson)
127. **Invited talk**, “Quasi Phase Matching of EUV High Harmonic Generation”, International Workshop on Attosecond Science, Boston, MA (November 2003). (Presented by Henry Kapteyn)
128. **Invited Talk**, “Resonant UV Spectroscopy for Enhanced Biological Agent Detection”, DARPA/DSO workshop on remote detection of chemical and biological agents (Arlington, VA, November 2003) (Presented by Henry Kapteyn)

Margaret M. Murnane

129. **Invited talk**, “Attosecond timescale coherent control of EUV generation”, Workshop on Coherent Control (Ringberg, Germany, December 2003). (Presented by Margaret Murnane)
130. **Invited talk**, “Multiphoton EUV Photonics”, Physics of Quantum Electronics (Snowbird, UT, January 2004). (Presented by Henry Kapteyn)
131. **Invited talk**, “Coherent Control and Chemical Sensing”, Physics of Quantum Electronics (Snowbird, UT, January 2004). (Presented by Margaret Murnane)
132. **Invited Lecture Series**, Institute of Physics, (University College Cork, University College Dublin, Queens University Belfast, Ireland, January 2004. (Presented by Margaret Murnane)
133. **Invited talk**, “Multiphoton and Attosecond EUV Photonics”, American Chemical Society Annual Meeting (March 2004). (Presented by Margaret Murnane)
134. **Invited talk**, “Control and correlations in multiphoton processes”, American Chemical Society Annual Meeting (March 2004). (Presented by Henry Kapteyn)
135. **Invited talk**, “Ultrafast EUV Spectroscopy”, Conference on Molecular Reaction Dynamics (March 2004). (Presented by Margaret Murnane)
136. **Invited talk**, “Multiphoton and Attosecond EUV Photonics”, Center for Ultracold Atoms, Harvard/MIT (March 2004). (Presented by Margaret Murnane)
137. **Invited talk**, “Multiphoton and Attosecond EUV Photonics”, Workshop on Ultrafast X-Ray Science, San Diego, CA (April 2004). (Presented by Henry Kapteyn)
138. **Invited talk**, “Coherent Control and Attosecond EUV Photonics”, Workshop on Attoscience, Ringberg, Germany (April 2004). (Presented by Henry Kapteyn)
139. **Invited talk**, “Ultrafast EUV Photonics and Applications in Spectroscopy”, Workshop on Attoscience, Ringberg, Germany (April 2004 (Presented by Margaret Murnane)
140. **Invited talk**, “How to make Atoms Sing and Molecules Dance – using fast light pulses to observe and control nature”, APS April Meeting (Denver, CO, May 2004). (Presented by Margaret Murnane)
141. **Invited talk**, “Multiphoton and Attosecond EUV Photonics”, CLEO/IQEC, San Francisco, CA (May 2004). (Presented by Margaret Murnane)
142. **Invited talk**, Workshop on Seeded Free Electron Lasers, MIT, 12-16 June 2004. (Presented by Henry Kapteyn).
143. **Invited lecture**, Roman Baths Summer School on Advanced Glass-Based Nano-Photonics, Newton St.Loe, Bath, United Kingdom, 12-16 July 2004. (Presented by Margaret Murnane)
144. **Invited Plenary talk**, “Multiphoton and Attosecond EUV Photonics”, 26th International Congress on High Speed Photography and Photonics (26th ICHSPP) in (Alexandria, Virginia 19-24 September 2004) (Presented by Henry Kapteyn).
145. **Invited talk**, Non-lethal Technology and Academic Research (NTAR) symposium, Winston-Salem, NC, November 2004. (Presented by Henry Kapteyn).
146. **Invited talk**, “Ultrafast Photoacoustic Spectroscopy Probed by Extreme Ultraviolet Light”, Physics of Quantum Electronics (Snowbird, UT, January 2005). (Presented by Raanan Tobey)

Margaret M. Murnane

147. **Invited talk**, “Extreme Nonlinear Optics – Applied Attosecond Science”, APS DAMOP Annual Meeting, Lincoln, NB May 2005. (Presented by Margaret Murnane)
148. **Invited tutorial**, “Physics of High Harmonic Generation and Applications”, APS DAMOP Annual Meeting, Lincoln, NB May 2005. (Presented by Henry Kapteyn)
149. **Invited tutorial**, “Extreme Ultraviolet Sources and Applications,” OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science (CLEO/QELS), Baltimore, MD, May 2005. Presented by Margaret Murnane.
150. **Invited talk**, NEW DEVELOPMENTS IN OPTICS AND RELATED FIELDS: MODERN TECHNIQUES, MATERIALS AND APPLICATIONS , NATO Advanced Study Institute, Ettore Majorana Center Erice, Italy, June 6, 2005. (Presented by Margaret Murnane)
151. **Invited talk**, Gordon Conference on Atomic Physics, Tilton, New Hampshire, June 26 (2005). (Presented by Margaret Murnane)
152. **Plenary talk**, 20th International Conference on X-ray and Inner-Shell Processes, Victoria, AUSTRALIA, 5-9 July 2005. (Presented by Margaret Murnane)
153. **Plenary talk**, EGAS conference (European Group for Atomic Systems), Dublin, Ireland, August 2005. (Presented by Margaret Murnane)
154. **Invited lecture**, Femtochemistry VII Conference, Washington, DC July 17 - 22, 2005. (Presented by Margaret Murnane)
155. **Invited talk**, Biological and Analytical Applications of Nonlinear Optics, American Chemical Society Meeting, Washington D.C., August 2005. (Presented by Henry Kapteyn)
156. **Plenary talk**, BA Festival of Science, Dublin, Ireland, September 2005. (Presented by Margaret Murnane)
157. **Invited talk**, Extreme Nonlinear Optics, Optical Society of America Annual Meeting, Tucson AZ October 2005. (Presented by Henry Kapteyn)
158. **Invited Talk**, M. Murnane et al, “Probing vibrational dynamics using electrons rescattered during high-order harmonic generation,” 4th International Workshop on Optimal Control of Quantum Dynamics: Theory and Experiment, Ringberg, Bavaria, Germany, Dec 2005. (Presented by Margaret Murnane)
159. **Invited talk**, German Annual AMOP Meeting, Frankfurt, Germany, March 2006. (Presented by Margaret Murnane)
160. **Invited talks**, Daresbury, UK, March 2006. (Presented by Margaret Murnane and Henry Kapteyn)
161. **Invited talk**, Gordon Conference on Multiphoton Processes, Tilton, NH June 2006. (Presented by Margaret Murnane)
162. **Invited talks**, University of Sao Paulo, Sao Carlos, Brazil, June 2006. (Presented by Margaret Murnane and Henry Kapteyn)
163. **Invited talk**, “Probing vibrational dynamics using electrons rescattered during high-order harmonic generation,” Nizhny, Russia, July 2006. (Presented by Margaret Murnane)
164. **Invited talk**, “Probing vibrational dynamics using electrons rescattered during high-order harmonic generation,” 15th International Laser Physics Workshop (LPHYS'06), Lausanne, Switzerland, August 2006. (Presented by Margaret Murnane)

Margaret M. Murnane

165. **Invited talk**, Workshop on Attosecond Science, KITP UC Santa Barbara, August 2006. (Presented by Margaret Murnane)
166. **Invited talk**, Workshop on Attosecond Science, KITP UC Santa Barbara, August 2006. (Presented by Henry Kapteyn)
167. **Invited talk**, OSA Annual Meeting, Rochester, NY, October 2006. (Presented by Margaret Murnane)
168. **Invited talk**, Workshop on Nonlinear Optical Processes, Tucson, AZ, October 2006. (Presented by Margaret Murnane)
169. **Invited talk**, International Conference on the Interaction of Atoms, Molecules and Plasmas with Intense Ultrashort Laser Pulses (IAMPI2006), Szeged, Hungary, 1-5 October 2006. (Presented by Luis Avila)
170. **Invited talk**, “Attosecond Science on Surfaces”, SLAC Workshop, October 2006. (Presented by Guido Saathoff)
171. **Seminar**, Guido Saathoff et al, “The Laser-Assisted Photoelectric Effect From Surfaces”, Seminar of the Graduiertenkolleg “Nonlinear Optics and Ultrafast Physics”, Department of Physics, Technical University Kaiserslautern, Germany. May 2006. (Presented by G. Saathoff)
172. **Colloquium**, Guido Saathoff et al, “Time-Resolved Spectroscopy of Solid Surfaces Using Femtosecond XUV Light”, Physics Colloquium, University of Manitoba, Winnipeg, Canada, September 2006. (Presented by G. Saathoff.)
173. **Invited talk**, “Attosecond Science on Surfaces”, Physics of Quantum Electronics (Snowbird, UT, January 2007). (Presented by Guido Saathoff)
174. **Invited talk**, “Monitoring Molecular Dynamics using Attosecond Electrons Recollisions”, Physics of Quantum Electronics (Snowbird, UT, January 2007). (Presented by Nick Wagner)
175. **Plenary talk**, “Attosecond Science - Latest Developments and Expanding Opportunities”. Physics of Quantum Electronics (Snowbird, UT, January 2007). (Presented by Margaret Murnane)
176. **Invited talk**, “All-Optical Quasi Phase Matching of High Harmonic Generation”, Photonics West (San Francisco, CA, January 2007). (Presented by Xiaoshi Zhang)
177. **Tutorial**, “Ultrasensitive Molecular and Materials Spectroscopies probed by Attosecond Electron Recollisions”, APS March Meeting, Denver, CO, March 2007. (Presented by Henry Kapteyn)
178. **Invited talk**, “All-optical quasi phase matching in plasmas”, Atomic Processes in Plasmas, Gaithersburg DC, March 2007. (Presented by Henry Kapteyn)
179. **After dinner talk**, West Point Academy, APS/AAPT Joint Meeting, April 2007. (Presented by Margaret Murnane)
180. **Invited talk**, Annual Biophysical Society Meeting, Baltimore, MD, March 2007. “How to recruit and retain the best scientists in your department”. (Presented by Margaret Murnane)
181. **Invited talk**, American Physical Society April Meeting, Jacksonville, FL, April 2007. “How to recruit and retain the best scientists in your department”. (Presented by Margaret Murnane)
182. **Invited talk**, “All-optical quasi phase matching of high harmonic generation”, CLEO/QELS Conference, Baltimore, MD, May 2007. (Presented by Amy Lytle)

Margaret M. Murnane

183. **Edison Lecture**, Naval Research Laboratory, May 2007. (Presented by Margaret Murnane)
184. **Invited talk**, “Attosecond nonlinear optics in high harmonic generation”, Rochester Conference on Coherence and Quantum Optics, Rochester, NY, June 2007. (Presented by Margaret Murnane)
185. **Invited talk**, “Attosecond nonlinear optics and applications”, Summer school on ultrafast x-ray science, Stanford, CA, June 2007. (Presented by Margaret Murnane)
186. **Invited talk**, “Attosecond nonlinear optics in high harmonic generation”, 3rd International Conference "Frontiers of Nonlinear Physics", Nizhny Novgorod, Russia, July 2007. (Presented by Oren Cohen)
187. **Invited talk**, “X-Ray Driven Molecular Dynamics”, Gordon Research Conference on Atomic Physics, Tilton, NH, July 2007. (Presented by Henry Kapteyn)
188. **Plenary talk**, 16th International Conference on Laser Physics, León, Mexico, August 2007). (Presented by Margaret Murnane)
189. **Invited talk**, International Conference on Laser Physics, León, Mexico, August 2007). (Presented by Henry Kapteyn)
190. **Invited talk**, “Attosecond X-Ray Photonics: All-Optical Quasi-Phase Matching for High Harmonic Generation,” International Conference on Nonlinear Optics, Kona, Hawaii, 2007 (Presented by Oren Cohen)
191. **Invited talk**, “All-optical quasi phase matching of high harmonic generation”, International Conference on Ultrafast Optics and Short Wavelength Generation, Santa Fe, NM, September 2007. (Presented by Margaret Murnane)
192. **Distinguished Lecturer**, University of Arizona, October 2007. (Presented by Margaret Murnane)
193. **Sponer Presidential Lectureship**, Duke University, November 2007. (Presented by Margaret Murnane)
194. **Plenary talk**, Physics of Quantum Electronics (Snowbird, UT, January 2008). (Presented by Henry Kapteyn)
195. **Invited talk**, Physics of Quantum Electronics (Snowbird, UT, January 2008). (Presented by Margaret Murnane)
196. **Invited Tutorial**, Attosecond Science and Technology, CLEO/QELS, San Jose, May 2008. (Presented by Margaret Murnane)
197. **Invited Tutorial**, New Phase Matching Techniques in the Hard-X-Ray Region, CLEO/QELS, San Jose, May 2008. (Presented by Oren Cohen)
198. **Invited talk**, 6th International Conference on Ultrafast Surface Dynamics 6, Kloster Banz, Germany, July 2008. (Presented by Margaret Murnane)
199. **Invited talk**, Gordon Conference on Atomic and Molecular Interactions, Colby-Sawyer College, New London, NH, July 2008. (Presented by Henry Kapteyn)
200. **Keynote lecture**, 3rd EPS-QEOD Europhoton Conference, Paris, France, August 2008.

Colloquia presented by M Murnane

1. Condensed Matter Physics Seminar, University of California at Davis, May 1990.

Margaret M. Murnane

2. Plasma Physics Seminar, University of California at Los Angeles, May 1990.
3. Colloquium, University of Maryland, 1990.
4. Seminar, SUNY Stony Brook, 1990.
5. Colloquium, Oregon State University, Spring 1991.
6. Departmental Colloquium, University of Idaho, Moscow, ID 1991.
7. Invited talk, WSU Honors Program, October 1992.
8. Invited talk, American Association of University Women, Pullman, WA, February, 1993.
9. Quantum Electronics Seminar, Stanford University, Stanford, CA, January 1993.
10. Colloquium, University of Michigan, Ann Arbor, MI, January 1994.
11. Colloquium, University of Maryland, February 1995.
12. Colloquium, University of Michigan, Ann Arbor, MI, March 1995.
13. Seminar, Lawrence Livermore National Laboratory, March 1995.
14. Colloquium, Utah State University, April, 1995.
15. Seminar, University of Washington, May 1995.
16. Colloquium, State University of New York at Stony Brook, October 1995.
17. Colloquium, University of Texas at Austin, November 1995.
18. Colloquium, Ohio State University, April 1996.
19. Colloquium, Harvard University, April 1996.
20. Seminar, Purdue University (Engineering), April 1996.
21. Colloquium, Swarthmore College, October 1996.
22. Seminar, Case Western University, April 1997.
23. Colloquium, University of Minnesota, May 1997.
24. Colloquium, University of Connecticut, June 1997.
25. Colloquium, University of Illinois at Urbana-Champaign, October 1997.
26. Colloquium, Argonne National Laboratory, October 1997.
27. Colloquium, Williams College, October 1997.
28. Colloquium, University of Groningen, Holland, December 1997.
29. Colloquium, University of Toronto, February 1998.
30. Colloquium, University of Michigan, February 1998.
31. Colloquium, University of Rochester, February 1998.
32. Colloquium, Bryn Mawr College, March 1998.
33. Colloquium, Purdue University (Physics), September 1998.
34. Colloquium, University of California at Berkeley, September 1998.
35. Seminar, MIT, November 1998.
36. Colloquium, Caltech, April 1999.
37. Seminar, Princeton University, April 1999.
38. Colloquium, Colorado School of Mines, January 2000.
39. Colloquium, College of William and Mary, April 2000.
40. Colloquium, Temple University, April 2000
41. Colloquium, University of Arizona, October 2000.
42. Colloquium, University of Michigan, October 2000.
43. Colloquium, University of Chicago, February 2001.
44. Colloquium, University of San Diego, February 2001.
45. Colloquium, Harvard University, March 2001.

Margaret M. Murnane

46. Colloquium, Colorado State University, March 2001.
47. Colloquium, Yale University, May 2001.
48. Seminar, MIT, May 2001.
49. Colloquium, Vanderbilt University, November 2001.
50. Colloquium, Reed College, November 2001.
51. Colloquium, Stanford University, April 2002
52. Colloquium, Sonoma State University, April 2002
53. Colloquium, Kansas State University, September 2002.
54. Colloquium, Trinity College Dublin, March 2003.
55. Colloquium, UC Irvine, May 2003.
56. Colloquium, Institute of Physics Lecture Series, University College Dublin, January 2004.
57. Colloquium, Institute of Physics Lecture Series, University College Cork, January 2004.
58. Colloquium, Institute of Physics Lecture Series, Queen's College Belfast, January 2004.
59. Colloquium, University of Southern California, February 2004.
60. Colloquium, Center for Ultracold Atoms, MIT, April 2004.
61. Colloquium, The Ohio State University, May 2004.
62. Colloquium, Northwestern University, November 2004.
63. Colloquium, Harvard University, November 2004.
64. Colloquium, Princeton University, February 2005.
65. Colloquium, UC Santa Barbara, January 2006.
66. Colloquium, IBM Yorktown Hights, April 2006.
67. Colloquium, Ecole Polytechnique de Montreal, February 2007.
68. Colloquium, University of Richmond, April 2007.
69. Lecture Series: Distinguished Women in Science and Engineering (Colorado State University, October 2007).
70. Distinguished Women in Science and Engineering (University of Arizona, October 2007).
71. **Sponer Presidential Lectureship**, Duke University, November 2007
72. Colloquium, BYU, January 2008.
73. **Munushian Lecturer**, University of Southern California (March 2008).
74. Colloquium, Penn State University (April 2008).
75. Malmstrom Lecturer, Hamline University (May 2008).
76. Basic Energy Sciences Invited Speaker Series, Sandia National Labs