

Biographical Sketch

Henry Cornelius Kapteyn
Department of Physics and JILA
Campus Box 440
University of Colorado
Boulder, CO 80309-0440

Phone: (303) 492-8198
FAX: (303) 492-5235
E-mail: kapteyn@jila.colorado.edu

ResearcherID: H-6559-2011

orcid.org/0000-0001-8386-6317

Education

- Ph.D. in Physics, University of California at Berkeley, 1989
 - Thesis: "Photoionization-pumped short-wavelength lasers," advisor Roger W. Falcone
- M.A. in Physics, Princeton University, 1984
- B.S. in Physics (with distinction and honors), Harvey Mudd College, 1982
 - Thesis: "Nonlinear conductivity in TaS₃," advisor James Eckert

Professional Experience

- Professor of Physics, University of Colorado at Boulder, 8/1999-present
- JILA Fellow, University of Colorado at Boulder, 8/1999-present
- Associate Professor of Electrical Engineering, University of Michigan, 1996-99
- Associate Professor of Physics, Washington State University, Pullman, WA, 1995
- Assistant Professor of Physics, Washington State University, Pullman, WA, 1990-95
- Postdoctoral Researcher, University of California at Berkeley, 1989-90
 - Research in high-power femtosecond lasers and short-wavelength lasers.
- Research Assistant, UC Berkeley, 1984-89
 - Ph.D. thesis research in short-wavelength lasers.
- Teaching Assistant, Princeton University, 1982-84
- Engineering Programmer, The Cyclotron Corporation, Berkeley, CA, summers 1981-83
 - Computer programming for cyclotron design.

Honors

- National Academy of Sciences, 2013
- Willis E. Lamb Award in Quantum Electronics, 2012
- R.W. Wood Prize, Optical Society of America, 2010
- Arthur L. Schawlow Prize in Laser Science, American Physical Society, 2010
- Ahmed Zewail Award in Ultrafast Science and Technology, American Chemical Society, 2009
- Fellow, American Association for the Advancement of Science, 2008
- Fellow, American Physical Society, 2001
- Fellow, Optical Society of America, 1998
- Sloan Research Fellowship, 1995
- Adolph Lomb Medal of the Optical Society of America, 1993

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- National Science Foundation Young Investigator Award, 1992
- SPIE Scholarship, Society of Photo-Optical Instrumentation Engineers, 1988
- Regents Fellowship, University of California, 1985-86
- Brown Award for undergraduate thesis research, Harvey Mudd College, 1982

Professional Affiliations

- American Association for the Advancement of Science (Fellow)
- American Chemical Society
- American Physical Society (Fellow)
- Association for Women in Science
- Optical Society of America (Fellow)
- IEEE

Professional Service

- Member, NAS Study on High Intensity Laser Science, 2015 – .
- APS representative (informal) for National Photonics Initiative, 2013.
- APS representative for Harnessing Light II publicity committee, 2012.
- Chair-elect (2012), chair(2013), past chair (2014) American Physical Society Division of Laser Science.
- Co-Chair, Ultrafast Surface Dynamics, Boulder, CO May 2013.
- Program Committee, Conference on Attosecond Phenomena (ATTO3), Sapporo, Japan, July 2011.
- Program committee, 12th ICOMP (International Conference on Multiphoton Processes), Sapporo, Japan, July 2011.
- Vice-Chair, American Physical Society Division of Laser Science, 2011.
- Review Panel, BES Operational Review of the LCLS, February 2011.
- Program Committee, Conference on Attosecond Phenomena (ATTO 09), Manhattan, KS, August 2009.
- Program Committee, Super-Intense Laser Atom Physics (SILAP), Zion, UT, September 2009.
- Member, Program Committee OSA/APS Conference on Lasers and Electro-Optics (CLEO). Chair of High Field Physics and High Energy Lasers subcommittee (2007-10).
- Program committee, 16th International Conference on Ultrafast Phenomena, Stresa, Italy, July 2008.
- Nominating committee of the American Physical Society Division of Atomic, Molecular, and Optical Physics (DAMOP) 2007-8.
- Program committee, 11th ICOMP (International Conference on Multiphoton Processes) Conference, Heidelberg, Germany, September 2008.
- Program committee of Super-Intense Laser Atom Physics (SILAP 2009) conference, Fall 2009.
- Program committee, Conference on Attosecond Science (ATTO 09), Fall 2009.

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- Program Committee, Ultrafast Optics 2007, High Field Short Wavelength 2007, Santa Fe, NM, 2007.
- American Physical Society Division of Laser Science (APS DLS) representative to the Long Range Planning Committee for the OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science (CLEO/QELS) Conference. 2005-2007.
- American Physical Society Division of Laser Science (APS DLS) representative to the Joint Council on Quantum Electronics, 2005-2007.
- Member, Executive Committee, NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, 2003—.
- Research Thrust Leader, NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, 2003—.
- Program committee, Joint High-Field/ High-Intensity Science subcommittee, OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science (CLEO/QELS), Long Beach, CA, 2006,2007.
- Member, Executive Committee, APS Division of Laser Science, 2002-2004.
- Member program committee, 14th International Conference on Ultrafast Phenomena, Niigata Japan, 2004.
- Chair, Search Committee for JILA/NIST position in Chemical Physics, 2003.
- Member, Ultrafast Optics, Optoelectronic, and Applications subcommittee of the OSA Conference on Lasers and Electro-Optics (CLEO) 2002-2003.
- Review Panel Member, NSF Information Technology Research (ITR) Program, 2001.
- Panelist, "Town Meeting" at the OSA Annual Meeting, Long Beach, CA, "Controlling light: What does the future hold?" 2001.
- Member, Chair (2002), Selection Committee for the R. W. Wood Prize of the Optical Society of America, 2001-2002.
- Member, Board of Editors, Review of Scientific Instruments, 2000-2003.
- Program Committee, Applications of High Field and Short Wavelength Sources IX, Palm Springs, CA 2001.
- Chair, Physics Department Evaluation Committee, 2000-2001.
- Member, Program Review Panel Department of Energy, J. R. MacDonald Laboratory, Kansas State University, Oct. 2000.
- Reviewer for Optics Letters, Journal of the Optical Society of America, IEEE Journal of Quantum Electronics, NSF, Journal of Modern Optics, Journal of Physics B
- Review Panel, Lawrence Livermore National Laboratory Physics Directorate V, 1999.
- Program Committee, XIth International Conference on Ultrafast Phenomena, Garmish-Partenkirchen, Germany, July 1998.
- Program Committee, International Conference on Quantum Electronics (IQEC), San Francisco, CA, 1998.
- Program Committee, OSA Conference on Applications of High Field and Short Wavelength Sources, Santa Fe, NM, 1997.

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- Symposium Organizer, International Laser Science Conference (ILS XI), 1996.
- Program Committee, OE/LASE '96.
- Member technical program committee, OSA Conference on High-Field Interactions and Short-Wavelength Generation, 1994.
- Member technical program committee, Euroconference on Generation and Application of Ultrashort X-ray Pulses, 1994.
- Panel Member, NSF QWEB grants, 1995.
- Panel Member, NSF SBIR engineering grants, 1992.

University-level Service

- Vice Chancellor's Advisory Committee (VCAC—University Tenure and Promotion) 2010-2014
- Arts & Sciences Personnel Committee (College Tenure and Promotions) 2007-2010
 - Chair 2009-10

Other Activities

- Co-founder and CEO, Kapteyn-Murnane Laboratories Inc. Manufacturer of ultrafast laser instrumentation.

Personal

- Married to Margaret Murnane.

Patents

- S. Backus, H. C. Kapteyn, and M. M. Murnane, "Laser amplifier and method," U.S. Patent #5644424, July 1, 1997.
- C. G. Durfee, III, A. R. Rundquist, H. C. Kapteyn, and M. M. Murnane, "Guided wave methods and apparatus for nonlinear frequency generation," U.S. Patent #6151155, Nov. 21, 2000
- S. J. Backus, H. C. Kapteyn, and M. M. Murnane, "Ultrashort pulse amplification in cryogenically cooled amplifiers," U.S. Patent #6,804,287, 2004.
- H. C. Kapteyn, J. L. Hall, and M. M. Murnane. J. Ye, "Multistage synchronization of pulsed radiation sources," US Patent #6,831,935, December 14, 2004.
- H. C. Kapteyn and S. J. Backus, "Downchirped pulse amplification," U.S. Patent #7,072,101, July 4, 2006.
- S. J. Backus and H. C. Kapteyn, "Method for optimizing output in ultrashort-pulse multipass laser amplifiers with selective use of a spectral filter," U.S. Patent #7,242,520, July 10, 2007.
- Jorge Rocca, Henry Kapteyn, Margaret Murnane, David Gaudiosi, Mike Grisham, Tenio Popmintchev, Brandan Reagan "High-Order Harmonic Generation in a Capillary Discharge," US Patent #7,729,403, June 1, 2010.

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- Oren Cohen, Henry C. Kapteyn, and Margaret M. Murnane, "Phase matching of high order harmonic generation using dynamic phase modulation caused by a non-collinear modulation pulse," US Patent #7,664,147, Feb 16, 2010.
- X. Zhang, A. L. Lytle, O. Cohen, H. C. Kapteyn, and M. M. Murnane, " Quasi-phase matching and quantum control of high harmonic generation in waveguides using counterpropagating beams," US Patent #7,830,928, November 9, 2010.
- Tenio Popmintchev, Ming-Chang Chen, Alon Bahabad, Margaret M. Murnane, and Henry C. Kapteyn, "Method for phase-matched generation of coherent soft and hard x-rays using IR lasers," US Patent #8,462,824, 11 June 2013.
- B. Zhang, M.D. Seaberg, D.E. Adams, H.C. Kapteyn, and M.M. Murnane, "Coherent Diffractive Imaging with Arbitrary Angle of Incidence," US provisional patent application #62/043,132, submitted Sept 2014.
- Tenio V. Popmintchev, Dimitar V. Popmintchev, Margaret M. Murnane, Henry C. Kapteyn, Patent, Generation of VUV, EUV, and X-ray Light Using VUV-UV-VIS Lasers, US20160315442 A1, Oct 27, 2016.

Publications

Citation Statistics from ISI Web of Science (April 6, 2017)

480 Total ISI records

300 Total articles

16594 Total citations to articles

55 Average number of cites per journal article

70 Hirsch Index (number of papers H cited more than H times)

Articles published in or submitted to refereed Journals:

277. **In preparation**, K.M. Dorney, T. Fan, P. Grychtol, R. Knut, J.L. Ellis, D. Hickstein, T. Popmintchev, H.C. Kapteyn, M.M. Murnane, "Circularly polarized high harmonic generation using collinearly propagated two-color counter-rotating circularly polarized beams with wavelength $2\mu\text{m}$ and $0.79\mu\text{m}$ ", in preparation (2017).
276. **In preparation**, D. Popmintchev, B. Zhang, D. Zusin, J. Shaw, H. Nembach, M. Chen, J. Siqueira, C. Mancuso, F. Dollar, S. Brown, A. Hankla, I. McNulty, S. Dietze, O. Shpyrko, T. Silva, P. Grychtol, T. Popmintchev, M. Murnane, H. Kapteyn, Imaging of buried magnetic domains using linearly polarized bright high harmonics from Ti: Sapphire laser", in preparation (2017).
275. **In preparation**, T. Fan, P. Grychtol, R. Knut, J.L. Ellis, D. Hickstein, K.M. Dorney, T. Popmintchev, H.C. Kapteyn, M.M. Murnane, "Circularly polarized high harmonic generation using collinearly propagated two-color counter-rotating circularly polarized beams with wavelength $2\mu\text{m}$ and $0.79\mu\text{m}$," in preparation (2017).

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274. **In preparation**, D. Popmintchev, M.C. Chen, C. Hernández-García, J.A. Pérez-Hernández, J. Sequeira, S. Brown, F. Dollar, P. Grychtol, B. Walker, Luis Plaja, M. Murnane, H.C. Kapteyn, T. Popmintchev, “Ultrahigh-Efficiency High Harmonic Generation in the VUV Driven by UV Lasers,” in preparation (2017).
273. **In preparation**, J. Hernandez-Charpak, K. M. Hoogeboom-Pot, D. Nardi, Q. Li, M. Tripp, S. King, E. Anderson, M. Murnane, H. Kapteyn, “Close-packed nanoscale thermal transport in 1D and 2D,” in preparation (2017).
272. **In preparation**, J.N. Hernandez-Charpak, T. Frazer, J. Knobloch, K. Hoogeboom-Pot, D. Nardi, W. Chao, M. Tripp, H. Kapteyn, M. Murnane, “Direct observation of efficient heat dissipation in close-packed nanoheaters using coherent EUV beams,” in preparation (2017).
271. **Submitted**, P-C. Huang, J. Huang, C. Hernández-García, B. Huang, C. Lu, L. Rego, D. Hickstein, J. Ellis, A. Jaron-Becker, A. Becker, S. Yang, C. Durfee, L. Plaja, H. Kapteyn, M. Murnane, A. Kung, M.-C. Chen,” Polarization Control of Isolated Attosecond Pulses, submitted 2017.
270. **Submitted**, C. Hernández-García, T. Popmintchev, M. Murnane, H. Kapteyn, L. Plaja, A. Becker, A. Jaron-Becker, “Isolated broadband attosecond pulse generation via time-gated phase and group velocity matching”, submitted 2017.
269. **Submitted**, G. Mancini¹, R. Karl, E. Shanblatt, C. Bevis, D. Gardner, M. Tanksalvala, J. Russell, D. Adams, H. Kapteyn, J. Badding, T. Mallouk, M. Murnane, “Colloidal Crystal Order and Structure Revealed by Tabletop Extreme Ultraviolet Scattering and Coherent Diffractive Imaging”, submitted 2017.
268. **Submitted**, C. Hernandez-Garcia, T. Popmintchev, M. Murnane, H.C. Kapteyn, L. Plaja, A. Becker, A. Jaron-Becker, Isolated broadband attosecond pulse generation with near- and mid-infrared driver pulses via time-gated phase matching”, submitted 2017
267. **Submitted**, E. Pisanty, D. Hickstein, C. Durfee, M. Murnane, M. Ivanov " High harmonic interferometry of the Lorentz force in strong mid-infrared laser fields ", submitted (2017).
266. **Submitted**, R. Knut, E. Delczeg, J. Shaw, H. Nembach, P. Grychtol, D. Zusin, C. Gentry, E. Turgut, H. Kapteyn, M. Murnane, D. Arena, O. Eriksson, O. Karis, T. Silva, “Controlling the distribution of virtual bound states in Permalloy (Fe_{0.2}Ni_{0.8}) by Cu alloying,” submitted (2017).
265. **Submitted**, L. Martin, R. Bello, C. Hogle, A. Palacios, X. Tong, J. Sanz-Vicario, T. Jahnke, M. Schöffler, R. Dörner, T. Weber, F. Martín, H. Kapteyn, M. Murnane, P. Ranitovic, “Revealing the Role of Electron-Electron Correlations by Mapping Dissociation of Highly Excited D₂⁺ using Attosecond XUV Pulses,” submitted (2017).
264. **In Press**, D. Popmintchev, B. Galloway, M.C. Chen, F. Dolar, C. Mancuso, L. Miaja-Avila, G. O’Neil, J. Shaw, G. Fan, S. Ališauskas, G. Andriukaitis, T. Balčiūnas, O. Mücke, A. Pugzlys, A. Baltuška, H. Kapteyn, T. Popmintchev, M. Murnane, “Near and extended edge X-ray absorption fine structure spectroscopy using ultrafast coherent high harmonic supercontinua,” Physical Review Letters (2018).
<https://journals.aps.org/prl/accepted/de076Y00Tba19c7cb0db67b1e5451d70170ec08b0>
263. P. Tendgin, W. You, C. Chen, X. Shi, D. Zusin, Y. Zhang, C. Gentry, A. Blonsky, M. Keller, P. Oppeneer, H. Kapteyn, Z. Tao, M. Murnane, “Critical Behavior within 20fs Drives the Out-of-Equilibrium Laser-induced Magnetic Phase Transition in Nickel,” in press, Science Advances (2018).

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262. C. Porter, M. Tanksalvala, M. Gerrity, G. Miley, X. Zhang, C. Bevis, E. Shanblatt, R. Karl jr., M. Murnane, D. Adams, H. Kapteyn, "General-purpose, wide field-of-view reflection imaging with a tabletop 13nm light source", *Optica* **4**(12) 1552-1557 (2017).
261. DD Hickstein, DR Carlson, A Kowligy, M Kirchner, S Domingue, N Nader, H Timmers, A Lind, M Murnane, H Kapteyn, S Papp, S Diddams, "High-harmonic generation in periodically poled waveguides," *Optica* **4**(12) 1538-1544 (2017).
260. W. Peters, D. Couch, B. Mignolet, X. Shi, Q. Nguyen, R. Fortenberry, H. Bernhard Schlegel, F. Remacle, H. Kapteyn, M. Murnane, W. Li., "Ultrafast 25fs relaxation in highly excited states of methyl azide mediated by strong nonadiabatic coupling," *PNAS* **114** (52), E11072 (2017). <https://doi.org/10.1073/pnas.1712566114>
259. D. Zusin, D. Legut, K. Carva, H. Nembach, S. Mathias, M. Aeschlimann, T. Silva, G. Zhang, P. Oppeneer, H. Kapteyn, M. Murnane, Direct measurement of the static and transient magneto-optical permittivity of cobalt across the entire M-edge in a reflection geometry by use of polarization scanning," *Physical Review B* **97**, 024433 (2018). <https://doi.org/10.1103/PhysRevB.97.024433>
258. C. Chen, C. Hernández-García, Z. Tao, W. You, Y. Zhang, D. Zusin, C. Gentry, P. Tengdin, A. Becker, A. Jaron-Becker, H. Kapteyn, M. Murnane, "Influence of microscopic and macroscopic effects on attosecond pulse generation using two-color laser fields," *Optics Express* **25**(23), 28684-28696 (2017).
257. K. Dorney, J. Ellis, C. Hernández-García, D. Hickstein, Christopher A. Mancuso, N. Brooks, T. Fan, G. Fan, P. Grychtol, D. Zusin, C. Gentry, H. Kapteyn, M. Murnane. " Helicity-Selective Enhancement and Polarization Control of Attosecond High Harmonic Waveforms Driven by Bichromatic Circularly Polarized Laser Fields", *Physical Review, Letters* **119**, 063201 (2017).
256. Christopher A. Mancuso, Kevin M. Dorney, Daniel D. Hickstein, Jan L. Chaloupka, Xiao-Min Tong, Jennifer L. Ellis, Henry C. Kapteyn, Margaret M. Murnane," Observation of ionization enhancement in two-color circularly polarized laser fields", *Physical Review A* **96** 023402 (2017). DOI: 10.1103/PhysRevA.96.023402
255. C. Hernández-García, T. Popmintchev, M. Murnane, H. Kapteyn, L. Plaja, A. Becker, A. Jaron-Becker, "Isolated broadband attosecond pulse generation via time-gated phase and group velocity matching ", *Optics Express* **25**, 11855 (2017).
254. Cong Chen, Zhensheng Tao, Adra Carr, Piotr Matyba, Tibor Szilvási, Martin Piecuch, Sebastian Emmerich, Mark Keller, Dmitriy Zusin, Markus Rollinger, Wenjing You, Stefan Mathias, Uwe Thumm, Manos Mavrikakis, Martin Aeschlimann, Peter Oppeneer, Henry Kapteyn, Margaret Murnane. "Distinguishing Attosecond Electron-Electron Scattering and Screening in Transition Metals", *PNAS* **114** (27), E5300-E5307 (2017). doi:10.1073/pnas.1706466114
253. C. Bevis, R. Karl, J. Reichanadter, D. Gardner, C. Porter, E. Shanblatt, M. Tanksalvala, G. Mancini, Henry Kapteyn, M. Murnane, D. Adams," Multiple beam ptychography for large field of view, high throughput, quantitative phase contrast imaging", *Ultramicroscopy* **184**, 164-171 (2018).
252. J. Ellis, K. Dorney, C. Durfee, C. Hernandez-Garcia, F. Dollar, C. Mancuso, T. Fan, P. Grychtol, D. Zusin, C. Gentry, H. Kapteyn, M. Murnane, D. Hickstein, "Phase Matching of Noncollinear Sum and Difference Frequency High-Harmonic Generation," *Opics Express* **25**(9), 10126-10144 (2017).

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251. L. Fan, S. Lee, Y. Tu, B. Mignolet, D. Couch, K. Dorney, Q. Nguyen, M. Murnane, F. Remacle, H. Bernhard Schlegel, W. Li, "A New Electron-Ion Coincidence 3D Momentum-Imaging Method and Its Application in Probing Strong Field Dynamics of 2-Phenylethyl-N, N-Dimethylamine", *Journal of Chemical Physics* **147**, 013920 (2017). <http://doi.org/10.1063/1.4981526>
250. **Advance Online Publication**, J. Hernandez-Charpak, K. Hoogeboom-Pot, Q. Li, T. Frazer, J. Knobloch, M. Tripp, S. King, E. Anderson, W. Chao, M. Murnane, H. Kapteyn, D. Nardi, "Full characterization of the mechanical properties of 11-50nm ultrathin films: influence of bond coordination on the Poisson's ratio", *Nano Letters*, Advance Online (2017). DOI: 10.1021/acs.nanolett.6b04635
249. **Advance Online Publication**, S. Eich, M. Plötzing, M. Rollinger, S. Emmerich, R. Adam, C. Chen, H. C. Kapteyn, M. Murnane, L. Plucinski, D. Steil, B. Stadtmüller, M. Cinchetti, M. Aeschlimann, C. Schneider, S. Mathias, "Band-structure evolution during the ultrafast ferromagnetic-paramagnetic phase transition in Cobalt," *Science Advances* **3**, e1602094 (2017).
248. **Advance Online Publication**, D. Gardner, M. Tanksalvala, E. Shanblatt, X. Zhang, B. Galloway, C. Porter, R. Karl, C. Bevis, D. Adams, H. Kapteyn, M. Murnane, G. Mancini, "Sub-wavelength coherent imaging of periodic samples using a 13.5 nm tabletop high harmonic light source," *Nature Photonics* **11**, 259 (2017). doi:10.1038/nphoton.2017.33
247. D. Couch, G. Buckingham, J. Baraban, J. Porterfield, L. Wooldridge, G.B. Ellison, H. Kapteyn, M. Murnane, W. Peters, "Tabletop Femtosecond VUV Photoionization and PEPICO Detection of Microreactor Pyrolysis Products," *J. Physical Chemistry* **121** (28), 5280–5289 (2017). DOI: 10.1021/acs.jpca.7b02821
246. S. Backus, M. Kirchner, R. Lemons, D. Schmidt, C. Durfee, M. Murnane, H. Kapteyn, "Direct diode pumped Ti: sapphire ultrafast regenerative amplifier system," *Optics Express* **25**(4), 3666-3674 (2017).
245. X. Gao, G. Patwardhan, S. Schrauth, D. Zhu, T. Popmintchev, H. Kapteyn, M. Murnane, D. Romanov, R. Levis, A. Gaeta, "Picosecond ionization dynamics in femtosecond filaments at high pressures," *Phys. Rev. A* **95**, 013412 (2017).
244. W. Peters, D. Couch, R. Fortenberry, H. Kapteyn, M. Murnane, "Uncovering highly-excited state mixing in acetone using ultrafast VUV pulses and coincidence imaging techniques," *J. Phys. Chem. A*, **121**, 2361–2366 (2017). 10.1021/acs.jpca.7b01112
243. CA Mancuso, KM Dorney, DD Hickstein, JL Chaloupka, JL Ellis, FJ Dollar, R Knut, P Grychtol, D Zusin, C Gentry, M Gopalakrishnan, HC Kapteyn, and MM Murnane, "Controlling Nonsequential Double Ionization in Two-Color Circularly Polarized Femtosecond Laser Fields," *Physical Review Letters* **117**(13), 6 (2016). [dx.doi.org/10.1103/PhysRevLett.117.133201](https://doi.org/10.1103/PhysRevLett.117.133201)
242. Elisabeth R. Shanblatt, Christina L. Porter, Dennis F. Gardner, Giulia F. Mancini, Robert M. Karl Jr., Michael D. Tanksalvala, Charles S. Bevis, Victor H. Vartanian, Henry C. Kapteyn, Daniel E. Adams, and Margaret M. Murnane "Quantitative Chemically Specific Coherent Diffractive Imaging of Reactions at Buried Interfaces with Few Nanometer Precision," *Nano Letters*, vol. **16**, no. 9, pp. 5444–5450 (2016).
241. KM Hoogeboom-Pot, E Turgut, JN Hernandez-Charpak, JM Shaw, HC Kapteyn, MM Murnane, and D Nardi, "Nondestructive Measurement of the Evolution of Layer-Specific Mechanical Properties in Sub-10 nm Bilayer Films," *Nano Letters* **16**(8), 4773-4778 (2016). [dx.doi.org/10.1021/acs.nanolett.6b00606](https://doi.org/10.1021/acs.nanolett.6b00606)

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240. CA Mancuso, DD Hickstein, KM Dorney, JL Ellis, E Hasovic, R Knut, P Grychtol, C Gentry, M Gopalakrishnan, D Zusin, FJ Dollar, XM Tong, DB Milosevic, W Becker, HC Kapteyn, and MM Murnane, "Controlling electron-ion rescattering in two-color circularly polarized femtosecond laser fields," *Physical Review A* **93**(5), 13 (2016). [dx.doi.org/10.1103/PhysRevA.93.053406](https://doi.org/10.1103/PhysRevA.93.053406)
239. C Hernandez-Garcia, T Popmintchev, MM Murnane, HC Kapteyn, L Plaja, A Becker, and A Jaron-Becker, "Group velocity matching in high-order harmonic generation driven by mid-infrared lasers," *New Journal of Physics* **18**, 9 (2016). [dx.doi.org/10.1088/1367-2630/18/7/073031](https://doi.org/10.1088/1367-2630/18/7/073031)
238. S Mathias, S Eich, J Urbancic, S Michael, AV Carr, S Emmerich, A Stange, T Popmintchev, T Rohwer, M Wiesenmayer, A Ruffing, S Jakobs, S Hellmann, P Matyba, C Chen, L Kipp, M Bauer, HC Kapteyn, HC Schneider, K Rossnagel, MM Murnane, and M Aeschlimann, "Self-amplified photo-induced gap quenching in a correlated electron material," *Nature Communications* **7**, 8 (2016). [dx.doi.org/10.1038/ncomms12902](https://doi.org/10.1038/ncomms12902)
237. BS Zhang, DF Gardner, MH Seaberg, ER Shanblatt, CL Porter, R Karl, CA Mancuso, HC Kapteyn, MM Murnane, and DE Adams, "Ptychographic hyperspectral spectromicroscopy with an extreme ultraviolet high harmonic comb," *Optics Express* **24**(16), 18745-18754 (2016). [dx.doi.org/10.1364/oe.24.018745](https://doi.org/10.1364/oe.24.018745)
236. E Turgut, D Zusin, D Legut, K Carva, R Knut, JM Shaw, C Chen, ZS Tao, HT Nembach, TJ Silva, S Mathias, M Aeschlimann, PM Oppeneer, HC Kapteyn, MM Murnane, and P Grychtol, "Stoner versus Heisenberg: Ultrafast exchange reduction and magnon generation during laser-induced demagnetization," *Physical Review B* **94**(22), 6 (2016). [dx.doi.org/10.1103/PhysRevB.94.220408](https://doi.org/10.1103/PhysRevB.94.220408). *Also selected as editor's suggestion.*
235. BR Galloway, D Popmintchev, E Pisanty, DD Hickstein, MM Murnane, HC Kapteyn, and T Popmintchev, "Lorentz drift compensation in high harmonic generation in the soft and hard X-ray regions of the spectrum," *Optics Express* **24**(19), 21818-21832 (2016). [dx.doi.org/10.1364/oe.24.021818](https://doi.org/10.1364/oe.24.021818)
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Presentations (presenter is first author unless otherwise noted)

1221. **Invited talk**, Margaret Murnane et al, "Capturing dynamics and function in quantum materials using tabletop coherent X-rays," Conference on Big Ideas in Quantum Materials, La Jolla, CA, December 2015. Presented by Margaret Murnane
1220. **Public Lecture, Royal Irish Academy**, Margaret Murnane et al, "Academy Discourse: Tabletop X-Ray Lasers: From Star Wars to Nanotechnology", Royal Irish Academy, Dublin, Ireland, Dec. 2015. Presented by Margaret Murnane.
1219. **Masterclass Series, Royal Irish Academy**, Margaret Murnane et al, "Science at the Timescale of the Electron: Tabletop X-ray Lasers and Applications in Nanoscience and Nanotechnology," Dublin, Ireland, Nov 2015. Presented by Margaret Murnane.
1218. **Contributed talk**, Travis Fraser et al, "Uncovering collective diffusion from nanoscale heat sources with coherent EUV beams," ASME 2015 International Mechanical Engineering Congress & Exposition, Houston, TX, November 2015. Presented by Travis Fraser.
1217. **NSF Distinguished Lecture Series**, Margaret Murnane et al, "Science at the Timescale of the Electron: Ultrafast Lasers and Applications to Nano- and Materials Research," Washington DC, October 2015. Presented by Margaret Murnane.
1216. **Contributed talk**, Jorge N. Hernandez-Charpak, Kathleen Hoogeboom-Pot, Travis Frazer, Damiano Nardi, Marie Tripp, Sean King, Lei Jiang, Weilun Chao, Henry Kapteyn and Margaret Murnane, "Probing nanoscale thermal and mechanical properties at dimensions $\ll 50\text{nm}$," Semiconductor Research Corporation TECHCON 2015, Austin, TX, Sept 2015. Presented by Jorge N. Hernandez-Charpak.
1215. **Contributed talk**, Dennis Gardner et al, "High Numerical Aperture Reflection Mode Coherent Diffractive Imaging of Nano-Patterned Surfaces using a Tabletop Extreme Ultraviolet Source," Semiconductor Research Corporation TECHCON 2015, Austin, TX, Sept 2015. Presented by Dennis Gardner.
1214. **Contributed talk**, DF Gardner, E Shanblatt, B Zhang, M Seaberg, C Porter, R Karl, M Tanksalvala, M Murnane, H Kapteyn, and D Adams, "High-Contrast 3D Surface Topographic Imaging With Near Wavelength-Limited Resolution Using Ptychography," Frontiers in Optics 2015, San Jose, California, October 2015. Presented by Dennis Gardner. doi: 10.1364/FIO.2015.FTh3G.3
1213. **Contributed talk**, JRM Karl, C Bevis, R Lopez-Rios, J Reichenadter, DF Gardner, C Porter, E Shanblatt, M Tanksalvala, GF Mancini, M Murnane, H Kapteyn, and D Adams, "Spatial, Spectral, and Polarization Multiplexed Ptychography," presented at the Frontiers in Optics 2015, San Jose, California, October 2015. Presented by Robert Karl. doi: 10.1364/FIO.2015.FW6A.2
1212. **Postdeadline talk**, E Shanblatt, C Porter, DF Gardner, GF Mancini, R Karl, C Bevis, M Tanksalvala, M Murnane, H Kapteyn, and D Adams, "Reflection Mode Tabletop Coherent Diffraction Imaging of Buried Nanostructures," presented at the Frontiers in Optics 2015, San Jose, California, October 2015. Presented by Elizabeth Shanblatt. doi: 10.1364/FIO.2015.FW6B.2

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1211. **Research Update Talk**, Sterling Backus, Michael Gerrity, Susannah Brown, Henry Kapteyn, Giedrius Andriukaitis, Skirmantas Alisauskas, Audrius Pugzlys, Andrius Baltuska, “Task 1 - High average power ultrafast MIR lasers for coherent x-ray generation,” Defense Advanced Research Projects Agency Program in Ultrafast Laser Science and Engineering (DARPA PULSE) Program Meeting, Arlington, VA, September 2015. Presented by Henry Kapteyn.
1210. **Contributed talk**, Carlos Hernández-García, Daniel D. Hickstein, Tenio Popmintchev, Margaret M. Murnane, Henry C. Kapteyn, Andreas Becker, Agnieszka Jaron-Becker, Charles Durfee, “Isolated attosecond pulses with controlled polarization,” Super Intense Laser-Atom Physics Conference, Bordeaux, France, September 2015. Presented by Carlos Hernandez-Garcia.
1209. **Contributed talk**, David Couch, William Peters, Henry Kapteyn, and Margaret Murnane, “Ultrafast dynamics of far-UV excited states of acetone using angle-resolved electron-ion coincidence detection,” 250th American Chemical Society National Meeting & Exposition, Boston, MA August 2015. Presented by David Couch.
1208. **Contributed talk**, William Peters, David Couch, Henry Kapteyn, and Margaret Murnane, “Ultrafast dynamics of methyl azide photodissociation in the far UV,” 250th American Chemical Society National Meeting & Exposition, Boston, MA August 2015. Presented by Bill Peters.
1207. **Contributed talk**, Daniel D. Hickstein, Christopher A. Mancuso, Franklin Dollar, Jennifer L. Ellis, Patrik Grychtol, Ronny Knut, Ofer Kfir, Xiaomin Tong, Dmitriy Zusin, Maithreyi Gopalakrishnan, Christian Gentry, Emrah Turgut, Ming-Chang Chen, Avner Fleischer, Oren Cohen, Henry C. Kapteyn, Margaret M. Murnane, “Strong-field physics in two-color circularly polarized fields,” 5th International Conference On Attosecond Physics, Saint-Sauveur, Québec, Canada, July 2015. Presented by Dan Hickstein.
1206. **Contributed talk**, Jorge N. Hernandez-Charpak, Kathleen Hoogeboom-Pot, Travis Frazer, Xiaokun Gu, Weilun Chao, Roger Falcone, Ronggui Yang, Margaret Murnane, Henry Kapteyn and Damiano Nardi, “Uncovering collective diffusion from nanoscale heat sources with coherent EUV beams,” Phonons 2015, Nottingham, UK, July 2015. Presented by Jorge N. Hernandez-Charpak.
1205. **Poster**, Jorge N. Hernandez-Charpak, et al, “Thickness dependence of the elastic properties of thin films at dimensions $\ll 50\text{nm}$,” Phonons 2015, Nottingham, UK, July 2015. Presented by Jorge N. Hernandez-Charpak.
1204. **Invited Talk**, Margaret M. Murnane, Henry Kapteyn, “The Extreme Nonlinear Optics of Coherent X-Ray Beams and Applications in Imaging and Nanometrology,” Nonlinear Optics (NLO) 2015, Kauai, Hawaii, July 2015. Presented by Margaret Murnane.
1203. **Contributed Talk**, Henry Kapteyn et al, “Circularly Polarized Soft X-Ray High Harmonics and XMCD on a Tabletop,” Nonlinear Optics (NLO) 2015, Kauai, Hawaii, July 2015. Presented by Henry Kapteyn.
1202. **Invited talk**, Kathleen Hoogeboom-Pot, Jorge Nicolas Hernandez-Charpak, Travis Frazer, Weilun Chao, Justin Shaw, Margaret Murnane, Henry Kapteyn and Damiano Nardi, “Using EUV Photoacoustics for Nanometrology of Ultrathin Films,” Nineteenth Symposium on Thermophysical Properties, Boulder, CO, July 2015. PaperID 2774. Presented by Kathleen Hoogeboom-Pot.
1201. **Contributed talk**, Jorge Nicolas Hernandez-Charpak, Kathleen Hoogeboom-Pot, Travis Frazer, Damiano Nardi, Weilun Chao, Erik Anderson, Xiaokun Gu, Ronggui Yang, Margaret Murnane and Henry Kapteyn, “Probing Nanoscale Heat Dissipation Away from 1D- and 2D-Confined Heat Sources with Coherent EUV Light,” Nineteenth Symposium on Thermophysical Properties, Boulder, CO, July 2015. PaperID 2754. Presented by Jorge Nicolas Hernandez-Charpak.

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1200. **Contributed Talk**, P. Ranitovic, R. Bello, L. S. Martin, C. W. Hogle, A. Palacios, J. L. Sanz-Vicario, K. Ueda, X. M. Tong, F. Marten, M. Murnane, and H. C. Kapteyn, "Control of Atomic and Molecular XUV Absorption Processes by Intense Infrared Radiation," XXIX International Conference on Photonic, Electronic, and Atomic Collisions (ICPEAC), Toledo, Spain July 2015. Presented by Predrag Ranitovic.
1199. **Contributed Talk**, Roger Bello, L. S. Martin, C. W. Hogle, Alicia Palacios, J. L. Sanz-Vicario, X. M. Tong, Fernando Martín, M. M. Murnane, H. C. Kapteyn, Predrag Ranitovic, "Mapping ultrafast dynamics of highly excited D2+ by ultrashort XUV pump - IR probe radiation," XXIX International Conference on Photonic, Electronic, and Atomic Collisions (ICPEAC), Toledo, Spain July 2015. Presented by Predrag Ranitovic.
1198. **Contributed talk**, E Shanblatt, B Zhang, D Gardner, M Seaberg, C Porter, R Karl, H Kapteyn, M Murnane, and D Adams, "High Numerical Aperture Reflection Mode Coherent Diffractive Imaging of Nano-Patterned Surfaces using a Tabletop Extreme Ultraviolet Source," OSA Conference on Imaging and Applied Optics (COSI) 2015, Arlington, Virginia, June 2015. Presented by Elizabeth Shanblatt. doi: 10.1364/COSI.2015.CW4E.4
1197. **Contributed talk**, Daniel E. Adams, Dennis F. Gardner, Elisabeth R. Shanblatt, Christina L. Porter, Robert M. Karl, Michael D. Tanksalvala, Henry C. Kapteyn, Margaret M. Murnane, "Tabletop-Scale EUV Coherent Phase-And-Amplitude Imaging Using High Harmonics," 2015 International Workshop on EUV Lithography, Maui, Hawaii, June 2015. Talk P55. Presented by Dan Adams.
1196. **Research Update talk**, Margaret Murnane et al, "Nanoscale Acoustic and Thermal Metrology using Coherent EUV Beams," Semiconductor Research Corporation Nanomanufacturing Science Patterning and Front-End Processes Review Agenda, Boulder, CO May 2015. Presented by Margaret Murnane.
1195. **Research Update talk**, Margaret Murnane et al, "Advanced Nanoscale Metrology for Semiconductor Applications - Task 2443.001," Semiconductor Research Corporation Nanomanufacturing Science Patterning and Front-End Processes Review Agenda, Boulder, CO May 2015. Presented by Margaret Murnane.
1194. **Invited talk**, Henry Kapteyn and Margaret Murnane, "Tabletop High Harmonic Sources and Applications," DCG Systems Inc, San Jose, CA May 2015. Presented by Henry Kapteyn.
1193. **Contributed talk**, Carlos Hernandez-Garcia, Tenio Popmintchev, Margaret M. Murnane, Henry C. Kapteyn, Luis Plaja, Agnieszka Jaron-Becker, Andreas Becker, "Group-velocity mismatch effect in high-order harmonic generation," Conference on Lasers and Electro-optics (CLEO), San Jose, CA, May 2015. Paper SM3N.4. Presented by Carlos Hernandez-Garcia. doi: 10.1364/CLEO_SI.2015.SM3N.4
1192. **Postdeadline talk**, T Fan, P Grychtol, R Knut, C Hernandez-Garcia, D Hickstein, C Gentry, C Hogle, D Zusin, K Dorney, O Shpyrko, O Cohen, O Kfir, L Plaja, A Becker, A Jaron-Becker, MM Murnane, HC Kapteyn, and T Popmintchev, "Bright Circularly Polarized Soft X-Ray High Harmonics for X-Ray Magnetic Circular Dichroism," Conference on Lasers and Electro-optics (CLEO), San Jose, CA, May 2015. Paper# JTh5C.1. Presented by Tingting Fan.
1191. **Contributed talk**, Dmitriy Zusin, Ronny Knut, Patrik Grychtol, Ofer Kfir, Christian Gentry, Hans Nembach, Justin Shaw, Tom Silva, Avner Fleischer, Oren Cohen, Henry C. Kapteyn, Margaret M. Murnane, "Probing Ultrafast Magnetization Dynamics using Bright Circularly Polarized High Harmonics," Conference on Lasers and Electro-optics (CLEO), San Jose, CA, May 2015. Paper STu4N.5. Presented by Dmitriy Zusin.

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1190. **Contributed talk**, Christopher A. Mancuso, Daniel Hickstein, Patrik Grychtol, Ronny Knut, Ofer Kfir, Xiao-Min Tong, Franklin Dollar, Dmitriy Zusin, Maithreyi Gopalakrishnan, Christian Gentry, Emrah Turgut, Jennifer Ellis, Ming-Chang Chen, Avner Fleischer, Oren Cohen, Henry C. Kapteyn, Margaret M. Murnane, “Direct Observation of Rescattering from Strong Field Ionization by Two-Color Circularly Polarized Laser Fields,” Conference on Lasers and Electro-optics (CLEO), San Jose, CA, May 2015. Paper FTh4C.6. Presented by Christopher A. Mancuso.
1189. **Contributed talk**, Patrik Grychtol et al, "Bright Circularly Polarized Soft X-Ray High Harmonics For X-Ray Magnetic Circular Dichroism". Second Conference on Femtosecond Electron Imaging and Spectroscopy (FEIS-2). Lansing, MI May 2015. Presented by Patrik Grychtol.
1188. **Poster presentation**, Kathleen Hooeboom-Pot, Jorge Hernandez-Charpak, Dennis Gardner, Matthew Seaberg, Bosheng Zhang, Travis Frazer, Elisabeth Shanblatt, Christina Porter, Robert Karl, Erik Anderson, Weilun Chao, Justin Shaw, Margaret Murnane, Henry Kapteyn, Daniel Adams, and Damiano Nardi, “Extreme Ultraviolet Nanometrology for Imaging of New Dynamics in NanoSystems,” Frontiers of Characterization and Metrology for Nanoelectronics 2015, Dresden Germany, April 2015. Presented by Kathleen Hooeboom-Pot.
1187. **Contributed talk**, Kathleen Hooeboom-Pot, Jorge Hernandez-Charpak, Travis Frazer, Justin Shaw, Henry Kapteyn, Margaret Murnane, Damiano Nardi, “Material Characterization at 1-50nm Dimensions Using EUV Acoustic Nanometrology,” Symposium A: Emerging Silicon Science and Technology, 2015 MRS Spring Meeting & Exhibit, San Francisco, California, April 2015. Talk A4.05. Presented by Kathleen Hooeboom-Pot.
1186. **Contributed talk**, Kathleen Hooeboom-Pot, Jorge Hernandez-Charpak, Travis Frazer, Xiaokun Gu, Ronggui Yang, Erik Anderson, Weilun Chao, Henry Kapteyn, Margaret Murnane, Damiano Nardi, “Harnessing a New Regime of Collective Diffusion in Nanoscale Thermal Transport,” Symposium M: Nanoscale Heat Transport---From Fundamentals to Devices, 2015 MRS Spring Meeting & Exhibit, San Francisco, California, April 2015. Talk M15.02. Presented by Kathleen Hooeboom-Pot.
1185. **Invited talk**, Henry Kapteyn and Margaret Murnane, “Tabletop High Harmonic Sources and Applications,” First Meeting of the Colorado Ultrafast Photonics Initiative Workshop CUPhI 2015, Winter Park, CO April 2015. Presented by Henry Kapteyn.
1184. **Invited talk**, Carlos Hernández-García, Tenio Popmintchev, Margaret Murnane, Henry Kapteyn, Luis Plaja, Andreas Becker, Agnieszka Jaron-Becker, “Role of group velocity matching in the generation of soft X-ray attosecond pulses,” First Meeting of the Colorado Ultrafast Photonics Initiative Workshop CUPhI 2015, Winter Park, CO April 2015. Presented by Carlos Hernández-García.
1183. **Poster**, Jennifer L. Ellis, Daniel D. Hickstein, Kyle J. Schnitzenbaumer, Molly B. Wilkner, Brett B. Palm, Franklin Dollar, Tingting Fan, Kevin M. Dorney, K. Ellen Keister, Chengyuan Ding, Luis Miaja-Avila, Jose Luis-Jimenez, Gordana Dukovic, Margaret M. Murnane, Henry C. Kapteyn, and Wei Xiong, “Ultrafast photoelectron spectroscopy of nanoparticles in the gas phase,” First Meeting of the Colorado Ultrafast Photonics Initiative Workshop CUPhI 2015, Winter Park, CO April 2015. Presented by Jennifer L. Ellis.
1182. **Joseph and Sophia Konopinski Colloquium Series**, Margaret Murnane et al, “Science at the Timescale of the Electron: Tabletop X-ray Lasers and Applications in Nanoscience and Nanotechnology,” Department of Physics, Indiana University, April 2015. Presented by Margaret Murnane.

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1181. **Invited talk**, Matthew Seaberg, Daniel Adams, Bosheng Zhang, Dennis Gardner, Elisabeth Shanblatt, Henry Kapteyn, Margaret Murnane, “Coherent Imaging in Reflection and Transmission Modes Near the Wavelength Limit Using Tabletop High Harmonics,” The Materials Society TMS 2015 144th Annual Meeting and Exhibition, Orlando, FL, March 2015. Presented by Dan Adams.
1180. **Contributed talk**, William Peters, David Couch, Craig Hogle, Deana Beltran, Perry Towstik, David Jonas, Henry Kapteyn, and Margaret Murnane, “Angle-resolved PEPICO imaging of the dissociative ionization of methyl azide and methylenimine using a tabletop high harmonic generation light source,” 249th ACS National Meeting & Exposition, March, 2015, Denver, CO. Paper PHYS 122. Presented by William Peters.
1179. **Research Update Talk**, Henry Kapteyn, Alexander Gaeta, Robert Levis, Agnieszka Jaron-Becker, Andreas Becker, Luis Plaja, Margaret Murnane, and Tenio Popmintchev, “Extreme Nonlinear Optics driven by UV to Mid-IR Lasers: Bright Coherent X-ray Beams Uncover New Regimes of Nonlinear Propagation,” Semiannual Spring Review & Workshop, MURI: “Mathematical Modeling and Experimental Validation of Ultrashort Nonlinear Light-Matter Coupling associated with Filamentation in Transparent Media”, Mar 2015, Tucson, AZ. Presented by Henry Kapteyn.
1178. **Plenary talk**, Margaret Murnane et al, “Science at the Timescale of the Electron: The Quantum Nonlinear Optics of High Harmonic Generation,” Deutsche Physikalische Gesellschaft (DPG) Spring Meeting, Heidelberg, Germany, March 2015. Talk PV V. Presented by Margaret Murnane.
1177. **Informal talk**, Henry Kapteyn and Margaret Murnane, “The quest for the x-ray laser,” JILA Partners Program, JILA, Boulder CO March 2015. Presented by Henry Kapteyn.
1176. **Invited talk**, Margaret Murnane et al, “Science at the Timescale of the Electron: Tabletop Ultrafast X-rays and Applications in Nano and Materials Science,” Deutsche Physikalische Gesellschaft (DPG) Annual Meeting and DPG Spring Meeting, Berlin, Germany, March 2015. Talk SYFL 2.3. Presented by Margaret Murnane.
1175. **Poster**, Christian Weier, Roman Adam, Denis Rudolf, Robert Frömter, Patrik Grychtol, Gerrit Winkler, André Kobs, Hans Peter Oepen, Margaret M. Murnane, Henry C. Kapteyn, and Claus M. Schneider, “Laser-Induced Modifications of Co/Pt Multilayer Films Studied with Tabletop Resonant Magnetic Scattering,” Deutsche Physikalische Gesellschaft (DPG) Annual Meeting and DPG Spring Meeting, Berlin, Germany, March 2015. Poster MA 49.12. Presented by Christian Weier.
1174. **Contributed talk**, S. Emmerich, S. Eich, A. Stange, A.V. Carr, J. Urbancic, T. Popmintchev, M. Wiesenmayer, K. Jansen, A. Ruffing, S. Jakobs, T. Rohwer, S. Hellmann, C. Chen, P. Matyba, L. Kipp, K. Rossnagel, M. Bauer, M.M. Murnane, H.C. Kapteyn, S. Mathias, and M. Aeschlimann, “Narrowband high harmonic pulses for trARPES using frequency-upconverted Ti:Sapphire lasers,” Deutsche Physikalische Gesellschaft (DPG) Annual Meeting and DPG Spring Meeting, Berlin, Germany, March 2015. Talk O 22.3. Presented by Sebastian Emmerich.
1173. **Poster**, S. Eich, S. Mathias, J. Urbancic, A.V. Carr, A. Stange, S. Michael, T. Popmintchev, T. Rohwer, M. Wiesenmayer, A. Ruffing, S. Jakobs, S. Hellmann, P. Matyba, C. Chen, L. Kipp, M. Bauer, M.M. Murnane, H.C. Schneider, K. Rossnagel, H.C. Kapteyn, and M. Aeschlimann, “The role of non-equilibrium dynamics in photo-induced phase transitions of correlated materials,” Deutsche Physikalische Gesellschaft (DPG) Annual Meeting and DPG Spring Meeting, Berlin, Germany, March 2015. Talk O 71.3. Presented by Stefan Eich.

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- 1172.**Invited speaker, Kavli Foundation Special Symposium: Frontiers of Light**, Margaret Murnane et al, “The Light Science of Coherent X-rays: How Quantum Dynamics Solved a 50 Year Challenge,” March Meeting of the American Physical Society, San Antonio, TX, March 2015. Talk Q0.00005. Presented by Margaret Murnane.
- 1171.**Contributed talk**, Adra Carr, Cong Chen, Zhensheng Tao, Margaret Murnane, Henry Kapteyn, Piotr Matyba, Sebastian Emmerich, Martin Aeschlimann, Ulrich Hofer, “Ultrafast Coherent Photoelectron Spectroscopy of Electronic States on a Cu (111) Surface,” March Meeting of the American Physical Society, San Antonio, TX, March 2015. Talk B27.00006. Presented by Zhensheng Tao.
- 1170.**Invited talk**, Patrick Grychtol, Ronny Knut, Emrah Turgut, Dmitriy Zusin, Christian Gentry, Henry Kapteyn, Margaret Murnane, Justin Shaw, Hans Nembach, Tom Silva, Ofer Kfir, Avner Fleischer, and Oren Cohen, “Ultrafast high harmonics for probing the fastest spin and charge dynamics in magnetic materials,” March Meeting of the American Physical Society, San Antonio, TX, March 2015. Talk B27.00009. Presented by Patrick Grychtol.
- 1169.**Poster**, Maithreyi Gopalakrishnan, Chris Mancuso, Daniel Hickstein, Patrik Grychtol, Ronny Knut, Franklin Dollar, Dmitriy Zusin, Christian Gentry, Emrah Turgut, Jennifer Ellis, Henry Kapteyn, Margaret Murnane, Ofer Kfir, Oren Cohen, Avner Fleischer, Xiao-Min Tong, Ming-Chang Chen, “Strong field ionization tomography with two-color circularly polarized femtosecond laser fields,” March Meeting of the American Physical Society, San Antonio, TX, March 2015. Poster H1.00051. Presented by Maithreyi Gopalakrishnan.
- 1168.**Poster**, Dmitriy Zusin, Patrik Grychtol, Christian Gentry, Margaret Murnane, Henry Kapteyn, Sophie Canton, Ronny Knut, Justin Shaw, Hans Nembach, Thomas Silva, Alejandro Ceballos, Catherine Bordel, Peter Fischer, Frances Hellman, “Capturing the Magnetic and Structural Phase Transition of Ferh using Extreme Ultraviolet Light,” March Meeting of the American Physical Society, San Antonio, TX, March 2015. Poster H1.00144. Presented by Dmitriy Zusin.
- 1167.**Invited talk: Best in Session Awardee**, Kathleen M. Hoogeboom-Pot, Jorge N. Hernandez-Charpak, Damiano Nardi, Travis Frazer, Emrah Turgut, Erik H. Anderson, Weilun L. Chao, Justin M. Shaw, Margaret M. Murnane, Henry C. Kapteyn, “Material characterization at sub-50nm dimensions using coherent EUV beams,” Conference 9424: Metrology, Inspection, and Process Control for Microlithography XXIX, SPIE Advanced Lithography Conference, San Jose, CA, February 2015. Presented by Kathleen M. Hoogeboom-Pot.
- 1166.**Colloquium**, Margaret Murnane et al, “Science at the Timescale of the Electron: Tabletop X-Ray Lasers and Applications in the Nanoworld,” Department of Physics, Johns Hopkins University, February 2015. Presented by Margaret Murnane.
- 1165.**Invited talk**, Henry C. Kapteyn and Margaret M. Murnane, “Applications of HHG Tabletop Coherent EUV and Soft X-ray Sources,” 4th Banff Meeting on Structural Dynamics: Ultrafast Dynamics with X-Rays and Electrons, Banff, Alberta, Canada, February, 2015. Presented by Henry Kapteyn.
- 1164.**Moossa J. Arman Physics Colloquium**, Margaret Murnane et al, “Science at the Timescale of the Electron: Tabletop X-ray Lasers and Applications in Nanoscience and Nanotechnology,” UCLA, February 2015. Presented by Margaret Murnane.
- 1163.**Colloquium**, Margaret Murnane et al, “Science at the Timescale of the Electron: Tabletop X-Ray Lasers and Applications in the Nanoworld,” University of Southern California, January 2015. Presented by Margaret Murnane.

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1162. **Research Update Talk**, Defense Advanced Research Projects Agency Program in Ultrafast Laser Science and Engineering (DARPA PULSE) Program Meeting, Arlington, VA, January 2015. Presented by Margaret Murnane.
1161. **Research Update Talk**, H.C. Kapteyn, M.M. Murnane, O. Cohen, A. Becker, A. Jaron-Becker, M. Keller, X.M. Tong, M. Bauer, S. Mathias, "Strong Field Ionization and High Harmonic Generation using Circularly Polarized Light," Update for JILA AMO Physics Frontier Center, Boulder, CO, January 2015. Presented by Henry Kapteyn.
1160. **Plenary Talk**, Tenio Popmintchev, Margaret M. Murnane, and Henry C. Kapteyn, "Bright High Harmonics from the UV to the keV X-ray Region for Dynamic Imaging at the Space-Time Limit," Winter Colloquium on the Physics of Quantum Electronics (PQE), Snowbird UT, January 2015. Presented by Tenio Popmintchev.
1159. **Invited talk**, Patrik Grychtol, Ofer Kfir, Ronny Knut, Emrah Turgut, Dmitriy Zusin, Dimitar Popmintchev, Tenio Popmintchev, Hans Nembach, Justin Shaw, Avner Fleicher, Henry Kapteyn, Margaret Murnane and Oren Cohen, "Integrating table-top laser, free electron laser and storage ring sources for time resolved spectroscopies," ELETTRA workshop, Trieste, Italy, December 2014. Presented by Patrik Grychtol.
1158. **Invited talk**, Patrik Grychtol, Ofer Kfir, Ronny Knut, Emrah Turgut, Dmitriy Zusin, Dimitar Popmintchev, Tenio Popmintchev, Hans Nembach, Justin Shaw, Avner Fleicher, Henry Kapteyn, Margaret Murnane and Oren Cohen, "Generation of bright Circular Polarized High Harmonics for Ultrafast Magneto-Optical Investigations," 59th Annual Conference On Magnetism And Magnetic Materials, Honolulu, HI, November 2014. Presented by Patrik Grychtol.
1157. **Physics & Astronomy Colloquium**, Margaret Murnane et al, "Science at the Timescale of the Electron: Tabletop X-ray Lasers and Applications in Nanoscience and Nanotechnology," Stony Brook University, Stony Brook, NY, November 2014.
1156. **Poster presentation**, Franklin Dollar, Daniel D. Hickstein, Tenio Popmintchev, et al, "Nonlinear Optical Interactions in Plasmas at JILA," APS Division of Plasma Physics Conference, New Orleans, LA. Presented by Franklin Dollar.
1155. **Invited talk**, Bosheng Zhang, Dennis F. Gardner, Matthew D. Seaberg, Elisabeth R. Shanblatt, Margaret M. Murnane, Henry C. Kapteyn, and Daniel E. Adams, "Reflection coherent diffractive imaging with tabletop high harmonics," X-ray Science Workshop, Melbourne, Australia, November 2014. Presented by Bosheng Zhang.
1154. **Contributed talk**, M. Gerrity, S. Brown, T. Popmintchev, M. Murnane, H. Kapteyn, and S. Backus, "Multi-mJ, High Repetition Rate, mid-IR OPCPA System," OSA Topical Conference on Advanced Solid State Lasers, Shanghai, China, November 2014. Paper AM3A.5. Presented by Michael Gerrity.
1153. **Contributed talk**, J. N. Hernandez-Charpak, K. Hoogeboom-Pot, E. Anderson, M. Murnane, H. Kapteyn and D. Nardi, "How close-packing of nanoscale interfaces may overcome inefficiencies of ballistic transport in heat dissipation," ASME 2014 International Mechanical Engineering Congress & Exposition, Montreal, Canada, Nov 2014. Presented by Jorge Hernandez-Charpak.
1152. **Overview Talk**, Margaret Murnane et al, BES Principal Investigators Meeting, X-ray Scattering and Ultrafast Techniques, Gaithersburg, MD, Nov 2014. Presented by Margaret Murnane.

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1151. **Research Update talk**, Henry Kapteyn et al, "Tailoring High Harmonics for Applications in Imaging and Photoemission," BES Principal Investigators Meeting, X-ray Scattering and Ultrafast Techniques, Gaithersburg, MD, Nov 2014. Presented by Henry Kapteyn.
1150. **Physics Colloquium**, Margaret Murnane et al, "Science at the Timescale of the Electron: Tabletop X-ray Lasers and Applications in Nanoscience and Nanotechnology," Department of Physics, University of Chicago, Chicago, IL November 2014. Presented by Margaret Murnane.
1149. **Physics Division Colloquium**, Margaret Murnane et al, "Science at the Timescale of the Electron: Tabletop X-ray Lasers and Applications in Nanoscience and Nanotechnology," Argonne National Laboratory, Argonne, IL November 2014. Presented by Margaret Murnane.
1148. **Keynote Lecture**, Margaret Murnane et al, "Coherent EUV and soft X-ray beams from tabletop lasers and applications in nanometrology, - NanoCity 2014, Utrecht, Netherlands, October 2014. Presented by Margaret Murnane.
1147. **Division of Mathematical and Physical Sciences Distinguished Lecture**, Margaret Murnane et al, "Science at the Timescale of the Electron: Ultrafast Lasers and Applications to Nano and Materials Research," National Science Foundation, Arlington, VA, October 2014. Presented by Margaret Murnane.
1146. **Contributed talk**, C. Hernandez-Garcia, T. Popmintchev, M. Murnane, H. Kapteyn, L. Plaja, A. Jaron-Becker, and A. Becker, "Efficient generation of isolated attosecond soft x-ray pulses," Frontiers in Optics 2014, San Jose, CA, October 2014. Paper JTU5G.3. Presented by Carlos Hernandez-Garcia.
1145. **Invited talk**, D. Adams, B. Zhang, M. Seaberg, D. Gardner, E. Shanblatt, M. Murnane, and H. Kapteyn, "Tabletop Nanometer Extreme Ultraviolet Imaging in an Extended Reflection Mode," Frontiers in Optics 2014, San Jose, CA, October 2014. Paper LW1H.4. Presented by Dan Adams.
1144. **Contributed talk**, E. Turgut, P. Grychtol, C. La-o-vorakiat, D. Zusin, H. Kapteyn, M. Murnane, J. Shaw, H. Nembach, T. Silva, R. Knut, O. Kfir, O. Cohen, A. Fleicher, D. Rudolf, R. Adam, C. Schneider, S. Mathias, and M. Aeschlimann, "Studying Ultrafast Magnetization Dynamics with Ultrafast Extreme Ultraviolet Light," Frontiers in Optics 2014, San Jose, CA, October 2014. Paper LW5H.5.
1143. **Invited talk**, M. Chen, C. Mancuso, C. Hernandez-Garcia, F. Dollar, B. Galloway, D. Popmintchev, P. Huang, B. Walker, L. Plaja, A. Jaron-Becker, A. Becker, M. Murnane, H. Kapteyn, and T. Popmintchev, "Generation of Bright Isolated Attosecond Soft X-Ray Pulses Driven by Multi-Cycle Mid-Infrared Lasers," Frontiers in Optics 2014, San Jose, CA, October 2014. Paper LW1H.1.
1142. **Russell Marker Lecture Series in the Physical Sciences: Seminar**, M. Murnane, H.C. Kapteyn, et al, "Coherent EUV and Soft X-ray Beams from Tabletop Lasers and Applications in Nanometrology", Pennsylvania State University Department of Physics, State College, PA, October 2014. Presented by Margaret Murnane.
1141. **Russell Marker Lecture Series in the Physical Sciences: Public Lecture**, M. Murnane, H.C. Kapteyn, et al, "Tabletop X-Ray Lasers: From Star Wars to Nanotechnology", Pennsylvania State University Department of Physics, State College, PA, October 2014. Presented by Margaret Murnane.

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1140. **Russell Marker Lecture Series in the Physical Sciences: Physics Colloquium**, M. Murnane, H.C. Kapteyn, et al, "Science at the Timescale of the Electron: Tabletop X-ray Lasers and Applications in Nanoscience and Nanotechnology", Pennsylvania State University Department of Physics, State College, PA, October 2014. Presented by Henry Kapteyn.
1139. **Webinar**, Margaret Murnane et al, "Acoustic and Thermal Nanometrology using Coherent EUV Light," Semiconductor Research Corporation, October 2015. Presented by Margaret Murnane.
1138. **Research Update talk**, Margaret Murnane et al, "Influence of Nonlinear Laser Beam Propagation on High harmonic Generation from the UV to the keV," Annual Review of Theoretical Nonlinear Optics 2014 (AFOSR MURI), Arlington, VA, October 2014. Presented by Margaret Murnane.
1137. **Introduction**, Henry Kapteyn, "[KMLabs Inc.] Company Overview," Quarterly Meeting of the Colorado Photonics Industry Association, Boulder, CO, September 2014. Presented by Henry Kapteyn.
1136. **Contributed talk**, Susannah Brown, M.R.Gerrity, T.Popmintchev, M.M.Murnane, H.C.Kapteyn, and S.Backus, "High-Energy, kHz, Mid-Infrared OPCPA System for High Harmonic Generation of Soft X-Rays," Directed Energy Professional Society Ultrashort Pulse Laser Workshop, Boulder, CO September 2014. Presented by Susannah Brown.
1135. **Invited talk**, Henry C. Kapteyn and Margaret M. Murnane, "Science at the Timescale of the Electron: Ultrafast X-Rays & Applications in the Nanoworld," Stanford Photonics Research Center 2014 Annual Symposium, Stanford, CA, Sept 2015. Presented by Henry Kapteyn.
1134. **Invited talk**, Margaret Murnane et al, "Acoustic and Thermal Nanometrology using Coherent EUV Light," Semiconductor Research Corporation Annual Executive Review, Hillsboro, OR, September 2014. Presented by Margaret Murnane.
1133. **Contributed talk**, Kathy Hoogeboom-Pot, Jorge N. Hernandez-Charpak, Damiano Nardi, Emrah Turgut, Vimal K Kamineni, Erik Anderson, Justin Shaw, Henry Kapteyn, Margaret Murnane, "Discovering New Thermal and Mechanical Properties of Nanostructured Systems using Tabletop EUV Nanometrology," Semiconductor Research Corporation TECHCON 2014, Austin, TX, Sept 2014. Paper 31.2. Presented by Kathy Hoogeboom-Pot. Recognized with Best in Session Award.
1132. **Invited talk**, Margaret Murnane et al, "Quantum nonlinear optics: Controlling the spectrum, polarization and temporal characteristics of bright high harmonics generation," Kavli Institute of Theoretical Physics (KITP) Program: Frontiers of Intense Laser Physics, Santa Barbara, CA, August 2014. Presented by Margaret Murnane.
1131. **Colloquium**, M. Murnane et al, "Science at the Timescale of the Electron: Ultrafast X-Rays and Applications in the Nanoworld," Workshop on Many-Body Quantum Systems Far from Equilibrium, Aspen Center for Physics, Aspen, CO, August 2014. Presented by Margaret Murnane.
1130. **Invited talk**, Margaret Murnane et al, "Coherent EUV and soft x-ray beams from tabletop lasers and Applications in nanometrology," Semiconductor Research Corporation GRC Nanoengineered Materials Review, Intel Corp, Hillsboro, OR, August 2014. Presented by Margaret Murnane.
1129. **Invited talk**, M. Murnane et al, "Attosecond Science: Tabletop Coherent Soft X-Ray Sources with Applications in Materials and Energy Science," BESAC Subcommittee Meeting: Directing Matter and Energy: Challenges for Science and the Imagination, Bethesda, MD, July 2014. Presented by Margaret Murnane.

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1128. **Contributed talk**, Kathleen Hoogeboom-Pot, J.N. Hernandez-Charpak, D. Nardi, M. Tripp, S. King, Intel Corp., E. Anderson, W. Chao, H. Kapteyn, M. Murnane, "Unique Advantages of EUV Light for Probing Material Properties at the Nanoscale," International Conference on Nanoscience and Technology (ICN&T), Vail, CO, July 2014. Presented by Kathy Hoogeboom-Pot.
1127. **Invited talk**, S. Backus, S. Brown, M. Gerrity, X. Zhang, R. Bartels, J. Squier, H. Kapteyn, and M. Murnane, "High Peak and Average Power Near/Mid-IR Femtosecond Laser Sources," OSA Topical Conference on Imaging and Applied Optics 2014, Seattle, WA, July 2014. Paper AM3A.1.
1126. **Invited talk**, "Quantum Nonlinear Optics of High Harmonic Generation – the Ultraviolet Surprise and Applications in Imaging," Ultrafast Dynamics at the Nanoscale Workshop, Okinawa Institute of Science and Technology, Okinawa, Japan, July 2014. Presented by Margaret Murnane.
1125. **Contributed talk**, D. Nardi, K. Hoogeboom-Pot, J. Hernandez-Charpak, E. Anderson, X. Gu, R. Yang, H. Kapteyn, and M. Murnane, "A New Regime of Nanoscale Thermal Transport: Collective Diffusion Counteracts Dissipation Inefficiency," 19th International Conference on Ultrafast Phenomena, Okinawa, Japan, July 2014. Paper 10.Thu.E.1. Presented by Damiano Nardi.
1124. **Poster Presentation**, C. Ding, W. Xiong, T. Fan, D. Hickstein, T. Popmintchev, X. Zhang, M. Walls, M. Murnane, and H. Kapteyn, "High flux coherent supercontinuum soft X-ray source driven by a single-stage Ti:sapphire pumped OPA," 19th International Conference on Ultrafast Phenomena, Okinawa, Japan, July 2014. Paper 07.Mon.P1.54.
1123. **Poster Presentation**, W. Xiong, D. Hickstein, K. Schnitzenbaumer, J. Ellis, B. Palm, C. Ding, M. Beernink, G. Dukovic, J. Jimenez, M. Murnane, and H. Kapteyn, "Ultrafast electronic structures and dynamics of CdSe nanocrystals revealed by gas phase time-resolved photoelectron spectroscopy," 19th International Conference on Ultrafast Phenomena, Okinawa, Japan, July 2014. Paper 07.Mon.P1.18.
1122. **Contributed talk**, P. Grychtol, O. Kfir, R. Knut, E. Turgut, D. Zusin, D. Popmintchev, T. Popmintchev, H. Nembach, J. Shaw, A. Fleischer, H. Kapteyn, M. Murnane, and O. Cohen, "Magnetic Circular Dichroism probed using High Harmonics," 19th International Conference on Ultrafast Phenomena, Okinawa, Japan, July 2014. Paper 10.Thu.B.1. Presented by P. Grychtol.
1121. **Contributed talk**, M. Chen, C. Mancuso, C. Hernandez-Garcia, F. Dollar, B. Galloway, D. Popmintchev, B. Langdon, A. Auger, P. Huang, B. Walker, L. Plaja, A. Jaron-Becker, A. Becker, M. Murnane, H. Kapteyn, and T. Popmintchev, "Generation of Bright Isolated Attosecond Soft X-Ray Pulses Driven by Multi-Cycle Mid-Infrared Lasers," 19th International Conference on Ultrafast Phenomena, Okinawa, Japan, July 2014. Paper 07.Mon.A.2. Presented by Ming-Chang Chen.
1120. **Contributed talk**, D. Hickstein, F. Dollar, J. Gaffney, M. Foord, G. Petrov, B. Palm, J. Ellis, C. Ding, E. Keister, S. Libbey, J. Jimenez, H. Kapteyn, M. Murnane, and W. Xiong, "Ultrafast Dynamics of Individual, Isolated Nanoparticles and Nanoplasmas in Intense Laser Fields," 19th International Conference on Ultrafast Phenomena, Okinawa, Japan, July 2014. Paper 09.Wed.E.2. Presented by Dan Hickstein.
1119. **Invited Presentation**, Margaret Murnane and Henry Kapteyn, "Quantum Dynamics in Nano and Materials Systems probed by Tabletop Coherent X-Rays," SFB 925 Conference and Summer School on Light induced dynamics and control of correlated quantum systems, Hohwacht, Germany, June 2014. Presented by Margaret Murnane.

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- 1118.**Invited Tutorial**, Margaret Murnane and Henry Kapteyn, "Quantum Dynamics at the Timescale of the Electron: Coherent X-Rays on a Tabletop," SFB 925 Conference and Summer School on Light induced dynamics and control of correlated quantum systems, Hohwacht, Germany, June 2014. Presented by Margaret Murnane.
- 1117.**Invited talk**, Damiano Nardi, Kathy Hoogeboom-Pot, Henry Kapteyn and Margaret Murnane, "Nanoscale Metrology using Coherent EUV Beams: Acoustic and Thermal Nanometrology; Coherent Imaging," Semiconductor Research Corporation NMS Nanoengineered Materials Review, Stanford, CA, June 2014. Presented by Margaret Murnane.
- 1116.**Contributed talk**, D. Adams, B. Zhang, M. Seaberg, D. Gardner, E. Shanblatt, H. Kapteyn, and M. Murnane, "Quantitative Tabletop EUV Phase-Contrast, Coherent Diffraction Imaging Microscope," OSA Topical Conference on Computational Optical Sensing and Imaging (COSI) 2014, Kohala Coast, Hawaii, June 2014. Paper CTu1C.6. Presented by Daniel Adams.
- 1115.**Contributed talk**, C. Hernandez-Garcia, M. Chen, C. Mancuso, F. Dollar, B. Galloway, D. Popmintchev, P. Huang, B. Walker, T. Popmintchev, M. Murnane, H. Kapteyn, L. Plaja, A. Jaron-Becker, and A. Becker, "Theory of time-gated phase-matching for isolated attosecond soft x-ray pulse generation using mid-infrared lasers," Conference on Lasers and Electro-optics (CLEO), San Jose, CA, June 2014. Paper FTu3B.7.
- 1114.**Contributed talk**, D. Adams, B. Zhang, M. Seaberg, D. Gardner, E. Shanblatt, M. Murnane, and H. Kapteyn, "High fidelity, general reflection-mode coherent diffractive imaging with a tabletop EUV source," Conference on Lasers and Electro-optics (CLEO), San Jose, CA, June 2014. Paper STh3O.1. Presented by Daniel Adams.
- 1113.**Contributed talk**, C. Mancuso, M. Chen, C. Hernandez-Garcia, F. Dollar, B. Galloway, D. Popmintchev, B. Langdon, A. Auger, P. Huang, B. Walker, L. Plaja, A. Jaron-Becker, A. Becker, M. Murnane, H. Kapteyn, and T. Popmintchev, "Generation of Bright Isolated Attosecond Soft X-Ray Pulses Driven by Multi-Cycle Mid-Infrared Lasers," Conference on Lasers and Electro-optics (CLEO), San Jose, CA, June 2014. Paper FTu3B.5.
- 1112.**Contributed talk**, O. Kfir, P. Grychtol, E. Turgut, R. Knut, D. Zusin, D. Popmintchev, T. Popmintchev, H. Nembach, J. Shaw, A. Fleischer, H. Kapteyn, M. Murnane, and O. Cohen, "Magnetic Circular Dichroism Probed with Bright High-order Harmonics," Conference on Lasers and Electro-optics (CLEO), San Jose, CA, June 2014. Paper FTu3B.1.
- 1111.**Contributed talk**, C. Ding, W. Xiong, T. Fan, D. Hickstein, T. Popmintchev, X. Zhang, M. Walls, M. Murnane, and H. Kapteyn, "High flux coherent supercontinuum soft X-ray source driven by a single-stage 10 mJ, kHz, Ti:sapphire laser amplifier," Conference on Lasers and Electro-optics (CLEO), San Jose, CA, June 2014. Paper FTu3B.2. Presented by Chenyuang Ding.
- 1110.**Contributed talk**, M. Gerrity, S. Brown, T. Popmintchev, M. Murnane, H. Kapteyn, and S. Backus, "High Repetition Rate, mJ-Level, mid-IR OPCPA System," Conference on Lasers and Electro-optics (CLEO), San Jose, CA, June 2014. Paper STh4E.8. Presented by Michael Gerrity.
- 1109.**Postdeadline talk**, D. Popmintchev, C. Hernandez-Garcia, B. Shim, M. Chen, F. Dollar, C. Mancuso, J. Perez-Hernandez, X. Gao, A. Hankla, A. Gaeta, M. Tarazkar, D. Romanov, R. Lewis, A. Jaron-Becker, A. Becker, L. Plaja, M. Murnane, H. Kapteyn, and T. Popmintchev, "Bright High Order Harmonic Generation in a Multiply Ionized Plasma up to the Water Window," Conference on Lasers and Electro-optics (CLEO), San Jose, CA, June 2014. Paper FTh5A.9. Presented by Tenio Popmintchev.

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- 1108.**Invited presentation**, Margaret Murnane and Henry Kapteyn, “X-ray Science with Ultrafast Lasers: origins and future,” Howard Schlossberg Retirement Symposium, Conference on Lasers and Electro-optics (CLEO), San Jose, CA, June 2014. Presented by Margaret Murnane.
- 1107.**Invited talk**, Margaret Murnane and Henry Kapteyn, “Quantum Dynamics at the Timescale of the Electron: Coherent X-Rays on a Tabletop,” A*STAR SIMTECH, Singapore, June 2014. Presented by Margaret Murnane.
- 1106.**Invited talk**, Henry Kapteyn and Margaret Murnane, “Quantum Dynamics in Nano and Materials Systems probed by Tabletop Coherent X-Rays,” A*STAR SIMTECH, Singapore, June 2014. Presented by Henry Kapteyn.
- 1105.**Invited talk**, Margaret Murnane and Henry Kapteyn, “Quantum dynamics at the timescale of the electron: Coherent x-rays on a tabletop”, International Conference on Light-Induced Dynamics and Control of Correlated Quantum Systems, Hohwacht, Germany, June 2014. Presented by Margaret Murnane.
- 1104.**Seminar**, Margaret Murnane et al, “Science at the timescale of the electron: Ultrafast x-rays and applications in nano and materials science,” Department of Mechanical Engineering, MIT, May 2014. Presented by Margaret Murnane.
- 1103.**Tutorial**, Margaret Murnane et al, “Science at the time scale of electron,” Mini-course on Atomic and Radiation Physics, International Conference on Plasma Science and High-Power Particle Beams, Washington, DC, May 2014. Presented by Margaret Murnane.
- 1102.**CUNY Advanced Science Seminar**, Margaret Murnane et al., “Science at the Timescale of the Electron: Tabletop X - ray Lasers and Applications in Nanoscience and Nanotechnology,” City University of New York, New York city, May 2014. Presented by Margaret Murnane.
- 1101.**Contributed talk**, Patrik Grychtol, Ofer Kfir, Emrah Turgut, Ronny Knut, Dmitriy Zusin, Dimitar Popmintchev, Tenio Popmintchev, Hans Nembach, Justin Shaw, Avner Fleicher, Henry Kapteyn, Margaret Murnane and Oren Cohen, INTERMAG, Dresden, Germany, May 2014. Presented by Patrik Grychtol.
- 1100.**Contributed talk**, Wei Xiong, Daniel D. Hickstein, Kyle J. Schnitzenbaumer, Jennifer L. Ellis, Brett B. Palm, K. Ellen Keister, Chengyuan Ding, Luis Miaja-Avila, Gordana Dukovic, Jose L. Jimenez, Margaret M. Murnane, and Henry C. Kapteyn, "Photoelectron Spectroscopy of CdSe Nanocrystals: direct measurements of electron wavefunctions," 8th International Conference on Quantum Dots, Pisa, Italy, May 2014. Presented by Jennifer Ellis.
- 1099.**Poster Presentation**, Daniel D. Hickstein, Wei Xiong, Jennifer L. Ellis, Chengyuan Ding, K. Ellen Keister, Franklin Dollar, Brett B. Palm, Jose L. Jimenez, Henry C. Kapteyn, Margaret M. Murnane, “Soft X-ray photoelectron spectroscopy of quantum dots in the gas phase,” 8th International Conference on Quantum Dots, Pisa, Italy, May 2014. Presented by Jennifer Ellis.
- 1098.**Contributed talk**, P. Grychtol, O. Kfir, R. Knut, E. Turgut, D. Zusin, D. Popmintchev, T. Popmintchev, H. Nembach, J. Shaw, A. Fleicher, H. Kapteyn, M. Murnane, and O. Cohen, “Generation of high harmonics with circular polarization and their use for magnetic materials studies,” International Conference on X-Ray Lasers, May 2014, Fort Collins. Paper 10.Thu.B.1. Presented by Patrik Grychtol.

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1097. **Contributed talk**, D.F. Gardner, B. Zhang, D.E. Adams, M.D. Seaberg, E.R. Shanblatt, M. Murnane, H. Kapteyn, “Reflection mode imaging with extreme-ultraviolet light from a high harmonic source” International Conference on X-Ray Lasers, May 2014, Fort Collins. Presented by Dennis Gardner.
1096. **Invited talk**, D. Popmintchev, C. Hernández-García, J. A. Pérez-Hernández, M.-C. Chen, F. Dollar, C. Manusco, X.-M. Tong, D. Romanov, R. Levis, B. Shim, A. Gaeta, A. JaronBecker, A. Becker, L. Plaja, M. M. Murnane, H. C. Kapteyn, and, T. Popmintchev, “Bright High Harmonic Generation in the X-ray Regime Driven by Ultraviolet – to – Midinfrared Lasers,” International Conference on X-Ray Lasers, May 2014, Fort Collins. Presented by Tenio Popmintchev.
1095. **Contributed talk**, E. Shanblatt, M. Seaberg, B. Zhang, D. Gardner, M. Murnane, H. Kapteyn, and D. Adams, “Keyhole reflection-mode coherent diffractive imaging of nano-patterned surfaces using a tabletop EUV source,” International Conference on X-Ray Lasers, Fort Collins, CO, May 2014. Presented by Elizabeth Shanblatt.
1094. **Seminar**, Margaret Murnane and Henry Kapteyn, “Tabletop X-ray Lasers: Applications in Nano, Materials and Defense,” DARPA, Arlington VA, May 2014. Presented by Margaret Murnane.
1093. **Invited talk**, Margaret Murnane and Henry Kapteyn, “Prospects for Standoff Detection Using Coherent High Harmonic X-ray Beams,” SPIE Defense and Security Symposium (DSS), Baltimore MD, April 2014. Presented by Henry Kapteyn.
1092. **Colloquium**, Margaret Murnane et al, “Science at the Timescale of the Electron: Ultrafast X-Rays and Applications in Nano- and Materials Research,” Cornell University, April 2014. Presented by Margaret Murnane.
1091. **Introductory talk**, Henry Kapteyn and Margaret Murnane, “The Quest for the X-ray Laser,” 151st Annual Meeting of the National Academy of Sciences, Washington DC, April 2014. Presented to Section 13: Physics by Henry Kapteyn.
1090. **Colloquium**, Margaret Murnane et al, “Science at the Timescale of the Electron: Ultrafast X-Rays and Applications in Nano- and Materials Research,” Department of Mechanical Engineering, Princeton University, Princeton, NJ, April 2014. Presented by Margaret Murnane.
1089. **Research Update Talk**, Henry Kapteyn et al, “Harnessing attosecond physics for quantum nonlinear optics,” Site visit review for JILA AMO Physics Frontier Center, Boulder, CO, April 2014. Presented by Henry Kapteyn.
1088. **Henry R. and Gladys V. Irons Lecture in Physics and Astronomy**, Margaret M. Murnane et al., “Tabletop X-Ray Lasers: From Star Wars to Nanotechnology,” Rutgers University, Piscataway, NJ, March 2014. Presented by Margaret Murnane.
1087. **William Small Distinguished Lecture**, Margaret Murnane et al, “Science at the Timescale of the Electron: Ultrafast X-Rays and Applications,” College of William and Mary, Williamsburg, VA, March 2014. Presented by Margaret Murnane.
1086. **Research Update talk**, Tenio Popmintchev, Henry Kapteyn, and Margaret Murnane, “Role of Nonlinear UV to mid-IR Laser Beam Propagation in High Harmonic Generation,” Meeting for AFOSR MURI on Mathematical Modeling and Experimental Validation of Ultrafast Nonlinear Light-Matter Coupling associated with Filamentation in Transparent Media, Tuscon Arizona, March 2014. Presented by Henry Kapteyn.

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1085. **Contributed talk**, Bosheng Zhang, Matthew Seaberg, Dennis Gardner, Elisabeth Shanblatt, Margaret Murnane, Henry Kapteyn, Daniel Adams, “Extended reflection coherent diffraction imaging of nanostructures on a tabletop,” March Meeting of the American Physical Society, Denver, CO, March 2014. Talk Y50.00014. Presented by Bosheng Zhang.
1084. **Contributed talk**, Elisabeth Shanblatt, Matthew Seaberg, Bosheng Zhang, Dennis Gardner, Margaret Murnane, Henry Kapteyn, Daniel Adams, “Keyhole reflection-mode coherent diffraction imaging of nano- patterned surfaces using a tabletop EUV source,” March Meeting of the American Physical Society, Denver, CO, March 2014. Talk Y50.00015. Presented by Elisabeth Shanblatt.
1083. **Contributed talk**, Daniel Hickstein, Wei Xiong, Franklin Dollar, Jennifer Ellis, Ellen Keister, Chengyuan Ding, Henry Kapteyn, Margaret Murnane, Jim Gaffney, Mark Foord, Stephen Libby, Brett Palm, Jose Jimenez, George Petrov, “Controlling shock wave propagation in individual nanoplasmas: experiment and hydrodynamic simulations,” March Meeting of the American Physical Society, Denver, CO, March 2014. Talk S26.00007. Presented by Daniel Hickstein.
1082. **Contributed talk**, Chengyuan Ding, Wei Xiong, Tingting Fan, Daniel Hickstein, Henry Kapteyn, Margaret Murnane, “kHz tabletop coherent soft X-ray source enabled by single-stage 10 mJ Ti:sapphire amplifier,” March Meeting of the American Physical Society, Denver, CO, March 2014. Talk Z24.00006. Presented by Chengyuan Ding.
1081. **Contributed talk**, Jennifer Ellis, Wei Xiong, Daniel Hickstein, Chengyuan Ding, Margaret Murnane, Henry Kapteyn, “Time Resolved Photoelectron Spectroscopy of CdSe Quantum Dots in the Gas Phase,” March Meeting of the American Physical Society, Denver, CO, March 2014. Talk P1.00038. Presented by Jennifer Ellis.
1080. **Contributed talk**, Ronny Knut, Justin Shaw, Hans Nembach, Patrik Grychtol, Emrah Turgut, Dmitriy Zusin, Henry Kapteyn, Margaret Murnane, Dario Arena, Erna Delczeg, Olle Eriksson, Olof Karis, Tom Silva, “Insight into the Slater-Pauling behavior of Permalloy-Cu alloys,” March Meeting of the American Physical Society, Denver, CO, March 2014. Talk Y7.00007. Presented by Ronny Knut.
1079. **Contributed talk**, K. Hoogeboom-Pot, E. Turgut, Jila, J. Shaw, J. Hernandez-Charpak, M. Murnane, H. Kapteyn, D. Nardi, “Understanding nanoscale mechanical properties of materials using ultrafast EUV photoacoustics,” March Meeting of the American Physical Society, Denver, CO, March 2014. Talk Z53.00003. Presented by Kathy Hoogeboom-Pot.
1078. **Contributed talk**, Dmitriy Zusin, Patrik Grychtol, Emrah Turgut, Henry Kapteyn, Margaret Murnane, Ronny Knut, Justin Shaw, Hans Nembach, Thomas Silva, Alejandro Ceballos, Catherine Bordel, Peter Fischer, Frances Hellman, “Ultrafast measurements of the magnetic and structural phase transition of FeRh in the extreme ultraviolet range,” March Meeting of the American Physical Society, Denver, CO, March 2014. Talk H1.00279. Presented by Dmitriy Zusin.
1077. **Contributed talk**, Emrah Turgut, Patrik Grychtol, Dmitry Zusin, Henry C. Kapteyn, Margaret M. Murnane, Dominik Legut, Karel Carva, Peter M. Oppeneer, Stefan Mathias, Martin Aeschlimann, Claus M. Schneider, Justin Shaw, Ronny Knut, Hans Nembach, Thomas J. Silva, “Theoretical and experimental investigations of the electronic structure configuration during ultrafast demagnetization of Co,” March Meeting of the American Physical Society, Denver, CO, March 2014. Talk Z8.00005. Presented by Emrah Turgut.

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1076. **Contributed talk**, Patrick Grychtol, Emrah Turgut, Dmitriy Zusin, Dimitar Popmintchev, Tenio Popmintchev, Henry Kapteyn, Margaret Murnane, Jila, Ronny Knut, Hans Nembach, Justin Shaw, Ofer Kfir, Avner Fleischer, Oren Cohen, “Circularly polarized high harmonic generation for element-selective probing of magnetic materials on a tabletop,” March Meeting of the American Physical Society, Denver, CO, March 2014. Talk F8.00007. Presented by Patrick Grychtol.
1075. **Contributed talk**, Piotr Matyba, Adra Carr, Cong Chen, Margaret M. Murnane, Henry C. Kapteyn, David L. Miller, Mark W. Keller, Guowen Peng, Manos Mavrikakis, Steffen Eich, “Dynamics of intermolecular Auger decay at a surface-chemisorbate interface,” March Meeting of the American Physical Society, Denver, CO, March 2014. Talk C1.00060. Presented by Piotr Matyba.
1074. **Contributed talk**, C. Weier, R. Adam, R. Fromter, J. Bach, G. Winkler, A. Kobs, H. P. Oepen, P. Grychtol, H. C. Kapteyn, M. M. Murnane, C. M. Schneider, “Element-selective investigation of domain structure in CoPd and FePd alloys using small-angle soft X-ray scattering,” March Meeting of the American Physical Society, Denver, CO, March 2014. Talk Q7.00007. Presented by C. Weier.
1073. **Contributed talk**, J. Hernandez-Charpak, K. Hoogeboom-Pot, E. Anderson, M. Murnane, H. Kapteyn, D. Nardi, “Comparing the Transition from Diffusive to Ballistic Heat Transport for 1D and 2D Nanoscale Interfaces,” March Meeting of the American Physical Society, Denver, CO, March 2014. Talk T25.00013. Presented by Jorge Nicolas Hernandez-Charpak.
1072. **Contributed talk**, Piotr Matyba, Adra Carr, Cong Chen, Margaret M. Murnane, Henry C. Kapteyn, David L. Miller, Mark W. Keller, Guowen Peng, Manos Mavrikakis, Stefan Mathias, “Controlling the electronic structure of graphene using surface-adsorbate interactions,” March Meeting of the American Physical Society, Denver, CO, March 2014. Talk W44.00011. Presented by Piotr Matyba.
1071. **Invited talk**, Margaret Murnane et al, “Quantum Control of Electrons in Atoms, Molecules and Materials - from Femtosecond to Attosecond to Zeptosecond Timescales,” March Meeting of the American Physical Society, Denver, CO, March 2014. Talk G2.00009. Presented by Margaret Murnane.
1070. **Contributed talk**, Bosheng Zhang, Daniel E. Adams, Matthew D. Seaberg, Dennis F. Gardner, Elisabeth R. Shanblatt, Henry Kapteyn and Margaret Murnane, “Quantitative tabletop coherent diffraction imaging microscope for EUV lithography mask inspection,” SPIE Advanced Lithography, San Jose, CA, February 2014. Paper Proc. of SPIE Vol. 90590501D. Presented by Bosheng Zhang.
1069. **Research Update Talk**, Margaret Murnane et al, “Progress in the Development of High Harmonic Lasers and Application” Industrial Advisory Board Meeting of the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, San Jose, CA, February 2014. Presented by Margaret Murnane.
1068. **Research Update Talk**, Margaret Murnane et al, “NANO-X: Tabletop coherent X ray nano-bio imaging at the spatio-temporal limits,” DARPA PULSE Contractors Meeting, Austin TX, February 2014. Presented by Margaret Murnane.
1067. **Research Update Talk**, Tenio Popmintchev, Alex Gaeta, John Badding et al, “Advances in HHG Sources and Waveguides,” DARPA PULSE Contractors Meeting, Austin TX, February 2014. Presented by Tenio Popmintchev, Alex Gaeta, and John Badding.

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- 1066.**Research Update Talk**, Henry C. Kapteyn, Michael Gerrity, Susannah Brown, Sterling Backus, Andrius Baltuska, “High average power ultrafast MIR lasers for coherent x-ray generation,” DARPA PULSE Contractors Meeting, Austin TX, February 2014. Presented by Henry Kapteyn.
- 1065.**Invited talk**, Stefan Mathias et al, “Ultrafast Element-Specific Magnetization Dynamics of Complex Magnetic Materials on a Table-Top,” 2014 Gordon Research Conference Ultrafast Phenomena in Cooperative Systems: Nonequilibrium Complex Matter Studied on Elementary Time Scales, Ventura, CA, February 2014. Presented by Stefan Mathias.
- 1064.**Hot topic talk**, Emrah Turgut et al, “NEW - Circularly Polarized Harmonic Generation & Controlling Ultrafast Spin Currents in Magnetic Multilayers,” 2014 Gordon Research Conference Ultrafast Phenomena in Cooperative Systems: Nonequilibrium Complex Matter Studied on Elementary Time Scales, Ventura, CA, February 2014. Presented by Emrah Turgut.
- 1063.**Poster**, Emrah Turgut, Patrik Grychtol, Chan La-O-Vorakiat, Justin Shaw, Ofer Kfir, Ronny Knut, Avner Fleicher, Stefan Mathias, Roman Adam, Dennis Rudolf, Dmitriy Zusin, Hans Nembach, Peter Oppeneer, Tom J. Silva, Oren Cohen, Claus M. Schneider, Martin Aeschlimann, Henry C. Kapteyn and Margaret M. Murnane, “Ultrafast and Element-Selective Probe of Magnetization Dynamics on a Tabletop,” 2014 Gordon Research Conference Ultrafast Phenomena in Cooperative Systems: Nonequilibrium Complex Matter Studied on Elementary Time Scales, Ventura, CA, February 2014. Presented by Emrah Turgut.
- 1062.**Invited talk**, Wei Xiong et al, “Photoelectron Spectroscopy of Nanoparticles Suspended in Gas Phase,” 2014 Gordon Conference on Photoions, Photoionization & Photodetachment, Galveston TX, February 2014. Presented by Wei Xiong.
- 1061.**Poster Presentation**, Daniel D. Hickstein, Franklin Dollar, K. Ellen Keister, Jennifer L. Ellis, Chengyuan Ding, Henry C. Kapteyn, Margaret M. Murnane, Jim A. Gagnay, Mark E. Foord, Stephen B. Libby, Brett B. Palm, Jose L. Jimenez, George M. Petrov, “Velocity map imaging of nanoparticles in femtosecond laser fields,” 2014 Gordon Conference on Photoions, Photoionization & Photodetachment, Galveston TX, February 2014. Presented by Daniel Hickstein.
- 1060.**Seminar**, Margaret Murnane et al, “High Harmonic Light Sources – Quantum Nonlinear Optics and Attosecond Science,” UCLA, January 2014. Presented by Margaret Murnane.
- 1059.**Invited talk**, Margaret Murnane et al, “High Harmonic Light Sources and Applications: Extreme Quantum Science,” The Knut and Alice Wallenberg Foundation - Hearing on Laser Based VUV and X-ray Sources and Their Applications, Royal Swedish Academy of Sciences, Stockholm Sweden, Jan 2014. Presented by Margaret Murnane.
- 1058.**Colloquium**, Margaret Murnane et al, “High Harmonic Light Sources and Applications: Extreme Quantum Science,” Department of Physics, Ullsala University, Uppsala, Sweden, January 2014. Presented by Margaret Murnane.
- 1057.**Invited Seminar**, Margaret Murnane et al, “Attosecond Science and Applications in Materials and Nano Science,” AMOLF, Amsterdam, January 2014. Presented by Margaret Murnane.
- 1056.**Invited talk**, Henry C. Kapteyn and Margaret Murnane, “Imaging using high-harmonic light sources: pushing light microscopy to its ultimate limits?” Winter Colloquium on the Physics of Quantum Electronics (PQE), Snowbird UT, January 2014. Presented by Henry Kapteyn.
- 1055.**Plenary talk**, Margaret Murnane et al, “Single attosecond pulses in the soft x-ray region of the spectrum: a favorable convergence of physics,” Winter Colloquium on the Physics of Quantum Electronics (PQE), Snowbird UT, January 2014. Presented by Margaret Murnane.

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1054. **Invited talk**, Margaret Murnane et al, “Probing Electron Dynamics in Molecules, Quantum Dots and Materials at the Space-Time Limits Using Coherent Tabletop High Harmonic X-Rays,” FEIS 2013 – Workshop on Femtosecond Electron Imaging and Spectroscopy, Key West, Florida, December 2013. Presented by Margaret Murnane.
1053. **Research Briefing**, Margaret Murnane et al, “Coherent 6.X nm Soft X-Rays from Tabletop Femtosecond Lasers and Applications in Nanometrology,” To personnel from Cymer, Inc, Nov 21, 2013. Presented by Margaret Murnane.
1052. **Colloquium**, Henry Kapteyn and Margaret Murnane, “Ultrafast coherent x-rays from tabletop lasers—a new tool for science and technology,” Institute of Modern Physics, Chinese Academy of Sciences November 2013. Presented by Henry Kapteyn.
1051. **Colloquium**, Henry Kapteyn and Margaret Murnane, “Ultrafast coherent x-rays from tabletop lasers—a new tool for science and technology,” Xi'an Institute of Optics and Precision Mechanics Of CAS, Xi'an China, November 2013. Presented by Henry Kapteyn.
1050. **Invited talk**, Henry C. Kapteyn and Margaret M. Murnane, “Coherent Soft X-ray sources driven by femtosecond mid-IR lasers, and the role of filamentation in beam propagation,” International Workshop on Ultrafast Molecular Processes in Filamentation, Shanghai China, November 2013. Presented by Henry Kapteyn.
1049. **Colloquium**, Henry Kapteyn and Margaret Murnane, “Ultrafast coherent x-rays from tabletop lasers—a new tool for science and technology,” Department of Physics Tsinghua University, Beijing, China, November 2013. Presented by Henry Kapteyn.
1048. **Keynote talk**, Margaret Murnane et al, “Coherent keV X-Rays from Tabletop Femtosecond Lasers and Applications in Nanometrology,” 2013 International Workshop on EUV and Soft X-Ray Sources, Dublin, Ireland, November 2013. Presented by Margaret Murnane.
1047. **Contributed talk**, Roman Adam, Dennis Rudolf, Claus Schneider, Chan La-O-Vorakiat, Emrah Turgut, Patrik Grychtol, Margaret Murnane, Henry Kapteyn, Stefan Mathias, Martin Aeschlimann, Justin M. Shaw, Hans Nembach, Tom Silva, Marco Battiato, Pablo Maldonado, and Peter Oppeneer “Element selective investigation of spin dynamics in magnetic multilayers,” Ultrafast Magnetism Conference, Strasbourg, France, Oct-Nov 2013. Presented by Roman Adam.
1046. **Contributed talk**, Justin M. Shaw, Hans Nembach, Tom Silva, Chan La-O-Vorakiat, Emrah Turgut, Patrik Grychtol, Margaret Murnane, Henry Kapteyn, Stefan Mathias, Martin Aeschlimann, Roman Adam, Dennis Rudolf, Claus Schneider, Marco Battiato, Pablo Maldonado, and Peter Oppeneer, “Ultrafast, element-specific magnetization dynamics of multi-constituent magnetic materials by use of high-harmonic generation,” Ultrafast Magnetism Conference, Strasbourg, France, Oct-Nov 2013. Presented by Justin Shaw.
1045. **Invited Research Update**, Henry Kapteyn and Margaret Murnane, “Capturing Electron Dynamics in Atoms and Molecules using VMI and COLTRIMS,” 2013 Research Meeting of the Atomic, Molecular, and Optical Sciences (AMOS) Program of the Department of Energy Office of Basic Energy Sciences, Potomac, MD, October 2013. Presented by M. Murnane.
1044. **Keynote talk**, Margaret Murnane et al, “The Quest for the X-Ray Laser – How Diverse Teams lead to Discovery Science and Technology”, MISSION SCIENCE: *Global Issues facing Science and Society* UCD, Dublin, Ireland, Oct 11, 2013. Presented by Margaret Murnane.

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1043. **Plenary talk**, Margaret Murnane et al, “Science at the Timescale of the Electron: Coherent keV X-Rays from Tabletop Femtosecond Lasers,” *Frontiers in Optics 2013/ Laser Science XXIX*, Orlando, FL, October 2013. Presented by Margaret Murnane.
1042. **Invited talk**, Henry C. Kapteyn and Margaret M. Murnane, “Probing the fastest spin, charge and energy flow processes in advanced materials using ultrafast x-rays,” *Frontiers in Optics 2013/ Laser Science XXIX*, Orlando, FL, October 2013. Talk LTu2H.1. Presented by Margaret Murnane.
1041. **Invited talk**, Henry Kapteyn et al, “Ultrafast lasers for demanding applications: State of the art and ongoing prospects,” 3rd mini-Workshop on H- Laser Stripping and Accelerator Applications, Fermilab, IL, September 2013. Presented by Henry Kapteyn.
1040. **Colloquium**, Henry C. Kapteyn and Margaret M. Murnane, “Coherent ultrashort-pulse x-rays from tabletop lasers—a new tool for science and technology,” *Chemical Physics Program, University of Colorado at Boulder*, Sept 2013. Presented by Henry Kapteyn.
1039. **Invited talk**, Margaret Murnane, Wei Xiong, Henry Kapteyn, Daniel Hickstein, Tenio Popmintchav, Gordana Dudovic, and Jose-Luis Jimenez, “Probing electron dynamics in molecules, quantum dots, and materials at the space-time limits using coherent tabletop high harmonic X-rays,” 246th ACS National Meeting, Indianapolis, IN, September 2013. Presented by Margaret Murnane.
1038. **Invited talk**, “Acoustic Nanometrology using Tabletop Coherent EUV Light,” *Semiconductor Research Corporation Annual Review on Nano Materials, Stanford University, Stanford, CA*, August 2013. Presented by Margaret Murnane.
1037. **Contributed talk**, Damiano Nardi et al, “Acoustic Nanometrology using Tabletop Coherent EUV Light,” *Semiconductor Research Corporation TECHCON 2013, Austin, TX, September 2013*. Presented by Damiano Nardi. **Best of Session Award.**
1036. **Invited Talk**, Henry C. Kapteyn et al, “The Quest for the X-Ray Laser – Discovery Science, Technology, and Impact,” *Photonics as an enabling technology: Scientific perspectives, industrial applications; Student Conference on Photonic technologies, Aston University, Birmingham UK*, September 2013. Presented by Henry Kapteyn.
1035. **Invited Presentation**, Henry C. Kapteyn and Margaret M. Murnane, “Nanoscale Metrology using Coherent Tabletop EUV Beams,” *Intel Inc., Hillboro, OR, August 2013*. Presented by Henry Kapteyn.
1034. **Invited Research Update**, Henry C. Kapteyn, Michael Gerrity, Susannah Brown, Sterling Backus, and Andrius Baltuska “High average power ultrafast MIR lasers for coherent x-ray generation,” *Defense Advanced Research Projects Agency Program in Ultrafast Laser Science and Engineering (DARPA PULSE) Program Kick-off Meeting, Arlington, VA, August 2013*. Presented by Henry Kapteyn.
1033. **Invited Reaserch Update**, Margaret Murnane et al, “Tabletop coherent X-ray nano-bio imaging at the space-time limits (NANO-X),” *Defense Advanced Research Projects Agency Program in Ultrafast Laser Science and Engineering (DARPA PULSE) Program Kick-off Meeting, Arlington, VA, August 2013*. Presented by Margaret Murnane.
1033. **Poster Presentation**, D.D. Hickstein, P. Ranitovic, S. Witte, X.M. Tong, Y. Huisman, P. Arpin, X. Zhou, K.E. Keister, C.W. Hogle, B. Zhang, C. Ding, P. Johnsson, N. Toshima, M.J.J. Vrakking, M.M. Murnane, and H.C. Kapteyn, “Multiple rescattering in strong-field ionization: a new window into quantum tunneling physics,” *Fourth International Conference on Attosecond Physics (ATTO2013), Paris, France, July 2013*. Presentation P2.45. Presented by Margaret Murnane.

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1032. **Poster Presentation**, P. Ranitovic, C. W. Hogle, P. Riviere, A. Palacios, X.-M. Tong, N. Toshima, A. Gonzalez-Castrillo, L. Martin, F. Martin, M. M. Murnane, and H. C. Kapteyn, "Attosecond VUV Coherent Control of Molecular Dynamics," Fourth International Conference on Attosecond Physics (ATTO2013), Paris, France, July 2013. Presentation P2.52. Presented by F. Martin.
1031. **Invited talk**, S. Mathias, E. Turgut, P. Grychtol, C. La-o-vorakiat, J.M. Shaw, R. Adam, D. Rudolf, H.T. Nembach, T.J. Silva, M. Aeschlimann, C.M. Schneider, H.C. Kapteyn, and M.M. Murnane, "Ultrafast magnetization dynamics probed using high-harmonic X-rays," ^{SEP} Fourth International Conference on Attosecond Physics (ATTO2013), Paris, France, July 2013. Presented by Stefan Mathias.
1030. **Contributed talk**, T. Popmintchev, D. Popmintchev, M.-C. Chen, J. P. Siqueira, C. Hernandez-Garcia, J. A. Perez-Hernandez, L. Plaja, A. Becker, A. Jaron-Becker, S. Alisauskas, G. Andriukaitis, A. Pugzlys, A. Baltuska, M.M. Murnane, H.C. Kapteyn, "Unified Microscopic-Macroscopic Picture of High Harmonic Generation from the VUV to the keV X-ray Region," Fourth International Conference on Attosecond Physics (ATTO2013), Paris, France, July 2013. Presented by Henry Kapteyn.
1029. **Poster presentation**, Daniel D. Hickstein, Wei Xiong, Franklin Dollar, George Petrov, Brett Palm, K. Ellen Keister, Jennifer L. Ellis, Chengyuan Ding, Jose Luis-Jimenez, Henry C. Kapteyn, and Margaret M. Murnane, "Observation and Control of Shock Shells in Nanoplasmas," 2013 Stockpile Stewardship Academic Alliances (SSAA) Academic Symposium, Albuquerque, NM, June 2013. Presented by Margaret Murnane.
1028. **Contributed talk**, D. Adams, C. Teale, D. Kane, M. M. Murnane, and H. Kapteyn, "Imaging by Integrating Stitched Spectrograms," Conference on Lasers and Electro-optics (CLEO), San Jose, CA, June 2013. Paper CM3N.4. Presented by Dan Kane.
1027. **Contributed talk**, M. Seaberg, B. Zhang, J. Shaw, D. F. Gardner, D. Adams, M. M. Murnane, and H. Kapteyn, "Keyhole Coherent Diffraction Imaging of an Extended Transparent Sample Using Curved Multilayer Mirrors," Conference on Lasers and Electro-optics (CLEO), San Jose, CA, June 2013. Paper CM3N.3. Presented by Matt Seaberg.
1026. **Invited talk**, D. Popmintchev, M.-C. Chen, C. H. García, J. A. Perez Hernandez, J. P. Siqueira, S. Brown, F. Dollar, B. C. Walker, P. Grychtol, L. Plaja, M. M. Murnane, H. Kapteyn, and T. Popmintchev, "Ultrahigh-Efficiency High Harmonic Generation Driven by UV Lasers," Conference on Lasers and Electro-optics (CLEO), San Jose, CA, June 2013. Paper QW1A.5. Presented by Henry C. Kapteyn.
1025. **Contributed talk**, M. M. Murnane, H. Kapteyn, T. Popmintchev, D. Adams, M. Seaberg, D. Nardi, and K. Hoogeboom-Pot, "Coherent EUV High Harmonic Sources for Applications in Imaging, Materials Dynamics and Nanometrology," Conference on Lasers and Electro-optics (CLEO), San Jose, CA, June 2013. Paper JTu3B.1. Presented by Henry Kapteyn.
1024. **Contributed talk**, Kathleen Hoogeboom-Pot et al, "Exploring high-frequency acoustic waves in nanostructured systems with coherent extreme ultraviolet light," Eighth International Conference on Ultrafast Surface Dynamics, Estes Park, CO, May 2013. Presented by Emrah Turgut.
1023. **Contributed talk**, Emrah Turgut et al, "Moderation of ultrafast spin current propagation by choice of spacer layer material in magnetic multilayers," Eighth International Conference on Ultrafast Surface Dynamics, Estes Park, CO, May 2013. Presented by Emrah Turgut.

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1022. **Research Overview**, Henry C. Kapteyn and Margaret Murnane, “Nanoscale Materials Metrology using Coherent EUV beams,” ASML Inc, Veldhoven, NL, May 2013. Presented by Henry Kapteyn.
1021. **Invited talk**, Margaret Murnane et al, “Ultrafast coherent x-ray beams on a tabletop and applications in nano and materials science,” Eighth International Conference on Ultrafast Surface Dynamics, Estes Park, CO, May 2013. Presented by Margaret Murnane.
1020. **Keynote Talk**, Tenio Popmintchev et al, “Frontiers in Extreme Nonlinear Optics: Attosecond-to-Zeptosecond Coherent Kiloelectronvolt X-rays on a Tabletop,” CLEO Europe, Munich, Germany May 2013. Presented by Tenio Popmintchev.
1019. **Outstanding Alumni Award Presentation**, Henry C. Kapteyn and Margaret M. Murnane, “The Quest for the X-ray Laser,” Harvey Mudd College, Claremont, CA, May 2013. Presented by Henry Kapteyn.
1018. **Seminar**, Kathleen Hoogeboom-Pot et al, “Using coherent extreme ultraviolet light to directly observe nanoscale dynamics,” Computational Sensing and Imaging (COSI) program, University of Colorado at Boulder, April 2013. Presented by Kathleen Hoogeboom-Pot.
1017. **Richard Bernstein Lecture**, Margaret Murnane et al, “Ultrafast Coherent X-Ray Beams on a Tabletop and Applications in Nano and Materials Science,” Department of Chemistry, UCLA, April 2013. Presented by Margaret Murnane.
1016. **Invited talk**, M.M. Murnane et al, “Nanoscale Acoustics, Energy Flow, and Imaging Using Tabletop Coherent EUV High Harmonic Light Sources,” 2013 International Conference on Frontiers of Characterization and Metrology for Nanoelectronics, Gaithersburg, MD, March 2013. Presented by Margaret Murnane.
1015. **Invited talk**, Tom Silva et al, “Measuring Ultrafast Magnetization Dynamics with HHG Sources: New Physics in Alloys and Multilayers,” MXLS13: New Opportunities for Magnetic Dynamics and Materials at NSLS-II and MAX-IV, Vail, CO, March 2013. Presented by Tom Silva.
1014. **Invited talk**, H.C. Kapteyn et al, “Coherent EUV and X-ray Light Generated Using Tabletop Lasers: A New Light Source for Dynamics Studies,” MXLS13: New Opportunities for Magnetic Dynamics and Materials at NSLS-II and MAX-IV, Vail, CO, March 2013. Presented by Henry Kapteyn.
1013. **Contributed talk**, Emrah Turgut, Chan La-O-Vorakiat, Patrik Grychtol, Henry C. Kapteyn, Margaret M. Murnane, Dennis Rudolf, Roman Adam, Claus M. Schneider, Marco Battiato, Pablo Maldonado, Peter M. Oppeneer, Stefan Mathias, Martin Aeschlimann, Justin M. Shaw, Hans T. Nembach, Thomas J. Silva, “Ultrafast Magnetization Enhancement in Metallic Multilayers Driven by Superdiffusive Spin Current,” March Meeting of the American Physical Society, Baltimore, MD, March 2013. Talk W16.00009. Presented by Emrah Turgut.
1012. **Contributed talk**, Bosheng Zhang, Matthew D. Seaberg, Daniel E. Adams, Dennis F. Gardener, Margaret M. Murnane, and Henry C. Kapteyn, “Tabletop coherent diffraction imaging EUV microscope for EUV lithography inspection,” SPIE 2013 Advanced Lithography, Conference 8681: Metrology, Inspection, and Process Control for Microlithography XXVII, San Jose, CA, February 2013. Paper 8681-17. Presented by Bosheng Zhang.

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1011. **Contributed talk**, Damiano Nardi, Kathleen Hoozeboom-Pot, Jorge N. Hernandez-Charpak, Univ. of Colorado, Marie K. Tripp, Sean W. King, Erik H. Anderson, Margaret M. Murnane, and Henry C. Kapteyn, “Probing limits of acoustic nanometrology using coherent extreme-ultraviolet light,” SPIE 2013 Advanced Lithography, Conference 8681: Metrology, Inspection, and Process Control for Microlithography XXVII, San Jose, CA, February 2013. Paper 8681-22. Presented by Damiano Nardi.
1010. **Invited talk**, Margaret Murnane et al, “Quantum Control in Extreme Environments”, Conference on New Directions in the Quantum Control Landscape," Kavli Institute of Theoretical Physics, Santa Barbara, CA, February 2013. Presented by Margaret Murnane.
1009. **Invited talk**, Stefan Mathias et al, “The Power of Ultrafast X-Rays for Materials Science,” Annual Meeting of the AAAS, Boston, MA, February 2013. Presented by Stefan Mathias.
1008. **Invited talk**, Tenio Popmintchev et al, “Attosecond Pulse Generation and Intense Ultrafast Laser Technology,” Annual Meeting of the AAAS, Boston, MA, February 2013. Presented by Tenio Popmintchev.
1007. **Invited talk**, Margaret Murnane and Henry Kapteyn, “Using nonlinear optics to make coherent keV photons: a new frontier in attosecond physics,” ATTOFEL Winter School, Bormio, Italy, January 2013. Presented by Henry Kapteyn.
1006. **Invited talk**, Margaret Murnane and Henry Kapteyn, “Applying coherent ultrafast x-rays to real world problems in nano and materials science”, ATTOFEL Winter School, Bormio, Italy, January 2013. Presented by Margaret Murnane.
1005. **Colloquium**, Henry C. Kapteyn and Margaret Murnane, “Ultrafast coherent x-rays from tabletop lasers—a new tool for science and technology,” Free Univesrity (VU) Amsterdam, January 2013. Presented by Henry Kapteyn.
1004. **Invited talk**, Margaret Murnane et al, “Nonlinear Optics into the X-Ray Regime and Application in Materials Science,” Physics @ FOM 2013, Veldhoven, Netherlands, January 2013. Presented by Margaret Murnane.
1003. **Colloquium**, Margaret Murnane and Henry Kapteyn, “Bright Coherent Ultrafast X-Ray Beams on a Tabletop and Applications in Nano and Materials Science,” Department of Physics, University of Groningen, Netherlands, January 2013. Presesnted by Margaret Murnane.
1002. **Plenary talk**, Henry C. Kapteyn and Margaret Murnane, “Nonlinear optics into the x-ray regime,” Winter Colloquium on the Physics of Quantum Electronics (PQE), Snowbird UT, January 2013. Presented by Henry Kapteyn.
1001. **Invited talk**, Margaret Murnane et al, “Capturing dynamics in spintronic and correlated electron materials using ultrafast X-rays,” Winter Colloquium on the Physics of Quantum Electronics (PQE), Snowbird UT, January 2013. Presented by Margaret Murnane.
1000. **Research Update Talk**, Matt Seaberg, Dan Adams, et al, “Coherent Imaging using HHG Sources,” Annual Retreat of the NSF Center in Extreme Ultraviolet Science and Technology, LaPorte, CO, December 2012. Presented by Matt Seaberg and Dan Adams.
999. **Research Update Talk**, Tenio Popmintchev, Ming-Chang Chen, et al, “Progress in the Development of High Harmonic Sources,” Annual Retreat of the NSF Center in Extreme Ultraviolet Science and Technology, LaPorte, CO, December 2012. Presented by Tenio Popmintchev and Ming-Chang Chen.

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998. **Research Update Talk**, Emrah Turgut, Patrik Grychtol et al, "Ultrafast magnetic and spin dynamics," Annual Retreat of the NSF Center in Extreme Ultraviolet Science and Technology, LaPorte, CO, December 2012. Presented by Emrah Turgut and Patrik Grychtol.
997. **Research Update Talk**, Kathy Hooeboom and Damiano Nardi et al, "EUV thermal and acoustic nanometrology," Annual Retreat of the NSF Center in Extreme Ultraviolet Science and Technology, LaPorte, CO, December 2012. Presented by Kathy Hooeboom and Damiano Nardi.
996. **Physics Colloquium**, Henry C. Kapteyn et al, "Ultrafast coherent x-rays from tabletop lasers-a new tool for science and technology," Texas A&M University, November 2012. Presented by Henry Kapteyn.
995. **OSA Travelling Lecturer Colloquium**, Henry C. Kapteyn and Margaret Murnane, "Science at the Timescale of the Electrons: Bright keV X-Rays from Tabletop Femtosecond Lasers," Lund University, November 2012. Presented by Henry Kapteyn.
994. **Presentation for NSF ERC "Perfect pitch competition,"** Kathleen Hooeboom-Pot, "Knowledge at the Nanoscale: Guiding innovation with EUV light", NSF ERC Annual meeting 2012, Washington DC, November 2012. Presented by Kathleen Hooeboom-Pot.
993. **Seminar**, Margaret Murnane and Henry Kapteyn, "Capturing the Fastest Dynamics in Materials using Ultrafast Coherent X-Rays," Department of Physics, Lund University, November 2012. Presented by Margaret Murnane.
992. **Research Commercialization Talk**, Henry Kapteyn, "KMLabs Inc.," ERC Annual Meeting, Bethesda, MD, Nov 2012. Presented by Henry Kapteyn.
991. **Invited research update**, Henry Kapteyn and Margaret Murnane, "Limits of Ultrafast Laser and X-Ray Pulse Generation," DOE BES X-ray Scattering Principal Investigators Meeting, Gaithersburg, MD, November 2012. Presented by Henry Kapteyn.
990. **Poster**, Margaret Murnane, Henry C. Kapteyn, and Thomas J. Silva, "Ultrafast Magnetization Dynamics and Spin Transport Probed by Coherent Soft X-Rays," DOE BES X-ray Scattering Principal Investigators Meeting, Gaithersburg, MD, November 2012. Presented by Margaret Murnane.
989. **Research Update Presentation**, Henry C. Kapteyn and Margaret Murnane, "Probing Coupled Charge/Spin/Phonon Dynamics using Ultrafast Coherent X-Rays," JILA AMO Physics Frontier Center Monthly Meeting, Boulder, CO, October 2012. Presented by Henry Kapteyn.
988. **Contributed talk**, Xiaoshi Zhang, Dan Adams, Sterling Backus, T. Popmintchev, M.-C. Chen, Paul Arpin, Michael Gerrity, Susannah Brown, Chris Mancuso, Chan La-O-Vorakiat, Q. Li, Emrah Turgut, M. Murnane, and H. Kapteyn, "Ultrafast X-ray "Laser" Advancing Nanophotonics and nanoelectronics towards unprecedented spatial and temporal resolutions," Photonics Asia, Beijing, China, November 2012. Presented by Xiaoshi Zhang.
987. **Seminar**, "Ultrafast Element-Selective Magnetization Dynamics in Alloys and Multilayers," E. Turgut, C. La-o-vorakiat, S. Mathias, D. Rudolf, J.M. Shaw, C. Tale, P. Grychtol, P. Granitzka, R. Adam, H.T. Nembach, Tom Silva, C.M. Schneider, M. Aeschlimann, H.C. Kapteyn, and M.M. Murnane. Department of Physics, Middle East Technical University, Ankara, Turkey, October 2012. Presented by Emrah Turgut.
986. **Invited talk**, M. Murnane, T. Popmintchev, A. Baltuška, A. Gaeta, H. Kapteyn, "Bright coherent keV beams driven by self-confined mid-infrared femtosecond lasers," 4th International Symposium on Filamentation, Tucson, AZ, October 2012. Presented by Margaret Murnane.

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985. **Contributed talk**, Charles G. Durfee, Tristan Storz, Jonathan Garlick, Steven Hill, Jeffrey A. Squier, Matthew Kirchner, Gregory Taft, Kevin Shea, Henry C. Kapteyn, Margaret Murnane, Sterling Backus, “Kerr-Lens Modelocked Ti:Sapphire Laser Oscillator Directly Pumped with Blue Diodes,” *Frontiers in Optics 2012/ Laser Science XXVIII*, Rochester, NY, October 2012. Talk FM3G.2. Presented by Charles Durfee.
984. **Invited talk**, Henry C. Kapteyn, Predrag Ranitovic, Craig W. Hogle, Xibin Zhou, Leigh Martin, William Peters, Austin P. Spencer, David Jonas, Xiao-Min Tong, Margaret Murnane, “Molecular Dynamics with Ultrafast X-rays,” *Frontiers in Optics 2012/ Laser Science XXVIII*, Rochester, NY, October 2012. Talk LTu1H.1. Presented by Henry Kapteyn.
983. **Contributed talk**, Ofer Kfir, Pavel Sidorenko, Ariel Paul, Tenio Popmintchev, Henry C. Kapteyn, Margaret Murnane, Oren Cohen, “Extended Phase-Matching of High Harmonics Driven by Focusing Light in Planar Waveguide,” *Frontiers in Optics 2012/ Laser Science XXVIII*, Rochester, NY, October 2012. Talk LTh1H.4. Presented by Ofer Kfir.
982. **Poster**, Kathleen Hooeboom-Pot et al., "Photoacoustic nanometrology of ultrathin films using coherent EUV light", Annual Meeting of the Colorado Photonics Industry Association, Boulder, CO, October 2012. Presented by Kathleen Hooeboom-Pot.
981. **Physics Colloquium**, Margaret Murnane et al, “Bright coherent keV X-rays from tabletop femtosecond lasers,” University of Ottawa, September 2012. Presented by Margaret Murnane.
980. **Research Update talk**, Tenio Popmintchev, Ming-Chang Chen, Ellen Keister, Predrag Ranitovic, Dan Hickstein, Margaret Murnane, Henry Kapteyn, Alex Gaeta, Agnieszka Becker, Andreas Becker, Andrius Baltuska, Luis Plaja, “Understanding Intense MIR Laser Beam Propagation using Strong Field Ionization and Coherent X-Ray Generation,” Meeting for AFOSR MURI on Mathematical Modeling and Experimental Validation of Ultrafast Nonlinear Light-Matter Coupling associated with Filamentation in Transparent Media, Tuscon Arizona, September 2012. Presented by Margaret Murnane.
979. **Contributed talk**, Carlos Hernández-García, Tenio Popmintchev, Margaret Murnane, Henry Kapteyn, Agnieszka Jaron-Becker, Andreas Becker and Luis Plaja, “Ultra high-order harmonic generation in the keV regime driven by mid-infrared lasers,” Spanish National Meeting in Optics, Zaragoza, Spain September 2012. Presented by Carlos Hernández-García.
978. **Physics Colloquium**, Henry Kapteyn et al, “Ultrafast Coherent X-rays from Tabletop Lasers—a New Tool for Science and Technology,” Colorado School of Mines, Golden, CO, September 2012. Presented by Henry Kapteyn.
977. **Overview Talk**, Henry Kapteyn, “Overview of KMLabs Inc.,” Quarterly Meeting of the Colorado Photonics Industry Association, Boulder, CO, August 2012. Presented by Henry Kapteyn.
976. **Invited talk**, Tenio Popmintchev, Ming-Chang Chen, Dimitar Popmintchev, Paul Arpin, Susannah Brown, Skirmantas Ališauskas, Giedrius Andriukaitis, Tadas Balčiūnas, Oliver Mücke, Audrius Pugzlys, Andrius Baltuska, Bonggu Shim, Samuel Schrauth, Alexander Gaeta, Carlos Hernández-García, Luis Plaja, Andreas Becker, Agnieszka Jaron-Becker, Margaret Murnane, and Henry Kapteyn, "Towards Zeptosecond X-ray Pulses", 5th European Physics Society - QEOD Europhoton Conference, Solid State, Fiber, and Waveguide Coherent Light Sources, Stockholm, Sweden, Aug 2012. Presented by Tenio Popmintchev.
975. **Invited talk**, M. Murnane et al., Bright keV X-Rays from Tabletop Lasers – Enabling Discovery Science and Technological Innovation, EuroScience OpenForum Session on Big Science for Small Countries, Dublin, July 2012.

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974. **Poster**, E. Turgut, C. La-o-vorakiat, S. Mathias, D. Rudolf, J.M. Shaw, C. Tale, P. Grychtol, P. Granitzka, R. Adam, H.T. Nembach, S. Eich, C.M. Schneider, M. Aeschlimann, T.J. Silva, H.C. Kapteyn, and M.M. Murnane, “Element-Selective Ultrafast Magnetization Dynamics with a Tabletop High-harmonic Generation Light Source,” 5th IEEE Magnetics Society Summer School, Chennai, India, July 2012. Presented by Emrah Turgut.
973. **Invited presentation**, Henry C. Kapteyn et al, “High average power ultrafast MIR lasers for coherent x-ray generation,” DARPA Program in Ultrafast Laser Science and Engineering (PULSE) Proposers Day, Arlington, VA, July 2012. Presented by Henry Kapteyn.
972. **Invited presentation**, Margaret Murnane and Henry Kapteyn, “Bright Coherent keV High Harmonics from Tabletop Lasers,” DARPA Program in Ultrafast Laser Science and Engineering (PULSE) Proposers Day, Arlington, VA, July 2012. Presented by Margaret Murnane.
971. **Poster**, Chien-Chun Chen, Matthew D. Seaberg, Jose A. Rodriguez, Zhifeng Huang, Rui Xu, Yunfei Zou, Henry C. Kapteyn, Margaret M. Murnane and Jianwei Miao, “High Resolution Coherent Diffraction Imaging with Tabletop High Harmonic and Soft X-ray Laser Sources,” DARPA Program in Ultrafast Laser Science and Engineering (PULSE) Proposers Day, Arlington, VA, July 2012. Presented by Jianwei Miao.
970. **Poster**, Damiano Nardi, Kathleen Hooeboom-Pot, Qin Li, Sean King, Marie Tripp, Erik Anderson, Margaret Murnane and Henry Kapteyn, “Photoacoustic Nanometrology of Ultrathin Films using Coherent EUV Light,” Gordon Research Conference on Thin Film & Small Scale Mechanical Behavior, Waterville, ME, July 2012. Presented by Damiano Nardi.
969. **Contributed talk**, Kathleen Hooeboom-Pot, Damiano Nardi, Qing Li, Chris Deeb, Sean King, Marie Tripp, Erik H. Anderson, Margaret M. Murnane, and Henry C. Kapteyn, “Acoustic nanometrology of ultrathin films using coherent extreme ultraviolet beams,” XIV International Conference on Phonon Scattering in Condensed Matter (Phonons 2012), Ann Arbor, MI July 2012. Presented by Kathleen Hooeboom-Pot.
968. **Contributed talk**, Kathleen Hooeboom-Pot, Damiano Nardi, Qing Li, Xiaobo Li, Ronggui Yang, Erik H. Anderson, Margaret M. Murnane, and Henry C. Kapteyn, “Observation of ballistic thermal phonon transport across 2D nanoscale interfaces,” XIV International Conference on Phonon Scattering in Condensed Matter (Phonons 2012), Ann Arbor, MI July 2012. Presented by Kathleen Hooeboom-Pot.
967. **Contributed talk**, Damiano Nardi, Marco Travagliati, Mark E. Siemens, Qing Li, Margaret M. Murnane, Henry C. Kapteyn, Gabriele Ferrini, Fulvio Parmigiani, and Francesco Banfi, “Probing thermomechanics at the nanoscale: impulsively excited pseudosurface acoustic waves in hypersonic phononic crystals,” XIV International Conference on Phonon Scattering in Condensed Matter (Phonons 2012), Ann Arbor, MI, July 2012. Presented by Francesco Banfi.
966. **Invited talk**, Tenio Popmintchev, Ming-Chang Chen, Dimitar Popmintchev, Paul Arpin, Susannah Brown, Skirmantas Ališauskas, Giedrius Andriukaitis, Tadas Balčiūnas, Oliver Mücke, Audrius Pugzlys, Andrius Baltuška, Bonggu Shim, Samuel Schrauth, Alexander Gaeta, Carlos Hernández-García, Luis Plaja, Andreas Becker, Agnieszka Jaron-Becker, Margaret Murnane, and Henry Kapteyn, “A New Frontier in Nonlinear Optics: Bright Coherent Ultrafast Kiloelectronvolt X-rays on a Tabletop,” XVIIIth International Conference on Ultrafast Phenomena, Lausanne, Switzerland, July 2012. Paper WED.3.1. Presented by Tenio Popmintchev.

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965. **Contributed talk**, Stefan Mathias, Chan La-o-vorakiat, Patrik Grychtol, Patrick Granitzka, Emrah Turgut, Justin Shaw, Roman Adam, Hans Nembach, Mark Siemens, Steffen Eich, Claus Schneider, Thomas Silva, Martin Aeschlimann, Margaret Murnane, and Henry Kapteyn, “Probing the timescale of the exchange interaction in a ferromagnetic alloy,” XVIIIth International Conference on Ultrafast Phenomena, Lausanne, Switzerland, July 2012. Paper WED.3.6. Presented by Stefan Mathias.
964. **Contributed talk**, Stefan Hellmann, Timm Rohwer, Matthias Kalläne, Kerstin Hanff, Adra Carr, Margaret Murnane, Henry Kapteyn, Lutz Kipp, Michael Bauer, and Kai Rossnagel, “Time-domain evidence for an excitonic insulator,” XVIIIth International Conference on Ultrafast Phenomena, Lausanne, Switzerland, July 2012. Paper THU.2B.5. Presented by Stefan Hellman.
963. **Poster Presentation**, Sterling Backus, Michael Young, Tristan Storz, Jonathan Garlick, Steven Hill, Matt Kirchner, Greg Taft, Kevin Shea, Henry Kapteyn, Margaret Murnane, Charles Durfee, and Jeff Squier, “A Direct Diode-Pumped 15 fs Ti:Sapphire Laser and its Application to Multi-Photon Microscopy,” XVIIIth International Conference on Ultrafast Phenomena, Lausanne, Switzerland, July 2012. Paper THU.PIII.9.
962. **Invited talk**, Margaret Murnane et al, “Capturing the Dance of Electrons in Molecules and Materials using Fast X-Ray Pulses,” Symposium on Big Science for Small Countries, Euroscience Open Forum (ESOF 2012), Dublin, Ireland, July 2012. Presented by Margaret Murnane.
961. **Invited talk**, E. Keister et al., “Direct Visualization of Laser-Driven Electron Multiple Scattering and Tunneling Distance in Strong-Field Ionization”, 21th International Laser Physics Workshop (LPHYS’12), Calgary, Canada, July 2012. Presented by Ellen Keister.
960. **Invited talk**, C. Hernández-García, J.A. Pérez-Hernández, T. Popmintchev, M. Murnane, H. Kapteyn, A. Jaron-Becker, A. Becker, and L. Plaja, “Sub-attosecond temporal structure of ultra high-order harmonic generation in the keV regime driven by midinfrared lasers,” 21th International Laser Physics Workshop (LPHYS’12), Calgary, Canada, July 2012. Presented by C. Hernández-García.
959. **Invited talk**, M.M. Murnane et al, “Bright coherent beams of keV-energy photons from tabletop lasers,” 21th International Laser Physics Workshop (LPHYS’12), Calgary, Canada, July 2012. Presented by Margaret Murnane.
958. **Contributed talk**, Kathleen Hooeboom-Pot, Qing Li, Damiano Nardi, Margaret Murnane, Henry Kapteyn, Xiaobo Li, Ronggui Yang and Erik Anderson, “Observation of Ballistic Thermal Transport Across 2D Nanoscale Interfaces,” Eighteenth Symposium on Thermophysical Properties, Boulder, CO June 2012. Presented by Kathleen Hooeboom-Pot.
957. **Contributed talk**, Henry C. Kapteyn and Margaret Murnane “A New Frontier for Nonlinear Optics: Bright Coherent Kiloelectronvolt Ultrafast X-Rays Generated on a Tabletop,” Directed Energy Professional Society Advanced High Power Lasers and Beam Control Conference, Broomfield, CO, June 2012. Presented by Henry Kapteyn.
956. **Contributed talk**, Michael Gerrity, Susannah Brown, Tenio Popmintchev, Chris Mancuso, Ming-Chang Chen, Dimitar Popmintchev, Sterling Backus, Matt Kirchner, Daisy Raymondson, Andrius Baltuska, and Frank Wise, “Development of a high repetition rate, high energy, IR OPCPA system for coherent x-ray generation,” Directed Energy Professional Society Advanced High Power Lasers and Beam Control Conference, Broomfield, CO, June 2012. Presented by Michael Gerrity.

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955. **Contributed talk**, Sterling Backus, Charles G. Durfee, Tristan Storz, Jonathan Garlick, E. Steven Hill, Jeff A. Squier, Matt Kirchner, Greg Taft, Kevin Shea, Henry Kapteyn, and Margaret Murnane, “Direct Diode Pumped Kerr Lens Modelocked Ti:Sapphire Laser Oscillator,” Directed Energy Professional Society Advanced High Power Lasers and Beam Control Conference, Broomfield, CO, June 2012. Presented by Sterling Backus.
954. **Contributed talk**, K. Ellen Keister, Daniel D. Hickstein, Predrag Ranitovic, Paul Arpin, Xibin Zhou, Craig W. Hogle, Bosheng Zhang, Chengyuan Ding, Margaret M. Murnane, Henry Kapteyn, Stefan Witte, Xiao-Min Tong, N. Toshima, Ymkje Huismans, Marc J.J. Vrakking, Per Johnsson, “Visualizing electron wavepacket dynamics in a strong laser field,” 43rd Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics, Orange Country, CA, June 2012. Presented by Ellen Keister.
953. **Contributed talk**, Craig Hogle, Predrag Ranitovic, William Peters, Austin Spencer, Leigh Martin, David Jonas, Xiao-Min Tong, Margaret Murnane, and Henry Kapteyn, “Ultrafast Dynamics of Ozone Exposed to Ionizing Radiation,” 43rd Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics, Orange Country, CA, June 2012. Presented by Craig Hogle.
952. **Contributed talk**, Predrag Ranitovic, Craig Hogle, Margaret Murnane, and Henry Kapteyn, “Attosecond coherent control of C₂D₄ dynamics,” 43rd Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics, Orange Country, CA, June 2012. Presented by Predrag Ranitovic.
951. **Invited talk**, Henry C. Kapteyn and Margaret Murnane, “Phase matched HHG into the keV regime,” Gordon Research Conference on Multiphoton Processes: Attoseconds, Intense Fields, and Ultrafast Imaging, Mount Holyoke College, South Hadley, MA, June 2012. Presented by Henry Kapteyn.
950. **Poster**, Dan Hickstein et al, “,” Gordon Research Conference on Multiphoton Processes: Attoseconds, Intense Fields, and Ultrafast Imaging, Mount Holyoke College, South Hadley, MA, June 2012. Presented by Dan Hickstein.
949. **Invited talk**, Henry C. Kapteyn et al, “Science at the Timescale of the Electron – Laser-Like X-Ray Beams from Tabletop Lasers,” Institute of Physics Ireland High Flyer Event, Royal College of Surgeons, Dublin, Ireland, May 2012. Presented by Henry Kapteyn.
948. **Invited talk**, Margaret M. Murnane et al, “Capturing the Dance of Electrons in Molecules and Materials,” Institute of Physics Ireland High Flyer Event, Royal College of Surgeons, Dublin, Ireland, May 2012. Presented by Margaret Murnane.
947. **Contributed talk**, Matthew D. Seaberg, Daniel E. Adams, Bosheng Zhang, Margaret M. Murnane, Henry C. Kapteyn, “Tabletop Reflection Mode Coherent Diffractive Imaging of Periodic Nano-Structures with 100 nm Resolution,” Conference on Lasers and Electro-optics (CLEO), San Jose, CA, May 2012. Paper CF1L.8. Presented by Matt Seaberg.
946. **Contributed talk**, Richard L. Sandberg, Dennis Gardner, Matthew E. Seaberg, Daniel E. Adams, Henry C. Kapteyn, Margaret M. Murnane, John L. Barber, “Fresnel-regime coherent diffractive imaging with with a 13 nm high harmonic source,” Conference on Lasers and Electro-optics (CLEO), San Jose, CA, May 2012. Paper CF1L.7. Presented by Richard Sandberg.
945. **Contributed talk**, Bosheng Zhang, Dennis Gardner, Leigh S. Martin, Matthew E. Seaberg, Daniel E. Adams, Margaret M. Murnane, Henry C. Kapteyn, “Coherent Diffraction Imaging with an Apertured Illumination Support,” Conference on Lasers and Electro-optics (CLEO), San Jose, CA, May 2012. Paper CF1L.4. Presented by Bosheng Zhang.

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944. **Contributed talk**, Tenio Popmintchev, Dimitar Popmintchev, Ming-Chang Chen, Jonathas P. Siqueira, Carlos Hernandez-Garcia, Jose A. Perez-Hernandez, Luis Plaja, Andreas Becker, Agnieszka Jaron-Becker, Skirmantas Alisauskas, Giedrius Andriukaitis, Audrius Pugzlys, Andrius Baltuska, Margaret M. Murnane, Henry C. Kapteyn, “Unified Microscopic-Macroscopic Picture of High Harmonic Generation from the VUV to the keV X-ray Region,” Conference on Lasers and Electro-optics (CLEO), San Jose, CA, May 2012. Paper CF1L.2. Presented by Tenio Popmintchev.
943. **Contributed talk**, Ming-Chang Chen, Tenio Popmintchev, Dimitar Popmintchev, Paul Arpin, Susannah Brown, Margaret Murnane, Henry C. Kapteyn, Skirmantas Alisauskas, Giedrius Andriukaitis, Tadas Balciunas, Audrius Pugzlys, Andrius Baltuska, “Fully Spatially Coherent High Harmonic Beams in the keV Region of the Spectrum,” Conference on Lasers and Electro-optics (CLEO), San Jose, CA, May 2012. Paper JTh3I.1. Presented by Ming-Chang Chen.
942. **Contributed talk**, Carlos Hernandez-Garcia, Tenio Popmintchev, Margaret M. Murnane, Henry C. Kapteyn, Agnieszka Jaron-Becker, Andreas Becker, Luis Plaja, “Temporal structure of ultra high-order harmonic generation in the keV regime driven by mid-infrared lasers,” Conference on Lasers and Electro-optics (CLEO), San Jose, CA, May 2012. Paper QTu3H.5. Presented by Carlos Hernandez-Garcia.
941. **Contributed talk**, Bonggu Shim, Samuel E. Schrauth, Tenio Popmintchev, Ming-Chang Chen, Dimitar Popmintchev, Skirmantas Ališauskas, Audrius Pugzlys, Andrius Baltuska, Margaret M. Murnane, Henry C. Kapteyn, Alexander Gaeta, “Role of Self-focusing in Bright Coherent X-Ray Generation by Mid-Infrared Driving Lasers,” Conference on Lasers and Electro-optics (CLEO), San Jose, CA, May 2012. Paper QTu3H.4. Presented by Bonggu Shim.
940. **Contributed talk**, Predrag Ranitovic, Craig W. Hogle, Leigh S. Martin, William Peters, Austin P. Spencer, Xiao Min Tong, David Jonas, Margaret M. Murnane, Henry C. Kapteyn, “Ultrafast Dynamics of Ozone Exposed to Ionizing Radiation,” Conference on Lasers and Electro-optics (CLEO), San Jose, CA, May 2012. Paper QTu1C.3. Presented by Predrag Ranitovic.
939. **Contributed talk**, Charles G. Durfee, Tristan Storz, Jonathan Garlick, Steven Hill, Jeff A. Squier, Matthew Kirchner, Greg Taft, Kevin Shea, Henry C. Kapteyn, Margaret M. Murnane, Sterling Backus, “Direct Diode Pumped Kerr Lens Modelocked Ti:Sapphire Laser Oscillator,” Conference on Lasers and Electro-optics (CLEO), San Jose, CA, May 2012. Paper CM2J.2. Presented by Charles Durfee.
938. **Contributed talk**, Matthew Kirchner, Andrew Niedringhaus, Charles G. Durfee, Frank W. Wise, Daisy Raymondson, Lora Nugent-Glandorf, Henry C. Kapteyn, Margaret M. Murnane, Sterling Backus, “Ultrafast Optical Parametric Oscillator Pumped by an All Normal Dispersion (ANDi) Yb:Fiber Oscillator,” Conference on Lasers and Electro-optics (CLEO), San Jose, CA, May 2012. Paper CM1B.1 Presented by Matt Kirchner.
937. **Colloquium**, Margaret Murnane and Henry Kapteyn, “Science at the Timescale of the Electron: Coherent X-Ray Beams from Tabletop Femtosecond Lasers,” Air Force Institute of Technology, Dayton, OH May 2012. Presented by Margaret Murnane.
936. **Poster**, Margaret Murnane, Ronggui Yang, Henry Kapteyn, Erik Anderson, Mark Siemens, “Nanometrology using Coherent 1 – 30nm Light,” Proposers' Conference for the SRC/DARPA Focus Center Research Program (FCRP), Dallas Texas, May 2012. Presented by Margaret Murnane.
935. **Colloquium**, Henry C. Kapteyn et al, “A new frontier for nonlinear optics: bright coherent kiloelectronvolt ultrafast x-rays generated on a tabletop,” JILA, University of Colorado, Boulder, CO April 2012. Presented by Henry C. Kapteyn.

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934. **Rosenthal Lecture (Yale)**, Margaret M. Murnane et al, “Science at the Timescale of the Electron – Capturing the Fastest Motions in our Physical World,” Yale University, April 2012. Presented by Margaret Murnane.
933. **Vasser Woolley Lecture**, Margaret Murnane et al, “Science on the Timescale of the Electron: Coherent keV X-rays from Tabletop Lasers and Applications in Nanoscience,” School of Chemistry and Biochemistry, Georgia Institute of Technology, Atlanta, GA, April 2012. Presented by Margaret Murnane.
932. **Plenary Talk**, Margaret M. Murnane et al, “Science at the Timescale of the Electrons: Bright keV X-Rays from Tabletop Femtosecond Lasers,” Workshop on Frontiers in Ultrafast Optics, National Tsing-Hua University, Hsinchu, Taiwan, April 2012. Presented by Margaret Murnane.
931. **Plenary Talk**, Henry C. Kapteyn et al, “Capturing Electron Dynamics in Molecules and Materials using Ultrafast Coherent X-Rays,” Workshop on Frontiers in Ultrafast Optics, National Tsing-Hua University, Hsinchu, Taiwan, April 2012. Presented by Henry Kapteyn.
930. **Colloquium**, Margaret M. Murnane et al, “Science at the Timescale of the Electrons: Bright keV X-Rays from Tabletop Femtosecond Lasers,” Institute of Atomic and Molecular Science (IAMS), National Taiwan University, Taipei, Taiwan, April 2012. Presented by Margaret Murnane.
929. **Colloquium**, Henry C. Kapteyn et al, “Capturing Electron Dynamics in Molecules and Materials using Ultrafast Coherent X-Rays,” Institute of Atomic and Molecular Science (IAMS), National Taiwan University, Taipei, Taiwan, April 2012. Presented by Henry Kapteyn.
928. **Keynote Opening Talk**, Margaret M. Murnane et al, Science at the Timescale of the Electron: Bright Coherent X-Ray Beams for Nanoscience and Engineering, Conference on Earth & Energy Research, Golden, CO, March 2012. Presented by Margaret Murnane.
927. **Proposal presentation**, Margaret Murnane et al, “Ultrafast Photons and X-rays for CENECA Science,” NSF Reverse Site Visit for Centers for Chemical Innovation program, Washington DC, March 2012. Presented by Margaret Murnane.
926. **Invited talk**, Kathleen Hooeboom-Pot, "Photoacoustic metrology for ultrathin films", Coherent Optical Sensing and Imaging (COSI) IGERT program Annual IAB Meeting/Retreat, Breckenridge, CO, March 2012. Presented by Kathleen Hooeboom-Pot.
925. **Poster**, Kathleen Hooeboom-Pot et al., "Heat transport across nano-interfaces", Coherent Optical Sensing and Imaging (COSI) IGERT program Meeting/Retreat, Breckenridge, CO, March 2012. Presented by Kathleen Hooeboom-Pot.
924. **Research Update talk**, Understanding Intense Laser Beam Propagation using Strong Field Ionization and Coherent X-Ray Generation, T. Popmintchev, M. Murnane, H. Kapteyn, Semiannual Spring Review & Workshop, MURI: “Mathematical Modeling and Experimental Validation of Ultrashort Nonlinear Light-Matter Coupling associated with Filamentation in Transparent Media”, Mar 2012, Tucson, AZ. Presented by Tenio Popmintchev.
923. **Invited talk**, Margaret Murnane et al, “Ultrafast Coherent Imaging at the Nanoscale using X-Rays and Electrons,” Black Forest Focus on Soft Matter 7: Multidimensional Optical Spectroscopy and Imaging: Temporal and spatial resolution at the cutting edge, Saig/Titisee, Black Forest, Germany, March 2012. Presented by Margaret Murnane.
922. **Invited talk**, Henry C. Kapteyn and Margaret M. Murnane, “Ultrafast coherent x-rays from tabletop lasers—a new tool for science and technology,” CREOL @ 25 Symposium, University of Central Florida, Orlando, FL, March 2012. Presented by Henry Kapteyn.

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920. **Contributed talk**, Roman Adam, Dennis Rudolf, Chan La-O-Vorakiat, Patrik Grychtol, Bastian Heller, Emrah Turgut, Stefan Mathias, Moritz Plötzing, Zbigniew Celinski, Justin Shaw, Hans Nembach, Tom J. Silva, Martin Aeschlimann, Henry Kapteyn, Margaret Murnane, and Claus M. Schneider, “Magnetization Dynamics in FeCuNi and FeRuNi Multilayers - Influence of the Spacer Layer,” 76th Annual Meeting of the DPG and DPG Spring Meeting, Berlin, Germany, March 2012. Presented by Roman Adam.
919. **Research Update Talk**, Henry C Kapteyn et al, “HEDLP: Coherent Imaging Studies of High Density Femtosecond Laser Plasmas,” 2012 Stockpile Stewardship Academic Alliances (SSAA) Academic Symposium, Washington DC, February 2012. Presented by Henry Kapteyn.
918. **Invited talk**, Margaret Murnane et al., “Advances in Ultrafast Laser Technology: Femto to Attosecond Science,” Annual Meeting of the AAAS, Vancouver, Canada, February 2012. Presented by Margaret Murnane.
917. **Research Update Talk**, Margaret Murnane et al, “Nanoscale Materials Metrology using Coherent High Harmonic Beams,” Industrial Advisory Board Meeting of the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, San Jose, CA, February 2011. Presented by Margaret Murnane.
916. **Contributed Talk**, M. D. Seaberg, D. E. Adams, M. M. Murnane, H. C. Kapteyn, “Ultrahigh resolution EUV coherent diffraction imaging using a tabletop 13nm HHG source,” SPIE Advanced Lithography 2012, Conference 8324: Metrology, Inspection, and Process Control for Microlithography XXVI, San Jose CA, February 2012. Talk 8324-13. Presented by Matt Seaberg.
915. **Contributed Talk**, Q. Li, K. Hoogeboom-Pot, D. Nardi, C. Deeb, S. King, M. K. Tripp, E. H. Anderson, M. M. Murnane, H. C. Kapteyn, “Characterization of ultrathin films by laser induced sub-picosecond photoacoustics with coherent extreme-ultraviolet detection,” SPIE Advanced Lithography 2012, Conference 8324: Metrology, Inspection, and Process Control for Microlithography XXVI, San Jose CA, February 2012. Talk 8324-58. Presented by Qing Li.
914. **Invited talk**, Margaret Murnane et al, “Capturing the Coupled Dynamics of Electrons, Atoms and Spins in Molecules and Materials using Ultrafast X-Rays,” March Meeting of the American Physical Society, Boston, MA, February 2012. Talk A34.00003. Presented by Margaret Murnane.
913. **Contributed talk**, Chan La-o-vorakiat, Emrah Turgut, Carson A. Teale, Henry C. Kapteyn, Margaret M. Murnane, Denis Lvovsky, Roman Adam, Patrik Grychtol, Claus M. Schneider, Stefan Mathias, Martin Aeschlimann, Justin M. Shaw, Hans Nembach, and Thomas J. Silva, “Ultrafast Demagnetization Measurements using Extreme Ultraviolet Light: Comparison of Electronic and Magnetic Contributions,” March Meeting of the American Physical Society, Boston, MA, February 2012. Talk D15.00003. Presented by Chan La-o-vorakiat.
912. **Contributed talk**, Emrah Turgut, Chan La-O-Vorakiat, Mark E. Siemens, Margaret M. Murnane, Henry C. Kapteyn, Stefan Mathias, Patrick Granitzka, Steffen Eich, Martin Aeschlimann, Patrik Grychtol, Roman Adam, Claus M. Schneider, Justin M. Shaw, Hans T. Nembach, and Thomas J. Silva, “Probing the timescale of the exchange interaction in a ferromagnetic alloy,” March Meeting of the American Physical Society, Boston, MA, February 2012. Talk D15.00008. Presented by Emrah Turgut.

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911. **McElvain Lecture in Physical Chemistry**, Margaret M. Murnane et al, “Science at the Timescale of the Electron: Coherent X-rays Beams from Tabletop Lasers and Applications in Materials and Molecular Science,” University of Wisconsin Chemistry Department, February 2012. Presented by Margaret Murnane.
910. **Invited Lecturer**, Margaret M. Murnane et al, 2 talks on Generation and Applications of Ultrafast Coherent X-rays, Winter Graduate School On Atomic, Molecular and Optical Physics: Ultracold and Ultrafast Atomic Physics, Biosphere 2, AZ, January 2012. Presented by Margaret Murnane.
909. **Condensed Matter Physics Seminar**, Henry C. Kapteyn and Margaret M. Murnane, “Ultrafast coherent x-rays from tabletop lasers—a new tool for studies of materials dynamics,” Department of Physics University of California at San Diego, La Jolla, CA, January 2012. Presented by Henry Kapteyn.
908. **Research Summary Talk**, Tenio Popmintchev, Ming-Chang Chen, Dimitar Popmintchev, Paul Arpin, Susannah Brown, Margaret Murnane, Henry Kapteyn, Skirmantas Ališauskas, Giedrius Andriukaitis, Tadas Balčiūnas, Oliver Mücke, Audrius Pugzlys, Andrius Baltuška, Bonggu Shim, Samuel E. Schrauth, Alexander Gaeta, Carlos Hernández-García, Luis Plaja, Andreas Becker, Agnieszka Jaron-Becker, “Bright Coherent Attosecond-to-Zeptosecond Kilo-electronvolt X-ray Supercontinua,” 2012 Retreat of the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, LaPorte, CO, January 2011. Presented by Tenio Popmintchev.
907. **Research Summary Talk**, Kathy Hooeboom-Pot, Qing Li, Damiano Nardi, Margaret Murnane, Henry Kapteyn, Eric Anderson, Chris Deeb, Marie Tripp, “Photoacoustic metrology for ultrathin films,” 2012 Retreat of the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, LaPorte, CO, January 2011. Presented by Kathy Hooeboom-Pot.
906. **Willis E. Lamb Award talk**, Henry C. Kapteyn et al, “Ultrafast X-ray Science @ 25: Capturing Dynamics in Molecules and Materials using Ultrafast Coherent X-Rays,” Winter Colloquium on the Physics of Quantum Electronics (PQE), Snowbird UT, January 2012. Presented by Henry Kapteyn.
905. **Willis E. Lamb Award talk**, Margaret Murnane et al, “A new Frontier for Nonlinear Optics—Bright Coherent Beams of keV-energy Photons from Tabletop Lasers,” Winter Colloquium on the Physics of Quantum Electronics (PQE), Snowbird UT, January 2012. Presented by Margaret Murnane.
904. **Colloquium**, Margaret Murnane et al, “Science at the Timescale of the Electron: Coherent X-rays Beams from Tabletop Lasers and Applications in Materials and Molecular Science,” Department of Physics, UCLA, November 2011. Presented by Margaret Murnane.
903. **Boyle medal lecture**, Margaret Murnane et al, “People, Places and the Joy of Discovery: Fast X-Rays from Fast Lasers,” Royal Dublin Society, Dublin Ireland, November 2011. Presented by Margaret Murnane.
902. **Contributed talk**, Henry Kapteyn et al, “Advances in Laser-generated coherent x-rays,” Workshop on Realizing the Potential of Seeded FELs in the Soft X-Ray Regime, Berkeley, CA, October 2011. Presented by Henry Kapteyn.
901. **Research Update Talk**, Tenio Popmintchev, Ming-Chang Chen, Ellen Keister, Predrag Ranitovic, Dan Hickstein, Margaret Murnane, Henry Kapteyn, Agnieszka Becker, Alex Gaeta, Xiao-Min Tong, Miroslav Kolesik, Andrius Baltuska, “Understanding Intense Laser Beam Propagation using Strong Field Ionization and Coherent X-Ray Generation,” MURI Review, Tucson, AZ, October 2011. Presented by Margaret Murnane.

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900. **Invited talk**, Tenio Popmintchev, Margaret Murnane, Henry Kapteyn, et al, "Phase Matching of Attosecond-to-Zeptosecond Kilolectronvolt X-ray Supercontinua from High Harmonic Generation," *Frontiers in Optics 2011/ Laser Science XXVII*, San Jose, CA October 2011. Talk FMJ5. Presented by Tenio Popmintchev.
899. **Invited talk**, Margaret Murnane et al, "Ultrafast Coherent X-Rays - from Femtoseconds to Zeptoseconds," *Frontiers in Optics 2011/ Laser Science XXVII*, San Jose, CA October 2011. Talk FTuB2. Presented by Margaret Murnane.
898. **Poster presentation**, Qing Li, Kathleen Hooeboom-Pot, Damiano Nardi, Mark Siemens, Margaret Murnane, Henry Kapteyn, Erik Anderson, Olav Hellwig, Bruce Gurney and Keith Nelson, "Surface Acoustic Wave Metrology Using EUV Light," Colorado Photonics Industry Association meeting, Boulder, CO October 2011. Presented by Kathleen Hooeboom-Pot.
897. **Poster Presentation**, Dennis Gardner, Bosheng Zhang, Matthew D. Seaberg, Danie E. Adams, Margaret Murnane, and Henry Kapteyn. "Optical Coherent Diffractive Imaging: A model system for high resolution x-ray imaging," 2011 Conference of Ford Fellows, Irvine, CA Oct 2011. Presented by Dennis Gardner.
896. Tenio Popmintchev et al, "???", International Symposium on Attoscience and Ultrafast Quantum Control, Imperial College London, September 2011. Presented by Tenio Popmintchev.
895. **Invited talk**, Stefan Mathias et al, "Capturing Dynamics in Materials and Molecules using Coherent X-Rays," International Symposium on Attoscience and Ultrafast Quantum Control, Imperial College London, September 2011. Presented by Stefan Mathias.
894. **Invited talk**, Dennis Gardner, Bosheng Zhang, Matthew D. Seaberg, Danie E. Adams, Margaret Murnane, and Henry Kapteyn. "Optical Coherent Diffractive Imaging: A model system for high resolution x-ray imaging," joint conference of the National Society of Black Physicists and the National Society of Hispanic Physicists, Austin, TX, Sept 2011. Presented by Dennis Gardner.
893. **Plenary Lecture**, Margaret Murnane et al, "Nonlinear Optics at the Timescale of the Electron: Bright Coherent Attosecond Kilolectronvolt X-Ray Supercontinua," Stanford Photonics Research Center (SPRC) Annual Symposium, Stanford, CA, September 2011. Presented by Margaret Murnane.
892. **Keynote talk**, Margaret Murnane et al, "Nonlinear Optics at the Timescale of the Electron: Bright Coherent Attosecond Kilolectronvolt X-Ray Supercontinua," *Ultrafast Optics VIII*, Monterey CA September 2011. Presented by Margaret Murnane.
891. **Contributed talk**, Sterling Backus et al, "Multi-microjoule cryo-cooled Ti:Sapphire ultrafast regenerative amplifier system at MHz repetition rates," *Ultrafast Optics VIII*, Monterey CA September 2011. Presented by Sterling Backus.
890. **After Dinner talk**, Henry Kapteyn et al, "FROG and the "modern era" of UFO," *Ultrafast Optics VIII*, Monterey CA September 2011. Presented by Henry Kapteyn.
889. **Seminar**, Kathleen Hooeboom-Pot, Qing Li, Henry Kapteyn, Margaret Murnane, Ronggui Yang, Erik Anderson, "Investigating the Nanoscale Heat Bottleneck," Computational Optical Sensing and Imaging (COSI) seminar series, University of Colorado at Boulder, Boulder, CO, September 2011. Presented by Kathleen Hooeboom-Pot.
888. **Colloquium**, Margaret Murnane et al, "Nonlinear Optics at the Timescale of the Electron: Bright Coherent Attosecond Kilolectronvolt X-Ray Supercontinua," Department of Physics, Louisiana State University, Sept 2011. Presented by Margaret Murnane.

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887. **Invited talk**, Margaret Murnane and Henry C. Kapteyn, “Coherent control in the VUV/EUV, and Attosecond science for x-ray generation,” Gordon Research Conference on Quantum Control of Light and Matter, South Hadley, MA, August 2011. Presented by Margaret Murnane.
886. **Plenary Lecture**, Margaret Murnane & Henry Kapteyn, “Ultrafast processes in atomic dynamics,” XXVII International Conference on Photonic, Electronic and Atomic Collisions (ICPEAC), Belfast, Northern Ireland, July 2011. Opening talk of conference. Presented by Margaret Murnane.
885. **Poster Presentation**, P. Rivière, P. Ranitovic, A. Palacios, J. F. Pérez-Torres, C. W. Hogle, M. M. Murnane, H. C. Kapteyn, F. Martín, “Near-threshold H₂ electron and nuclear dynamics induced by attosecond pulse trains and probed by IR pulses,” XXVII International Conference on Photonic, Electronic and Atomic Collisions (ICPEAC), Belfast, Northern Ireland, July 2011. Poster Mo128. Presented by Paula Rivière.
884. **Poster Presentation**, Predrag Ranitovic, Xiao-Min Tong, Craig W Hogle, Xibin Zhou, N. Toshima, M. M. Murnane, H. C Kapteyn, “Controlling the XUV transparency using two pathway quantum interference,” XXVII International Conference on Photonic, Electronic and Atomic Collisions (ICPEAC), Belfast, Northern Ireland, July 2011. Poster Tu108. Presented by Xiao-Min Tong.
883. **Plenary talk**, Tenio Popmintchev, Andrius Baltuška, Margaret Murnane, Henry C. Kapteyn, “Nonlinear Optics at the Timescale of the Electron— Ultra Broadband Coherent X-Rays and Applications,” OSA Conference on Nonlinear Optics (NLO), Kauai, Hawaii, July 2011. Paper NThA1. Presented by Margaret Murnane.
882. **Contributed talk**, Matthew D. Seaberg, Daniel E. Adams, Chien-Chun Chen, Jianwei Miao, William F. Schlotter, Yanwei Liu, Carmen Menoni, Margaret Murnane, Henry C. Kapteyn, “Ultrahigh Resolution EUV imaging using a Tabletop High Harmonic Light Source, OSA Conference on Nonlinear Optics (NLO), Kauai, Hawaii, July 2011. Paper NThA4. Presented by Henry Kapteyn.
881. **Invited talk**, Margaret Murnane and Henry Kapteyn, “Bright attosecond harmonics in the keV region,” FEMTO10, The Madrid Conference on Femtochemistry: Frontiers of Ultrafast Phenomena in Chemistry, Physics, and Biology, Madrid, Spain, July 2011. Presented by Margaret Murnane.
880. **Invited talk**, Matthew D. Seaberg, Daniel E. Adams, Chien-Chun Chen, Jianwei Miao, William F. Schlotter, Yanwei Liu, Margaret Murnane and Henry Kapteyn, “Nanoscale-Resolution Coherent Diffractive Imaging using Tabletop Soft X-ray Light Sources,” OSA Conference on Computational Optical Sensing and Imaging (COSI), Toronto, Ontario, Canada, July 2011. Paper CMC2. Presented by Henry Kapteyn.
879. **Contributed talk**, Ming-Chang Chen et al, "Phase-matched, Coherent, Attosecond Hard X-ray pulses from a Mid-IR Few-Cycle Tabletop Source," 3rd International Conference on Attosecond Physics (ATTO3), Sapporo, Japan, July 2011. Presented by Ming-Chang Chen.
878. **Invited talk**, Henry Kapteyn and Margaret Murnane, "Strong field control of dynamics in atoms and molecules," 12th International Conference on Multiphoton Processes (ICOMP12), Sapporo, Japan, July 2011. Presented by Henry Kapteyn.
877. **Colloquium**, Margaret Murnane et al, “Attosecond Light and Science at the Time-scale of the Electron,” Department of Physics, Northwestern University, Evanston, IL, June 2011. Presented by Margaret Murnane.

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876. **Contributed talk**, Craig W. Hogle, X.M. Tong, X. Zhou, N. Toshima, P. Ranitovic, M.M. Murnane, H.C. Kapteyn, "Controlling the XUV Transparency of Helium using Two Pathway Quantum Interference," 42nd Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics (DAMOP), Atlanta, GA, June 2011. Paper B2.0002. Presented by Craig Hogle.
875. **DAMOP Thesis Award Finalist Presentation**, Tenio Popmintchev et al, "Bright Attosecond Soft and Hard X-ray Supercontinua," 42nd Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics (DAMOP), Atlanta, GA, June 2011. Paper C6.0002. Presented by Tenio Popmintchev.
874. **Contributed talk**, Predrag Ranitovic, X.M. Tong, Craig W. Hogle, N. Toshima, M.M. Murnane, Henry Kapteyn, "Laser enabled Auger decay in argon atoms and dimers," 42nd Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics (DAMOP), Atlanta, GA, June 2011. Paper K5.0004. Presented by Predrag Ranitovic.
873. **Invited talk**, Henry Kapteyn et al, "The physics of laser-based coherent x-ray generation--attosecond science meets nonlinear optics meets nanotechnology," 42nd Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics (DAMOP), Atlanta, GA, June 2011. Paper P2.0007. Presented by Henry Kapteyn.
872. **Contributed talk**, Antonio Picon, Alon Bahabad, Henry Kapteyn, M.M. Murnane, Andreas Becker, "Two-center interferences and nuclear wave packet imaging in dissociating H₂ molecule," 42nd Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics (DAMOP), Atlanta, GA, June 2011. Paper L1.0067. Presented by Antonio Picon.
871. **Poster**, Predrag Ranitovic, Daniel Hickstein, Xibin Zhou, Stefan Witte, K. Ellen Keister, Changyuan Ding, Paul Arpin, N. Toshima, Xiao-Min Tong, Ymkje Huismans, Marc Vrakking, Per Johnsson, Henry Kapteyn, Margaret Murnane. "Visualizing the Influence of the Coulomb Force on Electron Wavepackets in a Strong Laser Field." 42nd Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics (DAMOP), Atlanta, GA, June 2011. Paper L1.0076. Presented by Daniel Hickstein.
870. **Poster**, Agnieszka Jaron-Becker, Wen Li, Craig W. Hogle, Vandana Sharma, Xibin Zhou, Henry Kapteyn, M.M. Murnane, Andreas Becker, "Visualizing electron rearrangement in space and time during the transition from a molecule to atoms," 42nd Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics (DAMOP), Atlanta, GA, June 2011. Paper L1.137. Presented by Agnieszka Jaron-Becker.
869. **Colloquium**, Margaret Murnane et al, "Attosecond Light and Science at the Time-scale of the Electron," Department of Physics, University of Minnesota, May 2011. Presented by Margaret Murnane.
868. **Invited talk**, T. Popmintchev, S. Mathias, M.M. Murnane, Andrius Baltuška, and H.C. Kapteyn, "Bright Coherent Attosecond Kiloelectronvolt X-ray Supercontinua and Applications in Nanoscience and Nanotechnology," International workshop on Elementary Processes in Solids and at Interfaces: Carrier, Lattice, and Molecular Dynamics, Bad Staffelstein, Germany, May 2011. Presented by Margaret Murnane.
867. **Seminar**, Margaret Murnane et al, "Attosecond Light and Science - Bright High Harmonic X-Rays at 8Å," The Molecular Foundry, Lawrence Berkeley National Laboratory, Berkeley, CA May 2011. Presented by Margaret Murnane.

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866. **Research Update Talk**, Tenio Popmintchev, Ming-Chang Chen, Paul Arpin, Dimitar Popmintchev, Henry Kapteyn, Margaret Murnane, Carmen Menoni, Fernando Brizuela, Ivan Christov, Jorge Rocca, Yanwei Liu, Erik Gullikson, Farhad Salmassi, Oren Cohen, Alon Bahabad, Andrius Baltuska, "Coherent High Harmonic Source Systems," Eighth Annual Site Visit, NSF Engineering Research Center for Extreme Ultraviolet Science and Technology, Berkeley, CA May 2011. Presented by Margaret Murnane.
865. **Research Update Talk**, Yan Xie, Joong-Won Shin, Erik Hosler, Qing Li, Chan La-O-Vorakiat, Mark Siemens, F. Dong, S. Heinbuch, Robynne Lock, Tory Carr, CriagHogle, Luis Miaja-Avila, Chengyuan Ding, Stefan Mathias, Wen Li, Xibin Zhou, Predrag Ranitovic, Etienne Gagnon, Allison Pymmer, Josh Vura-Weis, Chang-Ming Jiang, Adrian Pffiefer, Scott Sayres, Elliot Bernstein, Jorge Rocca, Erik Anderson, Steve Leone, Henry Kapteyn, Margaret Murnane, Andreas Becker, Agnieszka Becker, Ronggui Yang, Tom Silva, Martin Aeschlimann, Michael Bauer, Albert Stolow, Serguei Patchkovskii, Robin Santra, Lew Cocke, Keith Nelson, Justin Shaw, Hans Nembach, Roman Adam, Claus M. Schneider, Arvinder Sandhu, "Nanoscale Materials Metrology using Coherent EUV Beams," Eighth Annual Site Visit, NSF Engineering Research Center for Extreme Ultraviolet Science and Technology, Berkeley, CA May 2011. Presented by Henry Kapteyn.
864. **Research Update Talk**, Dan Adams, Matt Seaberg, Paul Arpin, Bosheng Zhang, Margaret Murnane, Henry Kapteyn, John Miao, Yanwei Liu, Erik Anderson, Eric Gullikson, Farhad Salmassi, Ann Sakdinawat, Carmen Menoni, Jorge Rocca, Richard Sandberg, Bill Schlotter, "Nanoscale Coherent Diffractive Imaging Testbeds," Eighth Annual Site Visit, NSF Engineering Research Center for Extreme Ultraviolet Science and Technology, Berkeley, CA May 2011. Presented by Henry Kapteyn.
863. **Research Update Talk**, Tenio Popmintchev, Ming-Chang Chen, Dimitar Popmintchev, M. M. Murnane, H. C. Kapteyn, Giedrius Andriukaitis, Tadas Balciunas, Audrius Pugzlys, Andrius Baltuska, "Bright Coherent Attosecond-to-Zeptosecond Kilo-electronvolt X-ray Supercontinua," Eighth Annual Site Visit, NSF Engineering Research Center for Extreme Ultraviolet Science and Technology, Berkeley, CA May 2011. Presented by Tenio Popmintchev.
862. **Research Update Talk**, Qing Li, Kathleen Hooeboom-Pot, Damiano Nardi, Mark Siemens, Margaret Murnane, Henry Kapteyn, Ronggui Yang, Erik Anderson, Olav Hellwig, Bruce Gurney and Keith Nelson, "Generation and Detection of Very Short-Wavelength Surface Acoustic Waves at Nanoscale Interfaces," Eighth Annual Site Visit, NSF Engineering Research Center for Extreme Ultraviolet Science and Technology, Berkeley, CA May 2011. Presented by Qing Li.
861. **Poster Presentation**, Robynne M. Lock, Xibin Zhou, Margaret M. Murnane, and Henry C. Kapteyn, "Elliptical Dichroism of High Harmonics Emitted from Aligned Molecules," Eighth Annual Site Visit, NSF Engineering Research Center for Extreme Ultraviolet Science and Technology, Berkeley, CA May 2011. Presented by Robynne Lock.
860. **Poster presentation**, Qing Li, Kathleen Hooeboom-Pot, Damiano Nardi, Mark Siemens, Margaret Murnane, Henry Kapteyn, Erik Anderson, Olav Hellwig, Bruce Gurney and Keith Nelson, "Surface Acoustic Wave Metrology Using EUV Light," Eighth Annual Site Visit, NSF Engineering Research Center for Extreme Ultraviolet Science and Technology, Berkeley, CA May 2011. Presented by Qing Li.

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859. **Poster Presentation**, Qing Li, Kathleen Hooeboom-Pot, Damiano Nardi, Mark Siemens, Margaret Murnane, Henry Kapteyn, Ronggui Yang, Erik Anderson, Olav Hellwig, Bruce Gurney, Keith Nelson, "Heat Transfer Across Nano-interfaces," Eighth Annual Site Visit, NSF Engineering Research Center for Extreme Ultraviolet Science and Technology, Berkeley, CA May 2011. Presented by Kathleen Hooeboom-Pot.
858. **Poster Presentation**, Chan La-o-vorakiat, Stefan Mathias,, Emrah Turgut, Patrik Grychtol, Patrick Granitzka, Justin M. Shaw, Roman Adam, Hans T. Nembach, Mark E. Siemens, Steffen Eich, Claus M. Schneider, Thomas J. Silva, Martin Aeschlimann, Margaret M. Murnane, and Henry C. Kapteyn, "Probing the Timescale of the Exchange Interaction in a Ferromagnetic Alloy," Eighth Annual Site Visit, NSF Engineering Research Center for Extreme Ultraviolet Science and Technology, Berkeley, CA May 2011. Presented by Chan La-o-vorakiat.
857. **Poster Presentation**, A.V. Carr, S. Mathias, L. Miaja-Avila, G. Saathoff, J. Yin, M. Aeschlimann, M. Bauer, M.M. Murnane and H.C. Kapteyn, "Ultrafast Electron dynamics in condensed matter systems studied using angle resolved photoelectron spectroscopy," Eighth Annual Site Visit, NSF Engineering Research Center for Extreme Ultraviolet Science and Technology, Berkeley, CA May 2011. Presented by Adra (Tory) Carr.
856. **Contributed talk**, M. Gerrity, S. Brown, T. Popmintchev, M. Chen, S. Witte, M. M. Murnane, and H. C. Kapteyn, S. Backus, "High power, 60MHz, cryogenically cooled, mode-locked, Yb:YAG oscillator," Conference on Lasers and Electro-optics (CLEO), Baltimore, MD, May 2011. Paper CThAA4. Presented by Michael Gerrity.
855. **Postdeadline talk**, T. Popmintchev, M. Chen, D. Popmintchev, S. Alisauskas, G. Andriukaitis, T. Balciunas, A. Pugzlys, A. Baltuska, M. Murnane, and H. Kapteyn, "Bright Coherent Attosecond-to-Zepto-second Kilo-electronvolt X-ray Supercontinua," Conference on Lasers and Electro-optics (CLEO), Baltimore, MD, May 2011. Paper PDPC12. Presented by Tenio Popmintchev.
854. **Invited talk**, M. D. Seaberg, D. E. Adams, W. F. Schlotter, Y. Liu, C. Menoni, M. Murnane, H. C. Kapteyn, "Sub-30nm Spatial Resolution Imaging Using a Tabletop 13nm High Harmonic Source," Conference on Lasers and Electro-optics (CLEO), Baltimore, MD, May 2011. Paper CTuH3. Presented by Matt Seaberg.
853. **Contributed talk**, Q. Li, K. Hooeboom-Pot, M. Siemens, M. M. Murnane, H. C. Kapteyn, R. Yang, E. H. Anderson, O. Hellwig, B. Gurney, K. A. Nelson, "Generation and Detection of Very Short-Wavelength Surface Acoustic Waves at Nano-interfaces," Conference on Lasers and Electro-optics (CLEO), Baltimore, MD, May 2011. Paper QTuN4. Presented by Qing Li.
852. **Contributed talk**, G. Andriukaitis, T. Balciunas, A. Pugzlys, A. Baltuska, T. Popmintchev, M. C. Chen, M.M. Murnane, and H.C. Kapteyn, "Phase-Matched Harmonic Generation beyond the Water Window with a Mid-IR Parametric Amplifier," Conference on Lasers and Electro-optics (CLEO Europe), Munich, Germany, May 2011. Paper CG5.4. Presented by G. Andriukaitis.
851. **Contributed talk, finalist best student paper award**, Chan La-o-vorakiat, Chan, Stefan Mathias, Patrik Grychtol, Justin Shaw, Roman Adam, Hans T. Nembach, Mark E. Siemens, Steffen Eich, Claus M. Schneider, Martin Aeschlimann, Thomas J. Silva, Henry C. Kapteyn, and Margaret M. Murnane, "Ultrafast decoupling of magnetization dynamics in Permalloys," Asia International Magnetism Conference, InterMag 2011, Taipei, Taiwan, April 2011. Presented by Chan La-O-Vorakiat.

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850. **Research Update Talk**, M. Murnane et al, "Coherent EUV-keV Beams from Femtosecond Lasers - Applications in Materials Characterization at the Nanoscale," Scientific Advisory Board Meeting of the NSF Engineering Research Center in EUV Science and Technology, Ft Collins, CO, April 2011.
849. **Poster presentation**, Kathleen Hooeboom-Pot, Qing Li, Mark Siemens, Margaret Murnane, Henry Kapteyn, Ronggui Yang, Erik Anderson, Keith Nelson, "Understanding the Heat Bottleneck and Developing a Probe for Very Thin Films," COSI Industrial Advisory Board Meeting, Boulder, CO April 2011. Presented by Kathleen Hooeboom-Pot.
848. **Research Update Talk**, Tenio Popmintchev, Ellen Keister, Predrag Ranitovic, Dan Hickstein, Margaret Murnane, Henry Kapteyn, "Understanding Intense Laser Beam Propagation using Strong Field Ionization and Coherent X-Ray Generation," Semiannual Spring Review and Workshop for MURI project, "Mathematical Modeling and Experimental Validation of Ultrafast Nonlinear Light-Matter Coupling associated with Filamentation in Transparent Media," Tucson, AZ, March 2011. Presented by Margaret Murnane.
847. **Contributed talk**, Roman Adam, Patrik Grychtol, Dennis Lvovsky, Chan La-O-Vorakiat, Stefan Mathias,, Moritz Plötzing, Justin M. Shaw, Hans Nembach, Tom J. Silva, Timm Rohwer, Martin Aeschlimann, Henry Kapteyn, Margaret Murnane, and Claus M. Schneider, "Element-selective measurement of magnetic multilayers using a tabletop high-harmonic soft X-ray source," 75th Annual Meeting of the DPG and DPG Spring Meeting, Dresden, Germany, March 2011. Presented by Roman Adam.
846. **Seminar**, Paul Arpin, Henry C. Kapteyn, and Margaret M. Murnane, "Coherent imaging at the nano-scale using ultrafast, soft x-rays," Computational Optical Sensing and Imaging (COSI) seminar series, University of Colorado at Boulder, Boulder, CO, March, 2011. Presented by Paul Arpin.
845. **Research Update Talk**, Dimitar Popmintchev, Paul Arpin, Matt Seaberg, Dan Adams, Andrius Baltuska, John Miao, Carmen Menoni, Yanwei Liu, Henry Kapteyn, Tenio Popmintchev, Margaret Murnane, "HEDLP: Coherent Imaging of Plasmas using High Harmonic Soft X-Rays," 2011 Stockpile Stewardship Academic Alliances (SSAA) Academic Symposium, Washington DC, February 2011. Presented by Henry Kapteyn.
844. **Poster**, Paul Arpin, Dimitar Popmintchev, Tenio Popmintchev, Matt Seaberg, Ming-Chang Chen, Dan Adams, Ethan Townsend, Daisy Raymondson, Michael Gerrity, Bosheng Zhang, Margaret M. Murnane and Henry C. Kapteyn, "Generation of coherent, extreme ultra-violet light for plasma and nano-imaging," 2011 SSAA Academic Symposium, Washington DC, February 2011. Presented by Paul Arpin.
843. **Contributed talk**, T. Popmintchev, M. C. Chen, P. Arpin, M. Gerrity, M. Seaberg, B. Zhang, D. Popmintchev, G. Andriukaitis, T. Balciunas, O. D. Mücke, A. Pugzlys, A. Baltuska, M. Murnane, H. Kapteyn, "Bright Coherent Ultrafast X-rays from mid-IR Lasers," High Intensity Lasers and High field Phenomena (HILAS), Istanbul Turkey, February 2011. Paper HThB5. Presented by Tenio Popmintchev.
842. **Research Update Talk**, H.C Kapteyn and M.M. Murnane, "Coherent EUV Beams from Femtosecond Lasers - Applications in Materials Characterization at the Nanoscale," Industrial Advisory Board Meeting of the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, San Jose, CA, February 2011. Presented by Henry Kapteyn.

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841. **Research Update Talk**, Chan La-O-Vorakiat, Stefan Mathias, Henry Kapteyn, and Margaret Murnane, Justin Shaw, Hans Nembach, and Thomas Silva, Mark Siemens, Patrik Grychtol, Roman Adam, and Claus M. Schneider, Steffen Eich, Martin Aeschlimann, “Probing Ultrafast and Element-selective Magnetization Dynamics with Coherent EUV Beams from High-harmonic Generation,” 2011 Retreat of the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, LaPorte, CO, January 2011. Presented by Chan La-O-Vorakiat.
840. **Invited talk**, Mark E. Siemens, Qing Li, Ronggui Yang, Keith A. Nelson, Erik H. Anderson, Margaret M. Murnane, and Henry C. Kapteyn, “Quasi-ballistic thermal transport from nanoscale interfaces observed using ultrafast coherent soft x-ray beams,” Conference on Ultrafast Phenomena in Semiconductors and Nanostructure Materials XV, SPIE Photonics West, San Francisco, CA, January 2011. Presented by Mark Siemens.
839. **Invited talk**, Margaret Murnane et al, “Science at the Timescale of the Electron - from Picoseconds to Zeptoseconds,” Northeast Conference for Undergraduate Women in Physics, Cambridge, MA, January 2011. Presented by Margaret Murnane.
838. **Invited talk**, Henry C. Kapteyn and Margaret Murnane, “Ultra-high resolution imaging using Tabletop Coherent EUV Light Sources,” Winter Colloquium on the Physics of Quantum Electronics (PQE), Snowbird UT, January 2011. Presented by Henry Kapteyn.
837. **Plenary talk**, Margaret Murnane et al, “Capturing Electron Dynamics in Materials using Bright Coherent X-Rays,” Winter Colloquium on the Physics of Quantum Electronics (PQE), Snowbird UT, January 2011. Presented by Margaret Murnane.
836. **Invited talk**, Tenio Popmintchev et al, “Ponderomotive energy scaling with a 0.1-TW peak power mid-IR few-cycle source,” Winter Colloquium on the Physics of Quantum Electronics (PQE), Snowbird UT, January 2011. Presented by Tenio Popmintchev.
835. **Invited talk**, Richard Sandberg et al, “Opportunities for ultrafast, wavelength-limited, tabletop coherent x-ray diffractive imaging,” Ninth International Symposium on Ultrafast Intense Laser Science, Maui, HI, USA, December 2010. Presented by Richard Sandberg.
834. **Poster—Winner ISUILS best poster award**, A. Jaroń-Becker, A. Becker, W. Li, C. Hogle, V. Sharma, M.M. Murnane and H.C. Kapteyn, “Visualizing electron rearrangement in space and time during the transition from molecule to atoms,” Ninth International Symposium on Ultrafast Intense Laser Science, Maui, HI, USA, December 2010. Presented by Agnieszka Jaron-Becker.
833. **Plenary talk**, M. Murnane and Henry Kapteyn, “Attosecond Light and Science at the Timescale of the Electron: Coherent X-Rays from Tabletop Ultrafast Lasers,” Annual Meeting of the Australian Institute of Physics, Melbourne, Australia, December 2010. Presented by Margaret Murnane.
832. **Research Update**, Henry Kapteyn and Margaret Murnane, “Capturing Electron Dynamics in Materials using Coherent X-Rays,” Meeting of the JILA AMO Physics Frontier Center, Boulder, CO, December 2010. Presented by Henry Kapteyn.
831. **Invited talk**, Tenio Popmintchev, Margaret M. Murnane, Wen Li, Stefan Mathias, Henry Kapteyn, “Ultrafast Dynamics in Molecules and Materials probed by Coherent Electrons and X-Rays,” Second International Conference on Transient Chemical Structures in Dense Media, Paris, France, Nov-Dec 2010. Presented by Tenio Popmintchev.
830. **Directors Colloquium**, M. Murnane and Henry Kapteyn, “Attosecond Light and Science at the Timescale of the Electron: Coherent X-Rays from Tabletop Ultrafast Lasers” Los Alamos National Laboratory, November 2010. Presented by Margaret Murnane.

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829. **Invited talk**, Margaret Murnane and Henry Kapteyn, “Attosecond Light and Science at the Timescale of the Electron: Coherent X-Rays from Tabletop Ultrafast Lasers,” Annual Meeting of the IEEE Photonics Society, Denver, CO November 2010. Presented by Margaret Murnane.
828. **Invited talk**, M. M. Murnane and Henry Kapteyn, “Attosecond and zeptosecond waveforms spanning the soft x-ray region,” Symposium on “Frontiers in Quantum Photon Science,” Hamburg Germany, November 2010. Presented by Margaret Murnane.
827. **Hubert James Lecture**, M. M. Murnane et al, “Attosecond Light and Science at the Time-scale of the Electron - Coherent X-Rays from Tabletop Ultrafast Lasers,” Purdue University, Lafayette, Indiana, November 2010. Presented by Margaret Murnane
826. Chan La-O-Vorakiat, Stefan Mathias, Margaret Murnane, Ronggui Yang, Dan Dessau, Henry Kapteyn, Justin Shaw, Hans Nembach, Thomas Silva, Martin Aeschlimann, Patrik Grychtol, Roman Adam, Claus M. Schneider, Yanwei Liu, Erik Gullikson, Bruce Gurney, Olav Hellwig, “Ultrafast Magnetic Dynamics Measured using Tabletop Coherent X-Rays,” Contractors Meeting for the US Department of Energy X-ray Scattering Program, Airlie, VA, November 2010. Presented by Margaret Murnane.
825. **Poster**, Chan La-o-vorakiat, Stefan Mathias, Patrik Grychtol, Roman Adam, Justin M. Shaw, Hans Nembach, Mark E. Siemens, Steffen Eich, Michael Bauer, Martin Aeschlimann, Claus M. Schneider, Thomas Silva, Margaret M. Murnane, and Henry C. Kapteyn, “Ultrafast Breakdown of Exchange and Correlation Interactions Probed with Coherent Soft X-rays from High-harmonics Generation,” Contractors Meeting for the US Department of Energy X-ray Scattering Program, Airlie, VA, November 2010. Presented by Margaret Murnane.
824. **Poster**, Chan La-o-vorakiat, Stefan Mathias, Patrik Grychtol, Roman Adam, Justin M. Shaw, Hans Nembach, Mark E. Siemens, Steffen Eich, Michael Bauer, Martin Aeschlimann, Claus M. Schneider, Thomas Silva, Margaret M. Murnane, and Henry C. Kapteyn, “Ultrafast Breakdown of Exchange and Correlation Interactions Probed with Coherent Soft X-rays from High-harmonics Generation,” Colorado Photonics Industry Association 13th Annual Focus on University Research, Boulder CO, November 2010. Presented by Chan La-o-vorakiat.
823. **Colloquium**, H.C. Kapteyn et al, “The Nonlinear Optics of Coherent X-Ray Generation,” University of Colorado Applied Math Department, November 2010. Presented by Henry Kapteyn.
822. **Invited talk**, Margaret Murnane et al, “Coherent X-Rays from Ultrafast Mid-IR Lasers for Applications in Nanotechnology,” Defense Sciences Disruptive Technologies Conference, Washington DC, Oct 2010.
821. **Invited talk**, Margaret Murnane et al, OSA Student Chapter CREOL, “Science at the Timescale of the Electron: Generation and Applications of Ultrafast Coherent X-Rays”, Oct 2010. Presented by Margaret Murnane.
820. **Schawlow Prize Plenary Talk**, H.C. Kapteyn and M.M. Murnane, “Attosecond Light and Science at the Timescale of the Electron: Generation and Applications of Ultrafast Coherent X-Rays,” Frontiers in Optics 2010/ Laser Science XXVI, Rochester, NY, October 2010. Presented by Henry Kapteyn.
819. **After Dinner talk**, M.M. Murnane et al, “Ultrafast Laser and X-Ray Science: from Femtoseconds to Zeptoseconds”, Frontiers in Optics 2010/ Laser Science XXVI, Rochester, NY, October 2010. Presented by Margaret Murnane.

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818. **Seminar**, H.C. Kapteyn et al, "The Nonlinear Optics of Coherent X-Ray Generation," University of Colorado at Boulder Research Seminar Series on Optical, Electronic and Quantum Systems, October 2010. Presented by Henry Kapteyn.
817. **Invited talk**, P. Grychtol, R. Adam, C. La-O-Vorakiat, S. Mathias, M. Siemens, J. Shaw, H. Nembach, T. Silva, M. Aeschlimann, C.M. Schneider, H. Kapteyn and M. Murnane, "Ultrafast and element-selective demagnetisation dynamics probed at the M absorption edges employing a tabletop soft x-ray source," IEEE 7th International Symposium on Metallic Multilayers (MML2010), Berkeley CA, Sept 2010. Presented by P. Grychtol.
816. H. C. Kapteyn and M.M. Murnane, "Understanding Intense Laser Beam Propagation using Coherent X-Ray Generation," Kickoff Meeting for AFOSR Multidisciplinary University Research Initiative project in Nonlinear Optics, Albuquerque, NM, September 2010. Presented by Henry Kapteyn.
815. **Contributed talk**, S. Mathias, C. La-O-Vorakiat, P. Grychtol, R. Adam, M. Siemens, J.M. Shaw, H. Nembach, M. Aeschlimann, C. M. Schneider, T. Silva, M.M. Murnane, H. C. Kapteyn, "Ultrafast, Element-Specific, Demagnetization Dynamics Probed using Coherent High Harmonic Beams," 7th International Symposium on Ultrafast Surface Dynamics (USD7), Brijuni Islands National Park, Croatia, August 2010. Presented by Stefan Mathias.
814. **Invited talk**, Henry Kapteyn and Margaret Murnane, "Science at the Time-scale of the Electron-Coherent Attosecond Soft and Hard X-Ray Harmonics," KITP conference on "X-ray Science in the 21st Century", Santa Barbara, CA, August 2010. Presented by Henry Kapteyn.
813. **Tutorial talk**, M. Murnane et al, "Extreme Nonlinear Optics: Bright Coherent X-Rays from Femtosecond Lasers" 66th Scottish Universities Summer School in Physics, International Summer School in Ultrafast Nonlinear Optics 2010, Edinburgh, Scotland, Aug 2010. Presented by Margaret Murnane.
812. **Tutorial talk**, M. Murnane et al, "Coherent Imaging at the Nanoscale using Ultrafast X-Rays" 66th Scottish Universities Summer School in Physics, International Summer School in Ultrafast Nonlinear Optics 2010, Edinburgh, Scotland, Aug 2010. Presented by Margaret Murnane.
811. **Tutorial talk**, M. Murnane et al, "Molecular and Materials Dynamics Probed by Coherent Ultrafast X-Rays" 66th Scottish Universities Summer School in Physics, International Summer School in Ultrafast Nonlinear Optics 2010, Edinburgh, Scotland, Aug 2010. Presented by Margaret Murnane.
810. **Invited talk**, Henry Kapteyn and Margaret Murnane, "Molecular and Materials Dynamics probed by Coherent Ultrafast X-Rays," Gordon Conference on Vibrational Spectroscopy: Probing Structure and Dynamics, Biddeford, ME, August 2010. Presented by Margaret Murnane.
809. **Invited talk**, M. Murnane et al, "Molecular and Materials Dynamics Probed by Coherent Ultrafast X-Rays" International Conference on Raman Spectroscopy (ICORS XXII), Boston, MA, Aug 2010. Presented by Margaret Murnane.
808. **Distinguished Speaker**, M. Murnane et al, "Ultrafast Coherent X-Rays from Tabletop Femtosecond Lasers" Air Force Office of Scientific Research (AFOSR) LaserFest Symposium Commemorating 50 years of the laser, Arlington, VA, August 2010. Presented by Margaret Murnane.
807. **Invited talk**, Henry Kapteyn and Margaret Murnane, "Bright Coherent Soft X-Rays and Applications in Radiation Chemistry," Gordon Conference on Radiation Driven Processes in Physics, Chemistry and Biology, Andover, NH, July 2010. Presented by Margaret Murnane.

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806. **Invited talk**, T. Popmintchev, M. -C. Chen, P. Arpin, M. Gerrity, M. Seaberg, B. Zhang, D. Popmintchev, A. Bahabad, M. M. Murnane, H. C. Kapteyn, “Bright Coherent X-Rays from Tabletop Ultrafast Lasers”, National Security Science and Engineering Faculty Fellowship Conference, Arlington, VA, July, 2010. Presented by Tenio Popmintchev.
805. **Contributed talk**, P. Arpin, R. Sandberg, D. Raymondson, M. C. Chen, T. Popmintchev, M. Gerrity, M. Seaberg, H. C. Kapteyn, M. M. Murnane, “Coherent Imaging at the Nanoscale using Ultrafast Soft X-Rays” National Security Science and Engineering Faculty Fellowship Conference, Arlington, VA, July, 2010. Presented by Paul Arpin.
804. **Contributed talk**, R. Adam, P. Grychtol, C. La-O-Vorakiat, S. Mathias, M. Siemens, J. Shaw, H. Nembach, T. Silva, M. Aeschlimann, C. M. Schneider, H. C. Kapteyn, and M. M. Murnane, “Measurement of demagnetization dynamics at the M edges of Ni and Fe using a tabletop high-harmonic soft X-ray source,” 37th International Conference on Vacuum Ultraviolet and X-ray Physics, Vancouver, Canada, July 2010. Presented by R. Adam.
803. **Poster presentation**, Stefan Mathias, Chan La-O-Vorakiat, Patrik Grychtol, Roman Adam, Mark Siemens, Justin M. Shaw, Hans Nembach, Martin Aeschlimann, Claus M. Schneider, Tom Silva, Margaret M. Murnane, Henry C. Kapteyn, “Ultrafast, Element-Specific, Demagnetization Dynamics Probed Using Coherent High Harmonic Beams,” 17th International Conference on Ultrafast Phenomena, Snowmass, CO, July 2010. Presented by Stefan Mathias.
802. **Poster presentation**, Robynne M. Lock, Xibin Zhou, Margaret M. Murnane, and Henry C. Kapteyn, “Elliptical Dichroism of High Harmonics Emitted from Aligned Molecules,” 17th International Conference on Ultrafast Phenomena, Snowmass, CO, July 2010. Presented by Robynne M. Lock.
801. **Contributed talk**, M.-C. Chen, P. Arpin, T. Popmintchev, M. Gerrity, M. Seaberg, B. Zhang, D. Popmintchev, A. Bahabad, M. M. Murnane, H. C. Kapteyn, “Bright, Coherent, Attosecond Soft X-Ray Harmonics Spanning the Water Window from a Tabletop Source,” 17th International Conference on Ultrafast Phenomena, Snowmass, CO, July 2010. Presented by M.-C. Chen.
800. **Contributed talk**, Xibin Zhou, Predrag Ranitovic, Craig Hogle, Margaret M. Murnane, and Henry C. Kapteyn, “Ultrafast Control of Fragmentation Pathways of Soft X-Ray Driven Dissociation of Triatomic N₂O Molecules,” 17th International Conference on Ultrafast Phenomena, Snowmass, CO, July 2010. Presented by Henry Kapteyn.
799. **Contributed talk**, Wen Li, Agnieszka A. Jaroń-Becker, Craig W. Hogle, Vandana Sharma, Xibin Zhou, Andreas Becker, Henry C. Kapteyn and Margaret M. Murnane, “Visualizing Electron Rearrangement in Space and Time during the Transition from a Molecule to Atoms,” 17th International Conference on Ultrafast Phenomena, Snowmass, CO, July 2010. Presented by Agnieszka Jaroń-Becker.
798. **Poster presentation**, P. Ranitovic, C. W. Hogle, X. Zhou, M. M. Murnane, and H. C. Kapteyn, “IR-Assisted Ionization of He⁺/He⁺⁺ by Attosecond Extreme Ultraviolet (EUV) Radiation,” 17th International Conference on Ultrafast Phenomena, Snowmass, CO, July 2010. Presented by P. Ranitovic.
797. **Contributed Talk**, Qing Li, Mark Siemens, Ronggui Yang, Keith Nelson, Erik Anderson, Margaret Murnane and Henry Kapteyn, “Observation of Non-Fourier Thermal Transport at Nano-Interfaces,” DEPS Ultrashort Pulse Workshop, Broomfield, Colorado June 2010. Presented by Qing Li.

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796. **Contributed Talk**, Chan La-o-vorakiat, Stefan Mathias, Patrik Grychtol, Roman Adam, Mark Siemens, Justin Shaw, Hans Nembach, Claus M. Schneider, Martin Aeschlimann, Thomas Silva, Margaret Murnane, and Henry Kapteyn, "Probing Ultrafast Magnetization Dynamics with Element-Specificity Using Coherent EUV High-Harmonics," DEPS Ultrashort Pulse Workshop, Broomfield, Colorado June 2010. Presented by Chan La-O-Vorakiat.
795. **Contributed Talk**, Paul Arpin, Ming-Chang Chen, Tenio Popmintchev, Michael Gerrity, Matt Seaberg, Bosheng Zhang, Dimitar Popmintchev, Alon Bahabad, Margaret M. Murnane, Henry C. Kapteyn, "Bright, Coherent, Attosecond, Soft X-Ray Harmonics Spanning the Water Window from a Tabletop Source" DEPS Ultrashort Pulse Workshop, Broomfield, Colorado June 2010. Presented by Paul Arpin.
794. **Invited talk**, Margaret Murnane et al, "Bright Coherent Attosecond Soft-X-Rays from Tabletop Femtosecond Lasers" 2010 Multiphoton Processes Gordon Conference, Tilton NH, June 2010.
793. **Colloquium**, Margaret Murnane et al, "Bright Coherent Soft-X-Rays from Tabletop Femtosecond Lasers", Department of Physics, University of California at San Diego, June 2010. Presented by Margaret Murnane.
792. **Poster**, Xibin Zhou, Predrag Ranitovic, Craig Hogle, Margaret Murnane, and Henry Kapteyn "Control and probe dynamics of small molecules with UV and XUV radiation," 2010 Multiphoton Processes Gordon Conference, Tilton NH, June 2010. Presented by Xibin Zhou.
791. **Poster**, Predrag Ranitovic, Craig W Hogle, Xibin Zhou, Margaret M Murnane, Henry C Kapteyn, "IR-Assisted Single/Double Ionization of Ar by attosecond XUV Radiation," 2010 Multiphoton Processes Gordon Conference, Tilton NH, June 2010. Presented by Predrag Ranitovic.
790. **Poster**, Predrag Ranitovic, Craig W Hogle, Xibin Zhou, Margaret M Murnane, Henry C Kapteyn, "XUV-Induced Electron/Nuclear Wave-Packet Dynamics in a D₂ molecule controlled by femtosecond IR radiation," 2010 Multiphoton Processes Gordon Conference, Tilton NH, June 2010., Presented by Predrag Ranitovic.
789. **Poster**, Robynne Lock, Xibin Zhou, Margaret. M. Murnane and Henry C. Kapteyn, "Polarization-Resolved Measurements of High Harmonic Emission from Aligned Molecules," 2010 Multiphoton Processes Gordon Conference, Tilton NH, June 2010. Presented by Robynne Lock.
788. **Seminar**, Henry C. Kapteyn and Margaret M. Murnane, "Coherent x-rays from ultrafast lasers—a unique tool for probing ultrafast materials and magnetic dynamics on the nanoscale," Hitachi Advanced Research Center, San Jose, CA, May 2010. Presented by Henry Kapteyn.
787. **Invited talk**, Henry Kapteyn and Margaret Murnane, "New Ultrafast X-Ray Tools for Probing and Manipulating at the Nano Scale," DARPA Workshop on Local Control of Chemistry, Arlington, VA, May 2010. Presented by Henry Kapteyn.
786. **Invited talk**, Margaret Murnane et al, "Coherent X-Rays from Tabletop Lasers using High Harmonics," DOE BES Workshop on Compact Light Sources, Rockville, MD, May 2010. Presented by Margaret Murnane.
785. **Invited talk**, Margaret Murnane et al, "Science at the Timescale of the Electron - Coherent Attosecond X-Ray High Harmonics," 41st Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics (DAMOP), Houston, Texas, May 2010. Presented by Margaret Murnane.

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784. **Contributed talk**, P. Ranitovic, C.W. Hogle, X. Zhou, H.C. Kapteyn, M.M. Murnane, “IR-assisted dissociation of D_2^+ by attosecond XUV radiation,” 41st Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics (DAMOP), Houston, Texas, May 2010. Talk J5.0010. Presented by Predrag Ranitovic.
783. **Contributed talk**, Antonio Picon, Alon Bahabad, Margaret Murnane, Henry Kapteyn, and Andreas Becker, “Molecular dissociation with attosecond pulses: A double-slit with moving nuclei,” 41st Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics (DAMOP), Houston, Texas, May 2010. Talk J5.0009. Presented by Antonio Picon.
782. **Contributed talk** Agnieszka Jaron-Becker, Wen Li, Margaret Murnane, Henry Kapteyn, and Andreas Becker, “Observing electron rearrangement in the simplest chemical reaction,” 41st Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics (DAMOP), Houston, Texas, May 2010. Talk W3.0001. Presented by Agnieszka Jaron-Becker.
781. **Research Update Talk**, Henry Kapteyn et al, “Introduction: Nanoscale Materials and Cluster Metrologies using Coherent EUV Beams,” 2010 Site visit of the National Science Foundation Engineering Research Center in Extreme Ultraviolet Science and Technology, Boulder, CO, May 2010. Presented by Henry Kapteyn.
780. **Research Highlights Talk**, Ming-Chang Chen, Michael Gerrity, Bosheng Zhang, Dr. Sterling Backus, Dr. Xiaoshi Zhang, “High Harmonic EUV Beams at 50 kHz Repetition Rate,” 2010 Site visit of the National Science Foundation Engineering Research Center in Extreme Ultraviolet Science and Technology, Boulder, CO, May 2010. Presented by Ming-Chang Chen.
779. **Research Highlights Talk**, Daisy Raymondson et al, “Compact EUV Source Development,” 2010 Site visit of the National Science Foundation Engineering Research Center in Extreme Ultraviolet Science and Technology, Boulder, CO, May 2010. Presented by Daisy Raymondson.
778. **Research Update Talk**, Matt Seaberg, Paul Arpin, Betsy Hall, Margaret Murnane, Henry Kapteyn, John Miao, Kevin Raines, Changyong Song, Ann Sakdinawat, Eric Anderson, Erik Gullikson, Farhad Salmassi, Yanwei Liu, Przemyslaw Wachulak, Mario Marconi, Carmen Menoni, Jorge Rocca, Bill Schlotter, “Coherent Imaging Systems using High Harmonic EUV Sources,” 2010 Site visit of the National Science Foundation Engineering Research Center in Extreme Ultraviolet Science and Technology, Boulder, CO, May 2010. Presented by Margaret Murnane.
777. **Research Update Talk**, Tenio Popmintchev, Ming-Chang Chen, Michael Gerrity, Bosheng Zhang, Matt Seaberg, Alon Bahabad, Paul Arpin, Henry Kapteyn, Margaret Murnane, Carmen Menoni, Fernando Brizuela, Ivan Christov, Jorge Rocca, Yanwei Liu, Erik Gullikson, Farhad Salmassi, Oren Cohen, “Coherent Ultrafast High Harmonic Systems,” 2010 Site visit of the National Science Foundation Engineering Research Center in Extreme Ultraviolet Science and Technology, Boulder, CO, May 2010. Presented by Margaret Murnane.
776. **Research Update Talk**, Tenio Popmintchev, Ming-Chang Chen, Paul Arpin, Michael Gerrity, Bosheng Zhang, Matt Seaberg, Alon Bahabad, Margaret Murnane, Henry Kapteyn, “Tabletop Coherent Hard X-ray Sources”, 2010 Site Visit of the National Science Foundation Engineering Research Center in Extreme Ultraviolet Science and Technology, Boulder, CO, May 2010. Presented by Tenio Popmintchev.

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775. **Research Update Talk**, Qing Li, Mark Siemens, Ronggui Yang, Keith Nelson, Erik Anderson, Margaret Murnane and Henry Kapteyn, "First observation of quasi-ballistic thermal transport from a nanoscale hot spot," 2010 Site visit of the National Science Foundation Engineering Research Center in Extreme Ultraviolet Science and Technology, Boulder, CO, May 2010. Presented by Qing Li.
774. **Research Update Talk**, Stefan Mathias, Chan La-O-Vorakiat, Mark Siemens, Margaret Murnane, Henry Kapteyn, Patrik Grychtol, Roman Adam, Claus M. Schneider, Martin Aeschlimann, Justin Shaw, Hans Nembach, Thomas Silva, Yanwei Liu, Erik Gullikson, Farhad Salmassi., "Element-selective magnetization dynamics probed using ultrafast EUV beams," 2010 Site visit of the National Science Foundation Engineering Research Center in Extreme Ultraviolet Science and Technology, Boulder, CO, May 2010. Presented by Stefan Mathias
773. **Invited talk**, Paul C. Arpin, Tenio Popmintchev, Henry C. Kapteyn, Margaret M. Murnane, "Short Wavelength Seed Sources," Second workshop on High Harmonic Seeding for present and future short wavelength Free Electron Lasers, Lund, Sweden, May 2010. Presented by Paul Arpin.
772. **Invited talk**, Paul C. Arpin, Ming-Chang Chen, Tenio Popmintchev, Michael Gerrity, Matt Seaberg, Bosheng Zhang, Eric Gullikson, Farhad Salmassi, Yanwei Liu, Alon Bahabad, Henry C. Kapteyn, Margaret M. Murnane, "Demonstration of Fully Spatially Coherent Soft X-Ray High Harmonic Beams in the Water Window," OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science Conference (CLEO/QELS), San Jose, CA, May 2010. Paper CThQ3. Presented by Paul Arpin.
771. **Invited talk**, Ming-Chang Chen, Paul Arpin, Tenio Popmintchev, Michael Ryan Gerrity, Matt Seaberg, Bosheng Zhang, Margaret Murnane, Henry Kapteyn, "Full Phase Matching of Ultrafast Coherent High Harmonic X-Rays at 0.5 keV," OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science Conference (CLEO/QELS), San Jose, CA, May 2010. Paper JThI3. Presented by Ming-Chang Chen.
770. **Postdeadline Presentation**, Richard Sandberg, Kevin S. Raines, Sara Salha, Huaidong Jiang, Jose A. Rodríguez, Benjamin P. Fahimian, Henry C. Kapteyn, Margaret M. Murnane, Jincheng Du, Jianwei Miao, "Three-Dimensional Coherent X-Ray Diffractive Imaging from a Single View," OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science Conference (CLEO/QELS), San Jose, CA, May 2010. Paper CPDB1. Presented by Richard Sandberg.
769. **Contributed talk**, Chan La-o-vorakiat, Stefan Mathias, Patrik Grychtol, Roman Adam, Mark Siemens, Justin M. Shaw, Hans Nembach, Martin Aeschlimann, Claus M. Schneider, Thomas J. Silva, Margaret M. Murnane, Henry C. Kapteyn, "Ultrafast, Element-Specific, Demagnetization Dynamics Probed Using Coherent High Harmonic Beams," OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science Conference (CLEO/QELS), San Jose, CA, May 2010. Paper QWC5. Presented by Chan La-o-vorakiat.
768. **Contributed talk**, Alon Bahabad, Margaret Murnane, Henry Kapteyn, "Generalized Spatiotemporal Quasi Phase Matching," OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science Conference (CLEO/QELS), San Jose, CA, May 2010. Paper CThEE7. Presented by Alon Bahabad.

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767. **Contributed talk**, Qing Li, Mark E. Siemens, Ronggui Yang, Margaret M. Murnane, Henry C. Kapteyn, Erik H. Anderson, Keith A. Nelson, "Observation of Quasi-Ballistic Heat Transport at Nano-Interfaces Using Coherent Soft X-Ray Beams," OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science Conference (CLEO/QELS), San Jose, CA, May 2010. Paper CThQ4. Presented by Qing Li.
766. **Colloquium**, "Molecular and Materials Dynamics probed by Coherent Electrons and X-Rays", Fermilab, IL, March 2010. Presented by Margaret Murnane.
765. **Invited talk**, Margaret Murnane et al, "Materials Dynamics probed by Ultrafast Coherent X-Rays," Gordon Research Conference on Ultrafast Phenomena In Cooperative Systems, Galveston, TX, March 2010. Presented by Margaret Murnane.
764. **Poster**, Chan La-o-vorakiat, Stefan Mathias, Patrik Grychtol, Roman Adam, Mark Siemens, Justin M. Shaw, Hans Nembach, Martin Aeschlimann, Claus M. Schneider, Thomas J. Silva, Margaret M. Murnane, and Henry C. Kapteyn, "Ultrafast demagnetization at elemental M-edges probed with high-order harmonic EUV light," Gordon Research Conference on Ultrafast Phenomena In Cooperative Systems, Galveston, TX, March 2010. Presented by Chan La-o-vorakiat.
763. **Invited talk**, Margaret Murnane et al, "Attosecond Science using Extreme Nonlinear Optics", Special Symposium to celebrate 90th birthday of Nichlaas Bloembergen, University of Arizona, Tucson, AZ, March 2010. Presented by Margaret Murnane.
762. **Invited talk**, Margaret Murnane et al, "Ultrafast molecular and materials dynamics probed by attosecond coherent x-rays," March Meeting of the American Physical Society, Portland OR, March 2010. Talk V27.00006. Presented by Margaret Murnane.
761. **Invited talk**, Tenio Popmintchev et al, "Extreme Nonlinear Optics using High Harmonics SLAC Workshop on next-generation Free Electron Lasers, Stanford, CA. Presented by Tenio Popmintchev.
760. **Contributed talk**, S. Mathias, C. La-o-Vorakiat, M. Siemens, M. Murnane, H. Kapteyn, M. Aeschlimann, P. Grychtol, R. Adam, C. Schneider, J. Shaw, H. Nembach, and T. Silva, "Element-selective magnetization dynamics probed using ultrafast soft x-ray beams," March Meeting of the American Physical Society, Portland OR, March 2010. Talk A33.00001. Presented by Stefan Mathias.
759. **Contributed talk**, Wen Li, Agnieszka Jaron-Becker, Craig Hogle, Vandana Sharma, Xibin Zhou, Andreas Becker, Henry Kapteyn, and Margaret Murnane, "Strong Field Ionization Probing of the Transition from a Molecule to Atoms," March Meeting of the American Physical Society, Portland OR, March 2010. Talk V27.00002. Presented by Wen Li.
758. **Contributed talk**, P. Ranitovic, C.W. Hogle, X. Zhou, M.M. Murnane, and H.C. Kapteyn, "IR-assisted ionization of Ar⁺/Ar⁺⁺ by attosecond XUV radiation," March Meeting of the American Physical Society, Portland OR, March 2010. Talk V27.00003. Presented by Predrag Ranitovic.
757. **Invited talk**, Henry Kapteyn and Margaret Murnane, "Introduction to Attosecond Science Session," 2010 Gordon Conference on Photoions, Photoionization & Photodetachment, Galveston TX, February 2010. Presented by Henry Kapteyn.
756. **Invited talk**, Margaret Murnane et al, "Attosecond Light and Science at the Time-scale of Electron Motion," Symposium on the History and Future of Laser Technology, 2010 Annual Meeting of the American Association for the Advancement of Science (AAAS), San Diego CA, February 2010. Presented by Margaret Murnane.

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755. **Research update talk**, Margaret Murnane et al, “High Harmonic Sources and Applications in Nanoscience”, Industrial Advisory Board Meeting of the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, San Jose, CA, February 2010. Presented by Henry Kapteyn.
754. **Invited Seminar**, Tenio Popmintchev, Ming-Chang Chen, Michael Gerrity, Paul Arpin, Alon Bahabad, Dimitar Popmintchev, Henry Kapteyn, Margaret Murnane, Mike Grisham, Jorge Rocca, Ivan Christov, Erik Gullikson, Farhad Salmassi, Yanwei Liu, Oren Cohen, “Coherent Ultrafast EUV Beams from FS Lasers,” EUV ERC Research Symposium, SEMATECH, Albany NY, February 2010. Presented by Margaret Murnane.
753. **Invited Seminar**, Qing Li, Mark Siemens, Ronggui Yang, Keith Nelson, Erik Anderson, Stefan Mathias, Chan La-O-Vorakiat, Patrik Grychtol, Roman Adam, Claus M. Schneider, Martin Aeschlimann, Justin Shaw, Hans Nembach, Thomas Silva, Margaret Murnane and Henry Kapteyn, “Materials characterization using high harmonics to address technological frontiers,” EUV ERC Research Symposium, SEMATECH, Albany NY, February 2010. Presented by Henry Kapteyn.
752. **Physical Chemistry Colloquium**, “Molecular and Materials Dynamics probed by Coherent Electrons and X-Rays”, University of California, Berkeley, CA. Presented by Margaret Murnane.
751. **Invited Poster**, Chan La-o-vorakiat, Stefan Mathias, Patrik Grychtol, Roman Adam, Mark Siemens, Justin M. Shaw, Hans Nembach, Martin Aeschlimann, Claus M. Schneider, Thomas J. Silva, Margaret M. Murnane, and Henry C. Kapteyn, “Ultrafast Demagnetization Probed at Elemental M-edges Using Tabletop High-Order Harmonic EUV Light,” 2010 Joint 55rd Conference on Magnetism and Magnetic Materials / IEEE International Magnetism Conference, January 2010. Presented by Chan La-O-Vorakiat.
750. **Invited talk**, Tenio Popmintchev, Paul Arpin, Ming-Chang Chen, Alon Bahabad, Oren Cohen, Margaret Murnane, Henry Kapteyn, “Laser pulse self-compression and phase matching of high harmonic generation at 0.5 keV,” Winter Colloquium on the Physics of Quantum Electronics (PQE), Snowbird UT, January 2010. Presented by Tenio Popmintchev.
749. **Update talk**, Brendan Reagan, Tenio Popmintchev et al, “Patent Experience: High-Order Harmonic Generation in a Capillary Discharge,” Annual Retreat of the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, LaPorte, CO, January 2010. Presented by Brendan Reagan and Tenio Popmintchev.
748. **Research Update talk**, Tenio Popmintchev, Ming-Chang Chen, Michael Gerrity, Paul Arpin, Alon Bahabad, Dimitar Popmintchev, Henry Kapteyn, Margaret Murnane, Mike Grisham, Jorge Rocca, Ivan Christov, Erik Gullikson, Farhad Salmassi, Yanwei Liu, Oren Cohen, “Coherent Ultrafast High Harmonic Sources,” Annual Retreat of the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, LaPorte, CO, January 2010. Presented by Margaret Murnane.
747. **Research Update talk**, Stefan Mathias, Chan La-O-Vorakiat, Mark Siemens, Margaret Murnane, Henry Kapteyn, Patrik Grychtol, Roman Adam, Claus M. Schneider, Martin Aeschlimann, Justin Shaw, Hans Nembach, Thomas Silva, “Ultrafast magnetization dynamics probed by EUV light,” Annual Retreat of the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, LaPorte, CO, January 2010. Presented by Stefan Mathias.
746. **Research Update talk**, Qing Li, Mark Siemens, Ronggui Yang, Keith Nelson, Erik Anderson, Margaret Murnane and Henry Kapteyn, “Quasi-ballistic thermal transport at nano-interfaces,” Annual Retreat of the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, LaPorte, CO, January 2010. Presented by Qing Li.

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745. **Research Update talk**, Matt Seaberg, Paul Arpin, Betsy Hall, Bosheng Zhang, Daisy Raymondson, Richard Sandberg, Margaret Murnane, Henry Kapteyn, John Miao, Kevin Raines, Changyong Song, Bill Schlotter, Ann Sakdinawat, Eric Anderson, Erik Gullikson, Farhad Salmassi, Yanwei Liu, Przemyslaw Wachulak, Mario Marconi, Carmen Menoni, Jorge Rocca, "Coherent Imaging Systems using High Harmonic EUV Sources," Annual Retreat of the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, LaPorte, CO, January 2010. Presented by Margaret Murnane.
744. **Research Overview**, Eric Hosler, Qing Li, Chan La-O-Vorakiat, Mark Siemens, F. Dong, S. Heinbuch, Robynne Hooper, Tory Carr, Criag Hogle, Luis Miaja-Avila, Chengyuan Ding, Stefan Mathias, Wen Li, Xibin Zhou, Predrag Ranitovic, Etienne Gagnon, Stefan Kowarik, Terefe Habteyes, Tom Silva, Martin Aeschlimann, Michael Bauer, Albert Stolow, Serguei Patchkovskii, Robin Santra, Lew Cocke, Keith Nelson, Henry Kapteyn, Margaret Murnane, Ronggui Yang, Elliot Bernstein, Jorge Rocca, Erik Anderson, Steve Leone, "Introduction: EUV Materials and Molecular Science," Annual Retreat of the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, LaPorte, CO, January 2010. Presented by Henry Kapteyn.
743. **Poster Presentation**, E. Townsend, M. Seaberg, R. Sandberg, K. Raines, S. Salha, D. Raymondson, C. La-o-varakiat, A. Paul, P. Wachulak, A. Sakdinawat, Y. Liu, C. Song, M. Marconi, C. Menoni, J. Rocca, M. Murnane, H. Kapteyn, and J. Miao, "Lensless imaging using tabletop EUV sources with extensions to 3D imaging," Annual Retreat of the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, LaPorte, CO, January 2010. Presented by Matt Seaberg.
742. **Poster Presentation**, Ming-Chang Chen, Paul Arpin, Tenio Popmintchev, Michael Gerrity, Alon Bahabad, Oren Cohen, Bosheng Zhang, Margaret M. Murnane, and Henry C. Kapteyn, "Phase Matching of Extreme High-Order Harmonics throughout the Water Window," Annual Retreat of the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, LaPorte, CO, January 2010. Presented by Paul Arpin.
741. **Poster Presentation**, Qing Li, Mark E. Siemens, Margaret M. Murnane, Henry C. Kapteyn, Ronggui Yang, Erik H. Anderson, Keith A. Nelson, "Quasi-ballistic thermal transport and Surface Acoustic Wave Propagation in Nanostructures Measured with Extreme Ultraviolet Radiation" Annual Retreat of the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, LaPorte, CO, January 2010. Presented by Qing Li.
740. **Research Update Talk**, Henry Kapteyn, Margaret Murnane, Tenio Popmintchev, Paul Arpin, Michael Gerrity, "Extreme Nonlinear Optics and Applications in HEDLP, " 2010 SSAA Academic Symposium, Washington DC, January 2010. Presented by Henry Kapteyn.
739. **Contributed talk**, Alon Bahabad, Margaret M. Murnane and Henry C. Kapteyn, "Spatiotemporal Nonlinear Optical Diffraction," 55th Meeting of the Israel Physical Society, Ramat Gan Israel, December 2009. Presented by Alon Bahabad.
738. **Poster Presentation**, Ming-Chang Chen, Paul Arpin, Tenio Popmintchev, Michael Gerrity, Alon Bahabad, Oren Cohen, Bosheng Zhang, Margaret M. Murnane, and Henry C. Kapteyn, "Phase Matching of Extreme High Order Harmonics throughout the Water Window," Annual Meeting of the Colorado Photonics Industry Association, Boulder, CO, November 2009. Presented by Paul Arpin.

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737. **Invited talk**, Henry C. Kapteyn and Margaret M. Murnane, "Coherent x-rays from ultrafast lasers, and applications-- attosecond science meets nonlinear optics," Workshop on Lasers for Extreme Fields and Interactions with Matter (LEFIM), Santa Fe NM, Nov. 2009. Presented by Margaret Murnane.
736. **Seminar**, Qing Li et al, "Quasi-Ballistic Heat Transport at Nano-Interfaces, " EUV ERC seminar series webcast, November 2009. Presented by Qing Li.
735. **Invited talk**, Margaret Murnane et al, "Coherent X-rays from Ultrafast Lasers, and Applications — Attosecond Science Meets Nonlinear Optics," 2009 Synchrotron Radiation Center Users' Meeting, Stoughton WI, October 2009. Presented by Margaret Murnane.
734. **Poster Presentation**, S. Mathias, A. V. Carr, L. Miaja-Avila, G. Saathoff, J. Yin, M Aeschlimann, M. Bauer, M.M. Murnane and H.C. Kapteyn, "Ultrafast electron dynamics studied using novel femtosecond photoelectron spectroscopy techniques," Third Annual Energy Research Symposium, Renewable and Sustainable Energy Institute (RASEI), Boulder CO, October 2009. Presented by Stefan Mathias.
733. **Invited talk**, H. C. Kapteyn and M. M. Murnane, "Coherent X-Rays from Ultrafast Lasers, and Applications-- Attosecond Science Meets Nonlinear Optics,"" *Frontiers in Optics/Laser Science XXV*, San Jose, CA, October 2009. Paper FTuZ1 in *Laser Science XXV*, OSA Technical Digest (CD) (Optical Society of America, 2009). Presented by Henry Kapteyn.
732. **Invited talk**, Wen Li, Xibin Zhou, Robynne Lock, Serguei Patchkovskii, Albert Stolow, Etienne Gagnon, Arvinder Sandhu, Robin Santra, Phay Ho, Vandana Sharma, Craig W. Hogle, Predrag Ranitovic, C. Lewis. Cocke, Margaret Murnane, and Henry C. Kapteyn, "Probing Coupled Electronic and Nuclear Dynamics Using Coherent Electrons and X-Rays," *Frontiers in Optics/Laser Science XXV*, San Jose, CA, October 2009. Paper LSTuI3 in *Laser Science XXV*, OSA Technical Digest (CD) (Optical Society of America, 2009). Presented by Wen Li.
731. **Postdeadline presentation**, C. La-O-Vorakiat, S. Mathias, P. Grychtol, R. Adam, M. E. Siemens, J. M. Shaw, H. Nembach, C. M. Schneider, M. Aeschlimann, T. J. Silva, M. M. Murnane, and H. C. Kapteyn, "Ultrafast Demagnetization Probed at Elemental M-Edges Using Tabletop High-Order Harmonic EUV Light," *Frontiers in Optics/Laser Science XXV*, San Jose, CA, October 2009. Paper PDPA1 in *Frontiers in Optics*, OSA Technical Digest (CD) (Optical Society of America, 2009). Presented by Chan La-O-Vorakiat.
730. **Contributed talk**, Mark Siemens, Qing Li, Keith Nelson, Ronggui Yang, Erik Anderson, Margaret Murnane, and Henry Kapteyn, "High-Frequency Surface Acoustic Wave Propagation in Nanostructures Characterized by Coherent Extreme Ultraviolet Beams," Annual Meeting of the Four Corners Section of the APS, Golden, CO, October 2009. Paper B3.0004. Presented by Mark Siemens.
729. **Contributed talk**, Chan La-O-Vorakiat, Stefan Mathias, Patrik Grychtol, Roman Adam, Mark E. Siemens, Justin M. Shaw, Hans Nembach, Claus M. Schneider, Martin Aeschlimann, T. J. Silva, Margaret M. Murnane, Henry C. Kapteyn, "Ultrafast Magnetization Dynamics Probed at Elemental M-edges of Ni and Fe Using Tabletop High-Order Harmonic EUV Light," Annual Meeting of the Four Corners Section of the APS, Golden, CO, October 2009. Paper B4.0001. Presented by Chan La-O-Vorakiat.

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728. **Contributed talk**, Qing Li, Mark Siemens, Ronggui Yang, Keith Nelson, Erik Anderson, Margaret Murnane, and Henry Kapteyn, "Quasi-ballistic thermal transport from a nanoscale hotspot observed using ultrafast coherent extreme ultraviolet beams," Annual Meeting of the Four Corners Section of the APS, Golden, CO, October 2009. Paper C3.0006. Presented by Qing Li.
727. **Invited talk**, Vandana Sharma et al, "Electronic Feshbach Resonances created in Soft X-ray-Induced molecular oxygen dissociation," IWES09 conference, Tohoku University, Sendai, Japan, October 2009. Presented by Vandana Sharma.
726. **Invited talk**, Henry C. Kapteyn and Margaret M. Murnane, "Phase Matching of High Harmonic Generation in the Soft and Hard X-Ray Regions Using Mid-Infrared Lasers," Workshop on Super Intense Laser-Atom Physics (SILAP 2009), Zion National Park, UT, September 2009. Presented by Henry Kapteyn.
725. **Contributed talk**, P. Arpin, T. Popmintchev, N. Wagner, A. Lytle, O. Cohen, H.C. Kapteyn, M.M. Murnane, "Pulse Self-compression combined with High Harmonic Generation in Multiply Ionized Argon," Workshop on Super Intense Laser-Atom Physics (SILAP 2009), Zion National Park, UT, September 2009. Presented by Paul Arpin.
724. **Contributed talk**, Xibin Zhou, Robynne Lock, Wen Li, Henry Kapteyn, and Margaret Murnane, "Molecular Structure and Dynamics probed by Coherent Electrons and X-Rays," Workshop on Super Intense Laser-Atom Physics (SILAP 2009), Zion National Park, UT, September 2009. Presented by Xibin Zhou.
723. **Invited talk**, Tenio Popmintchev, Ming-Chang Chen, Alon Bahabad, Michael Gerrity, Ivan P. Christov, Margaret M. Murnane, and Henry C. Kapteyn, "Phase matching of high harmonic generation in the soft and hard X-ray regions of the spectrum," Ultrafast Nonlinear Optics Conference (UFNO), Burgas, Bulgaria, September 2009. Presented by Tenio Popmintchev.
722. **Seminar**, Tenio Popmintchev, Ming-Chang Chen, Alon Bahabad, Ivan P. Christov, Margaret M. Murnane, Henry C. Kapteyn, "Tunable coherent ultrafast light in the soft and hard X-ray regions of the spectrum," Photonics Institute, Vienna University of Technology, Vienna, Austria, September 2009. Presented by Tenio Popmintchev.
721. **Research Update Talk**, Henry Kapteyn and Margaret Murnane, "Ultrafast Dynamics probed by Coherent Electrons and X-Rays," Contractors Meeting for the US Department of Energy atomic molecular and optical program (AMOP), Airlie, VA, Sept 2009. Presented by Margaret Murnane.
720. **Invited talk**, Margaret M. Murnane, Henry C. Kapteyn, Wen Li, Xibin Zhou, and Robynne Lock, "Probing coupled electron and nuclear dynamics in polyatomic molecules using ultrafast X-rays," 238th Meeting of the American Chemical Society, Washington DC, August 2009. Presented by Henry Kapteyn.
719. **Invited talk**, Margaret Murnane et al, "Ultrafast Coherent X-Rays as a probe of Heat Transport and Chemical Reactions," Gordon Research Conference on Laser Diagnostics In Combustion, Waterville Valley NH, August 2009. Presented by Margaret Murnane.
718. **Invited talk**, Margaret Murnane et al, "Probing and Manipulating Electrons in Molecules and Materials," Gordon Research Conference on Quantum Control Of Light & Matter, South Hadley, MA, August 2009. Presented by Margaret Murnane.

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717. **Invited talk**, Margaret Murnane et al, “Ultrafast molecular dynamics probed by coherent electrons and X- rays,” 9th International Conference on Femtochemistry, Femtobiology, and Femtophysics – Frontiers in Ultrafast Science and Technology (Femtochemistry IX), Beijing, China, August 2009. Presented by Margaret Murnane.
716. **Invited talk**, Henry Kapteyn et al, “Coherent X-rays from ultrafast lasers, and applications— attosecond science meets nonlinear optics,” 9th International Conference on Femtochemistry, Femtobiology, and Femtophysics – Frontiers in Ultrafast Science and Technology (Femtochemistry IX), Beijing, China, August 2009. Presented by Henry Kapteyn.
715. **Invited talk**, Henry Kapteyn et al, “Coherent X-rays From Ultrafast Lasers, and Applications – Attosecond Science Meets Nonlinear Optics,” Second International Conference on Attosecond Physics, Manhattan, KS, July-August 2009. Presented by Henry Kapteyn.
714. **Poster Presentation**, Xibin Zhou, Robynne Lock, Henry Kapteyn, and Margaret Murnane “Polarization Characterization of High Harmonic Generation from Transiently Aligned Molecules,” Second International Conference on Attosecond Physics, Manhattan, KS, July-August 2009. Poster F32. Presented by Xibin Zhou.
713. **Poster Presentation**, Wen Li, Vandana Sharma, Craig Hogle, Agnieszka Jaron-Becker, Andreas Becker, Henry Kapteyn, Margaret Murnane, "Ultrafast Molecular Dynamics Probed Using Strong Field Ionization," Second International Conference on Attosecond Physics, Manhattan, KS, July-August 2009. Poster T27. Presented by Wen Li.
712. **Upgraded Poster** (including 5 min introductory talk), J. Yin, L. Miaja-Avila, G. Saathoff, S. Mathias, M. Aeschlimann, M. Bauer, M. M. Murnane, H. C. Kapteyn, “Ultrafast electron dynamics at surfaces studied using femtosecond photoelectron spectroscopy techniques, Second International Conference on Attosecond Physics, Manhattan, KS, July-August 2009. Poster S12. Presented by Jing Yin.
711. **Contributed talk**, Mark Siemens, Qing Li, Margaret Murnane, Henry Kapteyn, Ronggui Yang, Erik Anderson, Keith Nelson, “Time-resolved quasi-ballistic heat transport at nano-interfaces,” ASME Summer Heat Transfer Conference, San Francisco, CA, July 2009. Paper 88264. Presented by Qing Li.
710. **Seminar**, Margaret Murnane et al, “Harnessing Attosecond Science for Coherent X-Ray Generation, and Applications,” Department of Physics, University of Oxford, Oxford UK, July 2009. Presented by Margaret Murnane.
709. **Invited talk**, Henry Kapteyn and Margaret Murnane, “Harnessing Attosecond Science for Extreme Nonlinear Optics,” 18th International Laser Physics Workshop (LPHYS'09), Barcelona, Spain, July 2009. Presented by Margaret Murnane.
708. **Invited talk**, Margaret Murnane and Henry Kapteyn, “Science using high-harmonic light sources,” 18th International Laser Physics Workshop (LPHYS'09), Barcelona, Spain, July 2009. Presented by Henry Kapteyn.
707. **Contributed poster**, Vandana Sharma, Etienne Gagnon, Robin Santra, Arvinder S. Sandhu, Wen Li, Phay Ho, Predrag Ranitovic, C. Lewis Cocke, Margaret M. Murnane, Henry C. Kapteyn, “Electronic Feshbach Resonances created in Soft X-ray-Induced O₂ dissociation,” XXVI International Conference on Photonic, Electronic, and Atomic Collisions (ICPEAC), Kalamazoo, MI, July 2009. Paper Fr154. Presented by Vandana Sharma.

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706. **Contributed poster**, P. Ranitovic, X.-M. Tong, B. Gramkow, S. De, B. DePaola, K. P. Singh, W. Cao, M. Magrakvelidze, D. Ray, I. Bocharova, H. Mashiko, E. Gagnon, A. Sandhu, M. M. Murnane, H. C. Kapteyn, I. Litvinyuk and C.L. Cocke, "IR-Assisted Ionization of He by Attosecond XUV Radiation," XXVI International Conference on Photonic, Electronic, and Atomic Collisions (ICPEAC), Kalamazoo, MI, July 2009. Paper Mo167. Presented by Arvinder Sandhu.
705. **Contributed talk**, T. Popmintchev, M.-C. Chen, A. Bahabad, M. Gerrity, P. Arpin, P. Sidorenko, O. Cohen, M. Seaberg, R. Sandberg, S. Backus, X. Zhang, G. Taft, I. P. Christov, M. M. Murnane, and H. C. Kapteyn, "Phase Matching of High Harmonic Generation in the Soft and Hard X-ray Regions of the Spectrum," OSA Conference on Nonlinear Optics, Honolulu, HI, July 2009. Paper NThC3 in *Nonlinear Optics: Materials, Fundamentals and Applications*, OSA Technical Digest (CD) (Optical Society of America, 2009). Presented by Tenio Popmintchev.
704. **Invited talk**, Margaret Murnane et al, "Harnessing Attosecond Science for Monitoring and Manipulating Electrons" Gordon Research Conference on Atomic Physics, Williamstown, MA, June 2009. Presented by Margaret Murnane.
703. **Contributed talk**, Iain McKinnie, Sterling Backus, Hsiao-Hua Liu, Neil Anderson, Dirk Muller, Xiaoshi Zhang, Greg Taft, Henry Kapteyn, Margaret Murnane, "High Power <50fs Ultrafast Laser Systems," Directed Energy Professional Society Solid State and Diode Laser Technology Review and Ultrashort Pulse Laser Workshop, Newton, MA, June 2009. Presented by Iain McKinnie.
702. **Contributed talk**, Daisy Raymondson et al, "Lensless Diffractive Imaging and Fourier Transform Holography," Directed Energy Professional Society Solid State and Diode Laser Technology Review and Ultrashort Pulse Laser Workshop, Newton, MA, June 2009. Presented by Margaret Murnane.
701. **Plenary talk**, Henry Kapteyn and Margaret Murnane, "Power-Scaling of Cryogenically-Cooled Ultrafast Amplifiers and Applications in Coherent X-Ray Generation," Directed Energy Professional Society Solid State and Diode Laser Technology Review and Ultrashort Pulse Laser Workshop, Newton, MA, June 2009. Presented by Margaret Murnane.
700. **Tutorial talk**, Henry C. Kapteyn et al, "Physics and applications of ultrafast high-harmonic-based light sources," 2009 Ultrafast X-ray Summer School, Stanford, CA, June 2009. Presented by Henry Kapteyn.
699. **Postdeadline presentation**, Chan La-O-Vorakiat, Mark Siemens, Justin Shaw, Hans Nembach, Stefan Matthias, Roman Adam, Claus M. Schneider, Martin Aeschlimann, Thomas Silva, Margaret Murnane, and Henry Kapteyn, "Magneto-Optical Kerr Effect Probed Using Ultrafast High-Order Harmonic EUV Light," OSA Conference on Lasers and Electro-optics/ International Quantum Electronics Conference (CLEO/IQEC), Baltimore, MD, June 2009. Paper CPDA5. Presented by Chan La-O-Vorakiat.
698. **Contributed talk**, Mark Siemens, Qing Li, Margaret Murnane, Henry Kapteyn, Ronggui Yang, Erik Anderson, Keith Nelson, "EUV Detection of High-Frequency Surface Acoustic Waves," OSA Conference on Lasers and Electro-optics/ International Quantum Electronics Conference (CLEO/IQEC), Baltimore, MD, June 2009. Paper CFN5. Presented by Mark Siemens.
697. **Contributed talk**, Pavel Sidorenko, Alon Bahabad, Tenio Popmintchev, Margaret Murnane, Henry Kapteyn, and Oren Cohen, "Sawtooth grating-assisted-phase-matching," OSA Conference on Lasers and Electro-optics/ International Quantum Electronics Conference (CLEO/IQEC), Baltimore, MD, June 2009. Paper CThS1. Presented by Pavel Sidorenko.

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696. **Contributed talk**, D.A. Raymondson, R.L. Sandberg, E. Townsend, M. Seaberg, C. La-o-vorakiat, M.M. Murnane, H.C. Kapteyn, K. Raines, J. Miao, W. F. Schlotter, “Tabletop Coherent Diffractive Microscopy with Soft X-rays from High Harmonic Generation at 13.5 nm,” OSA Conference on Lasers and Electro-optics/ International Quantum Electronics Conference (CLEO/IQEC), Baltimore, MD, June 2009. Paper CME5. Presented by Daisy Raymondson.
695. **Contributed talk**, Jing Yin, Luis Miaja-Avila, Sterling Backus, Guido Saathoff, Martin Aeschlimann, Margaret Murnane, and Henry Kapteyn, “Wavelength dependence of the Laser-Assisted Photoelectric Effect on surfaces,” OSA Conference on Lasers and Electro-optics/ International Quantum Electronics Conference (CLEO/IQEC), Baltimore, MD, June 2009. Paper CMQ5. Presented by Jing Yin.
694. **Contributed talk**, Etienne Gagnon, Arvinder S. Sandhu, Vandana Sharma, Robin Santra, Wen Li, Phay Ho, Predrag Ranitovic, C. L. Cocke, Margaret M. Murnane, Henry C. Kapteyn, “The Creation of Super-Excited Electronic Feshbach Resonances by EUV-induced Dissociation of O₂,” OSA Conference on Lasers and Electro-optics/ International Quantum Electronics Conference (CLEO/IQEC), Baltimore, MD, June 2009. Paper JThD2. Presented by Etienne Gagnon.
693. **Contributed talk**, Xibin Zhou, Robynne Lock, Nicholas Wagner, Wen Li, Henry Kapteyn, Margaret Murnane, “Elliptically Polarized High Harmonic Emission from Molecules Driven by Linearly Polarized Light,” OSA Conference on Lasers and Electro-optics/ International Quantum Electronics Conference (CLEO/IQEC), Baltimore, MD, June 2009. Paper JThD6. Presented by Robynne Lock.
692. **Contributed talk**, Tenio Popmintchev, Ming-Chang Chen, Alon Bahabad, Michael Gerrity, Paul Arpin, Pavel Sidorenko, Oren Cohen, Matthew Seaberg, Richard Sandberg, Sterling Backus, Xiaoshi Zhang, Greg Taft, Ivan P. Christov, Margaret M. Murnane, Henry C. Kapteyn, “Phase Matching of High Harmonic Generation in the Water Window and Beyond at High Pressures Using Mid-IR Lasers,” OSA Conference on Lasers and Electro-optics/ International Quantum Electronics Conference (CLEO/IQEC), Baltimore, MD, June 2009. Paper JThG1. Presented by Tenio Popmintchev.
691. **Contributed talk**, Paul Arpin, Tenio Popmintchev, Nick Wagner, Amy Lytle, Oren Cohen, Henry C. Kapteyn, Margaret M. Murnane, “High Harmonic Generation from Multiply Ionized Argon Extending Beyond 500 eV,” OSA Conference on Lasers and Electro-optics/ International Quantum Electronics Conference (CLEO/IQEC), Baltimore, MD, June 2009. Paper JThG5. Presented by Paul Arpin.
690. **Contributed talk**, Ming-Chang Chen, Michael R. Gerrity, Tenio Popmintchev, Sterling Backus, Xiaoshi Zhang, Margaret M. Murnane, Henry C. Kapteyn, “Spatially Coherent, Phase Matched, High-Order Harmonic Beams at 50 kHz,” OSA Conference on Lasers and Electro-optics/ International Quantum Electronics Conference (CLEO/IQEC), Baltimore, MD, June 2009. Paper JThH2. Presented by Ming-Chang Chen.
689. **Contributed talk**, Isabell Thomann, Alon Bahabad, Rick Trebino, Margaret M. Murnane, Henry C. Kapteyn, “Characterizing Isolated Attosecond Pulses from a Hollow-Core Waveguide Using Multi-Cycle Driving Pulses,” OSA Conference on Lasers and Electro-optics/ International Quantum Electronics Conference (CLEO/IQEC), Baltimore, MD, June 2009. Paper JThB4. Presented by Isabell Thomann.

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688. **Contributed talk**, Alon Bahabad, Oren Cohen, Margaret Murnane, Henry Kapteyn, “Application of Quasiperiodic and Random Quasi-Phase-Matching to High-Harmonic-Generation,” OSA Conference on Lasers and Electro-optics/ International Quantum Electronics Conference (CLEO/IQEC), Baltimore, MD, June 2009. Paper JThH3. Presented by Alon Bahabad.
687. **Invited talk**, Margaret Murnane and Henry Kapteyn, “Fully Coherent EUV Beams using High Harmonic Generation and Applications in Nanoscale Heat Transport and Nanoimaging,” SEMATECH Workshop on EUV Sources, Baltimore, MD, May 2009. Presented by Henry Kapteyn.
686. **Invited talk**, Henry Kapteyn and Margaret Murnane, “Ultrafast x-ray sources in the soft and hard x-ray regions of the spectrum using high-order harmonic generation,” Conference on X-ray Science at the Femtosecond to Attosecond Frontier, University of California at Los Angeles, May 2009. Presented by Henry Kapteyn.
685. **Research Update talk**, Margaret Murnane et al, “Coherent Ultrafast High Harmonic Sources,” Annual Site Visit of the NSF Engineering Research Center in EUV Science and Technology, Ft Collins, CO, May 2009. Presented by Margaret Murnane.
684. **Research Update talk**, Henry Kapteyn et al, “Thrust III: EUV Materials and Molecular Science,” Annual Site Visit of the NSF Engineering Research Center in EUV Science and Technology, Ft Collins, CO, May 2009. Presented by Henry Kapteyn.
683. **Research Update talk**, Mark Siemens et al, “Quasi-Ballistic Thermal Transport and Surface Acoustic Wave Propagation in Nanostructures Measured with Extreme Ultraviolet Beams,” Annual Site Visit of the NSF Engineering Research Center in EUV Science and Technology, Ft Collins, CO, May 2009. Presented by Mark Siemens.
682. **Research Update talk**, Margaret Murnane et al, “Coherent Imaging Systems using High Harmonic EUV Sources,” Annual Site Visit of the NSF Engineering Research Center in EUV Science and Technology, Ft Collins, CO, May 2009. Presented by Margaret Murnane.
681. **Poster preview talk**, Isabell Thomann, AlonBahabad, Xuan Liu, Rick Trebino, Margaret M. Murnane, Henry C. Kapteyn, “Characterizing Isolated Attosecond Pulses from Hollow Hollow-Core Waveguides Using Multi Multi-Cycle Driving Pulses,” Annual Site Visit of the NSF Engineering Research Center in EUV Science and Technology, Ft Collins, CO, May 2009. Presented by Isabell Thomann.
680. **Poster preview talk**, Craig Hogle et al, ““Radiation Femtochemistry” Probed Using Ultrafast X-Rays,” Annual Site Visit of the NSF Engineering Research Center in EUV Science and Technology, Ft Collins, CO, May 2009. Presented by Craig Hogle.
679. **Research Highlights talk**, Daisy Raymondson et al, “High Average Power, High Rep Rate CEP-Stabilized Ultrafast Laser Amplifier,” Annual Site Visit of the NSF Engineering Research Center in EUV Science and Technology, Ft Collins, CO, May 2009. Presented by Daisy Raymondson.
678. **Research Highlights talk**, Ming-Chang Chen et al, “High Harmonic EUV Beams at 50 kHz Repetition Rate” Annual Site Visit of the NSF Engineering Research Center in EUV Science and Technology, Ft Collins, CO, May 2009. Presented by Ming-Chang Chen.
677. **Poster presentation**, Isabell Thomann, Alon Bahabad, Xuan Liu, Rick Trebino, Margaret Murnane, Henry Kapteyn, “Characterizing Isolated Attosecond Pulses from Hollow-Core Waveguides Using Multi-Cycle Driving Pulses,” Annual Site Visit of the NSF Engineering Research Center in EUV Science and Technology, Ft Collins, CO, May 2009. Presented by Isabell Thomann.

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676. **Poster presentation**, Tenio Popmintchev, Ming-Chang Chen, Alon Bahabad, Michael Gerrity, Bosheng Zhang, Ivan P. Christov, Henry C. Kapteyn, and Margaret M. Murnane, “Phase matching of extreme high-order harmonic generation in the soft and hard X-ray regions of the spectrum,” Annual Site Visit of the NSF Engineering Research Center in EUV Science and Technology, Ft Collins, CO, May 2009. Presented by Tenio Popmintchev.
675. **Poster presentation**, Paul Arpin, Tenio Popmintchev, Amy L. Lytle, Nicholas L. Wagner, Oren Cohen, Margaret M. Murnane, and Henry C. Kapteyn, “High-Order Harmonic Generation in the Water-Window Using Multiply Ionized Ar,” Annual Site Visit of the NSF Engineering Research Center in EUV Science and Technology, Ft Collins, CO, May 2009. Presented by Paul Arpin.
674. **Poster presentation**, E. Gagnon, C. W. Hogle, W. Li, A. S. Sandhu, C. L. Cocke, P. Ranitovic, V. Sharma, X.M. Tong, R. Santra, P. Ho, M. M. Murnane, H. C. Kapteyn, ““Radiation Femtochemistry” Probed Using Ultrafast X-Rays,” Annual Site Visit of the NSF Engineering Research Center in EUV Science and Technology, Ft Collins, CO, May 2009. Presented by Craig Hogle.
673. **Poster presentation**, M. Seaberg, E. Townsend, D. Raymondson, R. Sandberg, W. Schlotter, C. La-o-varakiat, A. Paul, K. Raines, C. Song, M. Murnane, H. Kapteyn, and J. Miao, “Compact Fourier Transform Holography with EUV Light from High Harmonic Generation,” Annual Site Visit of the NSF Engineering Research Center in EUV Science and Technology, Ft Collins, CO, May 2009. Presented by Matt Seaberg.
672. **Poster presentation**, E. Townsend, M. Seaberg, R. Sandberg, D. Raymondson, K. Raines, S. Salha, C. La-o-varakiat, A. Paul, P. Wachulak, A. Sakdinawat, Y. Liu, C. Song, M. Marconi, C. Menoni, J. Rocca, M. Murnane, H. Kapteyn, and J. Miao, “Lensless imaging using tabletop EUV sources with extensions to 3D imaging,” Annual Site Visit of the NSF Engineering Research Center in EUV Science and Technology, Ft Collins, CO, May 2009. Presented by Ethan Townsend.
671. **Poster presentation**, Alon Bahabad, Oren Cohen, Margaret M. Murnane and Henry C. Kapteyn, “Quasiperiodic and Random Quasi-Phase-Matching of High-Harmonic-Generation,” Annual Site Visit of the NSF Engineering Research Center in EUV Science and Technology, Ft Collins, CO, May 2009. Presented by Alon Bahabad.
670. **Poster presentation**, Alon Bahabad, Margaret M. Murnane and Henry C. Kapteyn, “Quasi Phase Matching of Momentum and Energy for Nonlinear Optical Processes,” Annual Site Visit of the NSF Engineering Research Center in EUV Science and Technology, Ft Collins, CO, May 2009. Presented by Alon Bahabad.
669. **Poster presentation**, L. Miaja-Avila, J. Yin, G. Saathoff, S. Mathias, M. Aeschlimann, M. Bauer, M. M. Murnane and H. C. Kapteyn, “Ultrafast electron dynamics studied using novel femtosecond photoelectron spectroscopy techniques,” Annual Site Visit of the NSF Engineering Research Center in EUV Science and Technology, Ft Collins, CO, May 2009. Presented by Luis Miaja-Avila.
668. **Poster presentation**, Mark E. Siemens, Qing Li, Margaret M. Murnane, Henry C. Kapteyn, Ronggui Yang, Erik H. Anderson, Keith A. Nelson, “Quasi-Ballistic Thermal Transport and Surface Acoustic Wave Propagation in Nanostructures Measured with Extreme Ultraviolet Beams,” Annual Site Visit of the NSF Engineering Research Center in EUV Science and Technology, Ft Collins, CO, May 2009. Presented by Mark Siemens.

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667. **Poster presentation**, Chan La-O-Vorakiat, Mark Siemens, Justin Shaw, Hans Nembach, Stefan Mathias, Patrik Grychtol, Roman Adam, Claus M. Schneider, Martin Aeschlimann, Thomas Silva, Margaret Murnane, and Henry Kapteyn, “Soft X-Ray Magneto-optics at the M-edge Using a Tabletop High-Harmonic Source,” Annual Site Visit of the NSF Engineering Research Center in EUV Science and Technology, Ft Collins, CO, May 2009. Presented by Chan La-O-Vorakiat.
666. **Poster presentation**, Xibin Zhou, Robynne Lock, Nicholas Wagner, Wen Li, Margaret Murnane, and Henry Kapteyn, “Polarization Resolved measurements of High Harmonic Emission from Aligned Molecules,” Annual Site Visit of the NSF Engineering Research Center in EUV Science and Technology, Ft Collins, CO, May 2009. Presented by Xibin Zhou.
665. Invited talk, Robynne Lock, Xibin Zhou, Wen Li, Margaret Murnane, Henry Kapteyn, Serguei Patchkovskii and Albert Stolow, “Probing Molecular Structure and Dynamics Using High Harmonic Generation,” Workshop on Studies of Atoms and Molecules with “New Light Sources,” Aarhus, Denmark, May 2009. <http://www.phys.au.dk/ltc/>. Presented by Robynne Lock.
664. **Invited talk**, Margaret Murnane et al, “Observing the Dance of Electrons in Atoms, Molecules and Materials using Coherent Electrons and x-rays,” Graduate Student Symposium of the 40th Annual Meeting of the Division of Atomic, Molecular, and Optical Physics of the American Physical Society (DAMOP), Charlottesville, VA, May 2009. Presented by Margaret Murnane.
663. **Contributed talk**, Xibin Zhou, Robynne Lock, Henry C. Kapteyn and Margaret M. Murnane, “Polarization-Resolved Characterization of High Harmonic Emission from Aligned Molecules,” 40th Annual Meeting of the Division of Atomic, Molecular, and Optical Physics of the American Physical Society (DAMOP), Charlottesville, VA, May 2009. Talk S5.0006. Presented by Xibin Zhou.
662. **Contributed talk**, Tenio Popmintchev et al, “Scaling of phase matching of high-order harmonics into the multi-keV x-ray region at low ionization and large density-length products,” 40th Annual Meeting of the Division of Atomic, Molecular, and Optical Physics of the American Physical Society (DAMOP), Charlottesville, VA, May 2009. Talk X6.0002. Presented by Tenio Popmintchev.
661. **Contributed talk**, Etienne Gagnon, Robin Santra, Arvinder S. Sandhu, Vandana Sharma, Wen Li, Phay Ho, Predrag Ranitovic, C. Lewis Cocke, Craig Hogle, Margaret M. Murnane, Henry C. Kapteyn, “Electronic Feshbach Resonances created in Soft X-ray–Induced O₂ dissociation,” 40th Annual Meeting of the Division of Atomic, Molecular, and Optical Physics of the American Physical Society (DAMOP), Charlottesville, VA, May 2009. Talk R5.0010. Presented by Craig Hogle.
660. **Invited talk**, Wen Li et al, “Molecular dynamics probed using high harmonic generation and strong field ionization,” 40th Annual Meeting of the Division of Atomic, Molecular, and Optical Physics of the American Physical Society (DAMOP), Charlottesville, VA, May 2009. Talk Q6.0004. Presented by Wen Li.
659. **Condensed Matter Seminar**, Margaret Murnane and Henry Kapteyn, “Harnessing Attosecond Science for Ultrafast Materials Studies,” Physics Department, University of California at Berkeley, Berkeley, CA, May 2009. Presented by Margaret Murnane.
658. **Research Update Talk**, Margaret Murnane et al, “Frontiers in Ultrafast AMO Science at JILA,” JILA Atomic Molecular and Optical Physics NSF Physics Frontiers Center site visit, Boulder, CO, April 2009. Presented by Margaret Murnane.

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657. **Colloquium**, Margaret Murnane et al, "Harnessing Attosecond Science in the Quest for Coherent X-Rays," Department of Physics, Technical University of Vienna, Vienna Austria, April 2009. Presented by Margaret Murnane.
656. **Zewail Award Address**, Henry C. Kapteyn et al, "Harnessing attosecond science for molecular dynamics," 237th American Chemical Society National Meeting and Exposition, Salt Lake City, UT, March 2009. Presented by Henry Kapteyn.
655. **Research Update talk**, Margaret Murnane and Henry Kapteyn, "Harnessing Attosecond Science in the Quest for Coherent X-Rays," JILA Physics Frontiers Center PI's meeting, March 2009. Presented by Henry C. Kapteyn.
654. **Invited talk**, Margaret M. Murnane et al, "Probing coupled electron and nuclear dynamics in polyatomic molecules using ultrafast X-rays" 237th American Chemical Society National Meeting and Exposition, Salt Lake City, UT, March 2009. Presented by Margaret Murnane.
653. **Colloquium**, Margaret Murnane et al, "Harnessing Attosecond Science in the Quest for Coherent X-Rays," Department of Physics, University of Wisconsin, Madison, WI, March 2009. Presented by Margaret Murnane.
652. **Colloquium**, Margaret Murnane et al, "Harnessing Attosecond Science in the Quest for Coherent X-Rays," Department of Chemistry, University of Washington, Seattle, WA, March 2009. Presented by Margaret Murnane.
651. **Colloquium**, Margaret Murnane et al, "Harnessing Attosecond Science in the Quest for Coherent X-Rays," Department of Physics, Massachusetts Institute of Technology, Cambridge, MA, March 2009. Presented by Margaret Murnane.
650. **Contributed talk**, Daisy Raymondson et al, "Tabletop coherent diffractive microscopy with extreme-ultraviolet light from high-harmonic generation," SPIE Advanced Lithography, San Jose, CA, February 2009. Presented by Daisy Raymondson.
649. **Invited talk**, Margaret Murnane et al, "Monitoring Molecular and Materials Dynamics using Ultrafast X-Rays", 2009 Workshop on Wave Function Engineering and Coherent Control in Nanostructured Materials, Los Alamos, NM, February 2009. Presented by Margaret Murnane.
648. **Poster Presentation**, Pavel Sidorenko, Alon Bahabad, Tenio Popmintchev, Margaret Murnane, Henry Kapteyn, and Oren Cohen, "Sawtooth grating-assisted-phase-matching," 10th European/French Israeli Symposium on Nonlinear and Quantum Optics (FRISNO), Ein Gedi, Israel, February 2009. Presented by Oren Cohen.
647. **Research update talk**, Henry Kapteyn et al, "Nanoscale Heat Transport and High Frequency Photoacoustics in Nanostructures using Ultrafast Coherent EUV Beams," Industrial Advisory Board Meeting of the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, San Jose, CA, February 2009. Presented by Henry Kapteyn.
646. **Research update talk**, Margaret Murnane et al, "EUV Coherent Lensless Imaging," Industrial Advisory Board Meeting of the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, San Jose, CA, February 2009. Presented by Margaret Murnane.
645. **Research update talk**, Henry Kapteyn et al, "Spectroscopy using Coherent EUV Sources," Annual Retreat of the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, Winter Park, CO, January 2009. Presented by Henry Kapteyn.

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644. **Research update talk**, Mark Siemens et al, “Quasi-Ballistic Thermal Transport and Surface Acoustic Wave Propagation in Nanostructures Measured with Extreme Ultraviolet Beams,” Annual Retreat of the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, Winter Park, CO, January 2009. Presented by Mark Siemens.
643. **Research update talk**, Tenio Popmintchev, et al, “Scaling of Phase Matching of Extreme High-Order Harmonics into the multi-keV X-Ray Regime,” Annual Retreat of the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, Winter Park, CO, January 2009. Presented by Tenio Popmintchev.
642. **Poster Presentation**, Wen Li, Vandana Sharma, Craig W. Hogle, Xibin Zhou, Margaret M. Murnane, and Henry C. Kapteyn, “Ultrafast Molecular Dynamics Probed Using Strong Field Ionization,” Annual Retreat of the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, Winter Park, CO, January 2009. Presented by Wen Li.
641. **Poster Presentation**, Tenio Popmintchev, Ming-Chang Chen, Michael Gerrity, Alon Bahabad, Oren Cohen, Bosheng Zhang, Margaret M. Murnane, and Henry C. Kapteyn, Michael E. Grisham and Jorge J. Rocca, “Scaling of Phase Matching of Extreme High-Order Harmonics into the multi-keV X-Ray Regime,” Annual Retreat of the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, Winter Park, CO, January 2009. Presented by Tenio Popmintchev.
640. **Poster Presentation**, Paul Arpin, Tenio Popmintchev, Amy L. Lytle, Nicholas L. Wagner, Oren Cohen, Margaret M. Murnane, and Henry C. Kapteyn, “Pulse Self-Compression and High-Order Harmonic Generation from Multiply Ionized Ar,” Annual Retreat of the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, Winter Park, CO, January 2009. Presented by Paul Arpin.
639. **Poster Presentation**, I. Thomann, A. Bahabad, X. Liu, R. Trebino, M. M. Murnane and H. C. Kapteyn, “Characterizing isolated attosecond pulses from hollow-core waveguides using multi-cycle driving pulses,” Annual Retreat of the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, Winter Park, CO, January 2009. Presented by Isabell Thomann.
638. **Postdeadline Presentation**, M.-C. Chen, M. R. Gerrity, S. Backus, T. Popmintchev, X. Zhou, P. Arpin, X. Zhang, H.C. Kapteyn and M. M. Murnane, "Spatially Coherent, Phase Matched, High-Order Harmonic EUV Light source at 50 kHz," Optical Society of America Conference on Advanced Solid State Photonics (ASSP), Denver, CO, Jan 2009. Paper MF7. Presented by Ming-Chan Chen.
637. **Colloquium**, Henry C. Kapteyn and Margaret Murnane, “Molecular and Electronic Dynamics Probed by Coherent X-Rays,” Chemical Physics Colloquium Series, University of Colorado at Boulder, Boulder, CO, January 2009. Presented by Henry Kapteyn.
636. **Seminar**, Henry C. Kapteyn et al, “Ultrafast Coherent X-Rays and Applications in Imaging,” Computational Optical Sensing and Imaging (COSI) seminar series, University of Colorado at Boulder, Boulder, CO, January 2009. Presented by Henry Kapteyn.
635. **Plenary talk**, Henry Kapteyn and Margaret Murnane, “Molecular and Electronic Dynamics Probed by Coherent X-Rays,” Winter Colloquium on the Physics of Quantum Electronics (PQE), Snowbird UT, January 2009. Presented by Henry Kapteyn.
634. **Invited talk**, Margaret M. Murnane et al, “Observing the Coupled Motions of Electrons and Atoms in Polyatomic Molecules,” Winter Colloquium on the Physics of Quantum Electronics (PQE), Snowbird UT, January 2009. Presented by Margaret Murnane.

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633. **Invited talk**, Henry C. Kapteyn and Margaret M. Murnane, “High harmonic generation-- Attosecond Science meets Nonlinear Optics,” Workshop on high-harmonic seeding for present and future short wavelength Free-Electron Lasers (FELs), Frascati, Italy, December 2008. Presented by Henry Kapteyn.
632. **Contributed Presentation**, Nicholas Tsoi-A-Sue et al, “Improving the Efficiency of the Image Reconstruction Algorithm Used in Soft-X-ray Diffraction Microscopy,” 2008 Annual Biomedical Research Conference for Minority Students (ABRCMS), Orlando, FL, November 2008. Presented by Nicholas Tsoi-A-Sue.
631. **Plenary Talk**, Margaret Murnane and Henry Kapteyn, “Molecular and Electronic Dynamics Probed by Coherent X-Rays,” Symposium on Light-Matter Interactions, 10th Anniversary of the formation of the College of Science and Technology at Temple University, Philadelphia, PA, November 2008. Presented by Margaret Murnane.
630. **Fred Schmidt Memorial Lecture**, Margaret Murnane et al, “Harnessing Attosecond Science for Coherent X-Ray Generation and Applications,” Department of Physics, University of Washington, Seattle, WA, November 2008. Presented by Margaret Murnane.
629. **Plenary Lecture**, Margaret Murnane et al, “How to Watch Atoms Sing, Electrons Hop and Molecules Dance: Using Fast Light Pulses to Observe and Control Nature,” Scientific Citizenship: Connecting Physics & Society, 2008 Quadrennial Congress of Sigma Pi Sigma, the Physics Honor Society, Fermilab, Batavia, IL, November 2008. Presented by Margaret Murnane.
628. **Invited Talk**, Henry C. Kapteyn and Margaret M. Murnane, “The Technology and Application of Coherent X-rays-- Attosecond Science meets NLO,” IEEE Lasers and Electro-Optics Society (LEOS) Annual Meeting, Newport Beach, CA, November 2008. Paper WR 3. Presented by Henry Kapteyn.
627. **Poster Presentation**, Isabell Thomann, Henry C. Kapteyn, Margaret M. Murnane, “Time-Resolved Extreme Ultraviolet Spectroscopy—Opportunities for Solar Energy Research,” CU-Boulder Energy Initiative Research Symposium, Boulder CO, November 2008. Presented by Isabell Thomann.
626. **Poster Presentation**, Mark Siemens, Qing Li, Margaret Murnane, Henry Kapteyn, Ronggui Yang, and Keith Nelson, “Nanoscale Heat Transport Probed with Ultrafast Soft X-rays,” CU-Boulder Energy Initiative Research Symposium, Boulder CO, November 2008. Presented by Mark Siemens.
625. **Invited Presentation**, Margaret Murnane et al, “Extreme nonlinear optics and applications in HEDLP,” High Energy Density Science Association (HEDSA) symposium on the future prospects of High Energy Density Laser Plasmas (HEDLP), Dallas, TX, November 2008. Presented by Margaret Murnane.
624. **Invited Presentation**, S Mathias, M Wiesenmayer, A Ruffing, F Deicke, L Miaja-Avila, M M Murnane, H C Kapteyn, M Bauer, M Aeschlimann, “Time and angle resolved photoemission spectroscopy using femtosecond visible and high-harmonic light,” 3rd International Conference on Photo-Induced Phase Transitions and Cooperative Phenomena (PIPT2008), Osaka, Japan, November 2008. Presented by Martin Aeschlimann
623. **Invited talk**, Oren Cohen, Amy L. Lytle, Xiaoshi Zhang, Henry C. Kapteyn, Margaret M. Murnane, “Optically-Induced Quasi-Phase Matching in High-Harmonic Generation,” 2008 Frontiers in Optics (FiO)/Laser Science XXIV (LS) Conference, Rochester, NY, October 2008. Paper FThH1. Presented by Oren Cohen.

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622. **Keynote talk**, Margaret Murnane and Henry Kapteyn, “Ultrafast Coherent X-Rays as probes of Molecular and Material Dynamics,” 3rd EPS-QEOD Europhoton Conference—Solid State and Fiber Coherent Light Sources, Paris, France, September 2008. Talk WEoA.1. Presented by Margaret Murnane.
621. **Colloquium**, Margaret Murnane et al, “Ultrafast Coherent X-Rays as probes of Molecular and Material Dynamics,” Sandia National Laboratory, Livermore, CA, September 2008. Presented by Margaret Murnane.
620. **Contributed talk**, Sterling J Backus, Hsiao-Hua Liu, Xiaoshi Zhang, Greg Taft, Iain T McKinnie, Dirk Müller, Henry C Kapteyn and Margaret M Murnane, “High Repetition Rate Power-Scalable Ultra-Fast Laser Architecture,” Directed Energy Professional Society Ultrashort Pulse Laser Workshop, Boulder CO, September 2008. Presented by Sterling Backus.
619. **Contributed talk**, Daisy Raymondson et al, “Coherent Diffractive Imaging Using Tabletop High-Harmonic EUV Sources at 29 and 13 nm,” Directed Energy Professional Society Ultrashort Pulse Laser Workshop, Boulder CO, September 2008. Presented by Daisy Raymondson.
618. **Contributed talk**, Mark Siemens, Qing Li, Margaret Murnane, Henry Kapteyn, Ronggui Yang, Keith Nelson, “Measuring Nanosecond Heat Transport with EUV Light From HHG,” Directed Energy Professional Society Ultrashort Pulse Laser Workshop, Boulder CO, September 2008. Presented by Mark Siemens.
617. **Invited talk**, Henry C. Kapteyn and Margaret M. Murnane, “Probing molecular and materials dynamics using coherent electrons and X-rays,” 11th International Conference on Multiphoton Processes (ICOMP), Heidelberg, Germany, September 2008. Presented by Henry C. Kapteyn.
616. **Invited Talk**, Margaret M. Murnane and Henry C. Kapteyn, “Extreme Nonlinear Optics in Plasmas,” DOE Fusion Energy Sciences Advisory Committee Workshop on Scientific Opportunities in High Energy Density Plasma Physics, Washington, DC, August 2008. Presented by Margaret Murnane.
615. **Invited Talk**, Margaret Murnane et al, “Probing Molecular and Material Dynamics using Coherent Electrons and X-Rays,” International Workshop on Time-Resolved X-Ray Dynamics, Dresden, Germany, August 2008. Presented by Margaret Murnane.
614. **Invited Talk**, Jianwei Miao, Changyong Song, Huaidong Jiang, Kevin Raines, Richard L. Sandberg, Chien-Chun Chen, T. K. Lee, Thomas Earnest, Tetsuya Ishikawa, Henry C. Kapteyn, and Margaret M. Murnane, “Coherent Diffraction Microscopy: Present and Future,” 21st General Assembly and Congress of the International Union of Crystallography (IUCr), Osaka, Japan, August 2008. Presented by Jianwei Miao.
613. **Invited talk**, Henry C. Kapteyn et al, “Molecular Structure and Dynamics Observed Using Ultrashort-Pulse Extreme-Ultraviolet Light,” 6th Congress of the International Society for Theoretical Chemical Physics, Vancouver Canada, July 2008. Presented by Henry Kapteyn.
612. **Contributed Talk**, R.L. Sandberg, C. Song, P.W. Wachulak, D.A. Raymondson, A. Paul, B. Amirkhanyan, A.E. Sakdinawat, E. Lee, C. La-O-Vorakiat, W.F. Schlotter, M.C. Marconi, C.S. Menoni, M.M. Murnane, J.J. Rocca, H.C. Kapteyn, J. Miao, “Table-top diffractive imaging,” 9th International Conference on X-Ray Microscopy (XRM 2008), Zurich Switzerland, July 2008. Presented by Richard Sandberg.

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611. **Invited Talk**, Margaret Murnane and Henry Kapteyn, "Direct measurement of core-level relaxation dynamics on a surface-adsorbate system," 6th International Conference on Ultrafast Surface Dynamics (USD6), Kloster Banz, Germany, July 2008. Presented by Margaret Murnane.
610. **Contributed talk**, Stefan Mathias, Luis Miaja-Avila, Andreas Ruffing, Martin Wiesenmayer, Frederik Deicke, Henry Kapteyn, Margaret Murnane, Martin Aeschlimann, Michael Bauer, "Ultrafast surface dynamics probed by time- and angle-resolved photoemission using femtosecond light pulses in the visible and XUV regime," 6th International Conference on Ultrafast Surface Dynamics (USD6), Kloster Banz, Germany, July 2008. Presented by Stefan Mathias.
609. **Contributed talk**, Luis Miaja-Avila, Guido Saathoff, Stefan Mathias, Jing Yin, Chan La-o-vorakiat, Michael Bauer, Martin Aeschlimann, Margaret Murnane, Henry Kapteyn, "Direct measurement of core-level relaxation dynamics on a surface-adsorbate system," 6th International Conference on Ultrafast Surface Dynamics (USD6), Kloster Banz, Germany, July 2008. Presented by Luis Miaja-Avila.
608. **Invited Talk and Poster Presentation**, Mark Siemens, Qing Li, Margaret Murnane, Henry Kapteyn, and Ronggui Yang, "Probing Nanoscale Thermal Transport using Extreme Ultraviolet (EUV) Light," 6th Japan-US Joint Seminar on Nanoscale Transport Phenomena - Science and Engineering, Boston, MA, July 2008. Presented by Ronggui Yang.
607. **Invited talk**, Margaret Murnane et al, "Probing molecular dynamics using coherent electrons and x-rays," Gordon Research Conference on Atomic & Molecular Interactions, New London, NH, July 2008. Presented by Margaret Murnane.
606. **Seminar**, Henry C. Kapteyn and Margaret M. Murnane, "Coherent EUV Sources for EUV lithography development," ASML Optics, Inc., Richmond CA, June 2008. Presented by Henry Kapteyn.
605. **Hot topic talk**, Xibin Zhou, Robynne Lock, Nick Wagner, Wen Li, Henry Kapteyn and Margaret Murnane, "Phase and polarization of high order harmonic emission from transiently aligned molecules," Gordon Research Conference on Multiphoton Processes, Tilton, NH, June 2008. Presented by Xibin Zhou.
604. **Invited talk**, Arvinder Sandhu, Etienne Gagnon, Vandana Sharma, Wen Li, Margaret Murnane and Henry Kapteyn, Predrag Ranitovic, Lew Cocke, Achim Czasch, Till Jahnke, Xiao-Min Tong, Robin Santra, "Probing femtosecond dynamics of highly-excited molecular states," Gordon Research Conference on Multiphoton Processes, Tilton, NH, June 2008. Presented by Arvinder Sandhu.
603. **Poster Presentation**, Richard L. Sandberg, Changyong Song, Przemyslaw W. Wachulak, Daisy A. Raymondson, Ariel Paul, Anne E. Sakdinawat, Chan La-O-Vorakiat, William F. Schlotter, Mario C. Marconi, Carmen S. Menoni, Margaret M. Murnane, Jorge J. Rocca, Henry C. Kapteyn, and Janwei Miao, "Lensless Imaging at 70nm Resolution using Tabletop Coherent Soft X-rays," 16th International Conference on Ultrafast Phenomena, Stresa, Italy, June 2008. Paper MONIa.3. Presented by Henry Kapteyn.
602. **Poster Presentation**, Amy Lytle, Xiaoshi Zhang, Paul Arpin, Oren Cohen, Margaret Murnane, and Henry Kapteyn, "All-Optical Quasi-Phase Matching and Electron Trajectory Control of High-Order Harmonic Generation at 140 eV," 16th International Conference on Ultrafast Phenomena, Stresa, Italy, June 2008. Paper MONIc.12. Presented by Margaret Murnane.

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601. **Poster Presentation**, Xibin Zhou, Robynne Lock, Nick Wagner, Wen Li, Henry Kapteyn, and Margaret Murnane, "Molecular Recollision Interferometry in High Harmonic Generation," 16th International Conference on Ultrafast Phenomena, Stresa, Italy, June 2008. Paper MONId.27. Presented by Robynne Lock.
600. **Invited talk**, Margaret Murnane and Henry Kapteyn, "Ultrafast Molecular and Materials Dynamics probed by Coherent X-Rays," 16th International Conference on Ultrafast Phenomena, Stresa, Italy, June 2008. Paper TUE1.1. Presented by Margaret Murnane.
599. **Contributed talk**, Wen Li, Xibin Zhou, Robynne Lock, Henry Kapteyn, Margaret Murnane, Serguei Patchkovskii, and Albert Stolow, "Large Amplitude Modulation of High-Order Harmonic Generation from Vibrationally Excited Molecules," 16th International Conference on Ultrafast Phenomena, Stresa, Italy, June 2008. Paper TUE1.2. Presented by Robynne Lock.
598. **Poster Presentation**, Mark Siemens, Qing Li, Margaret Murnane, Henry Kapteyn, Ronggui Yang, and Keith Nelson, "Nanoscale Heat Transport Probed with Ultrafast Soft X-Rays," 16th International Conference on Ultrafast Phenomena, Stresa, Italy, June 2008. Paper TUEIIId.6. Presented by Henry Kapteyn.
597. **Contributed talk**, Isabell Thomann, Robynne Lock, Chan La-O-Vorakiat, Etienne Gagnon, Arvinder Sandhu, Henry C. Kapteyn, Margaret M. Murnane, and Wen Li, "Direct measurement of the angular-dependence of molecular ionization cross-sections by time-resolved extreme-ultraviolet spectroscopy," 16th International Conference on Ultrafast Phenomena, Stresa, Italy, June 2008. Paper TUE3.3. Presented by Isabell Thomann.
596. **Postdeadline talk**, Xibin Zhou, Robynne Lock, Henry C. Kapteyn, and Margaret M. Murnane, "Observation of Elliptically Polarized High Harmonic Emission from Molecules Driven by Linearly Polarized Light," 16th International Conference on Ultrafast Phenomena, Stresa, Italy, June 2008. Paper PD2.2. Presented by Henry Kapteyn.
595. **Contributed talk**, Oren Cohen, Tenio Popmintchev, Amy Lytle, Henry Kapteyn, and Margaret Murnane, "Optically-induced phase structures and quasi-phase matching of high harmonic generation at keV energies," 16th International Conference on Ultrafast Phenomena, Stresa, Italy, June 2008. Paper FRI2.4. Presented by Oren Cohen.
594. **Contributed Talk**, Sterling J Backus, Iain T McKinnie, Dirk Müller, Hsiao-Hua Liu, Henry C Kapteyn and Margaret M Murnane, "Efficient 100 kHz Repetition Rate Ultrafast Laser System with OPA/NOPA Frequency Conversion," Directed Energy Professional Society 21st Annual Solid State and Diode Laser Technology Review, June 2008, Albuquerque, New Mexico. Presented by Iain McKinnie.
593. **Invited Talk**, Arvinder Sandhu, Etienne Gagnon, Vandana Sharma, Wen Li, Margaret Murnane and Henry Kapteyn, Predrag Ranitovic, Lew Cocke, Achim Czasch, Till Jahnke, Xiao-Min Tong, Robin Santra, "Using high-harmonics for probing real-time dynamics of highly excited molecules," 39th Annual Meeting of the APS Division of Atomic, Molecular, and Optical Physics (DAMOP), State College, PA, May 2008. Paper Q1.00002. Presented by Arvinder Sandhu.
592. **Contributed Talk**, Xibin Zhou, Robynne Lock, Nick Wagner, Wen Li, Margaret Murnane, Henry Kapteyn, "Molecular Recollision Interferometry in High Harmonic Generation," 39th Annual Meeting of the APS Division of Atomic, Molecular, and Optical Physics (DAMOP), State College, PA, May 2008. Paper J6.00008. Presented by Xibin Zhou.

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591. **Contributed Talk**, Predrag Ranitovic, B. Gramkow, D. Ray, M. Magrakvelidze, I. Bocharova, S. De, H. Mashiko, I. Litvinyuk, C.L. Cocke, H. Kapteyn, M. Murnane, A. Lytle, E. Gagnon, A. Paul, A. Sandhu, G.G. Paulus, X.M. Tong, A. Alnaser, "EUV-Driven Attosecond Processes," 39th Annual Meeting of the APS Division of Atomic, Molecular, and Optical Physics (DAMOP), State College, PA, May 2008. Paper J6.00011. Presented by Predrag Ranitovic.
590. **Contributed Talk**, Jing Yin, Luis Miaja-Avila, Guido Saathoff, Chan La-o-Vorakiat, Margaret Murnane, Henry Kapteyn, Stefan Mathias, Martin Aeschlimann, Michael Bauer, "Direct measurement of core-level relaxation dynamics on a surface- adsorbate system," 39th Annual Meeting of the APS Division of Atomic, Molecular, and Optical Physics (DAMOP), State College, PA, May 2008. Paper B6.00010. Presented by Jing Yin.
589. **Contributed Talk**, R.L. Sandberg, D.A. Raymondson, A. Paul, C. La-O-Vorakiat, M.M. Murnane, H.C. Kapteyn, C. Song, B. Amirbekain, E. Lee, J. Miao, P.W. Wachulak, M.C. Marconi, C.S. Menoni, J.J. Rocca, A.E. Sakdinawat, W.F. Schlotter, "70 nm Lensless Imaging using Tabletop Extreme Ultraviolet Sources," EIPBN 2008: The 52nd International Conference on Electron, Ion, and Photon Beam Technology and Nanofabrication, Portland, Oregon, May 2008. Presented by Richard Sandberg.
588. **Short Course Presentation**, Henry C. Kapteyn and Margaret Murnane, "Lensless Diffractive Microscopy Using Tabletop Extreme Ultraviolet (EUV) Sources," OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science (CLEO/QELS), San Jose, CA, May 2008. Presented as part of short course SC247, "Ultrafast Optics: Nanoscale Microscopy, Metrology and Patterning Using Compact and Large Scale Soft X-Ray Sources." Presented by Henry Kapteyn.
587. **Tutorial talk**, Margaret M. Murnane, Jorge Rocca, John Miao, Ronggui Yang, Keith Nelson, Eric Anderson, Martin Aeschlimann, Carmen Menoni, Mario Marconi, Henry C. Kapteyn, "Harnessing Attosecond Science for Visualizing the Nanoworld," OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science (CLEO/QELS), San Jose, CA, May 2008. Paper QMF1. Presented by Margaret Murnane.
586. **Contributed talk**, Daisy A. Raymondson, Richard L. Sandberg, Chan La-o-vorakiat, Ariel Paul, Margaret M. Murnane, Henry C. Kapteyn, William F. Schlotter, "Multiple Reference Fourier Transform Holography Using Coherent High-Harmonic Soft-X-Rays," OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science (CLEO/QELS), San Jose, CA, May 2008. Paper CMCC4. Presented by Daisy Raymondson.
585. **Contributed talk**, Richard L. Sandberg, Changyong Song, Przemyslaw W. Wachulak, Daisy A. Raymondson, Ariel Paul, Bagrat Amirbekian, Anne E. Sakdinawat, Edwin Lee, Chan La-O-Vorakiat, Mario C. Marconi, Carmen S. Menoni, Margaret M. Murnane, Jorge J. Rocca, Henry C. Kapteyn, Janwei Miao, "70 nm Lensless Diffractive Microscopy Using Tabletop Soft X-Ray Sources," OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science (CLEO/QELS), San Jose, CA, May 2008. Paper CMCC5. Presented by Richard Sandberg.
584. **Invited talk**, Mark Siemens, Qing Li, Margaret Murnane, Henry Kapteyn, Ronggui Yang, Keith Nelson, "Nanoscale Heat Transport Probed with Soft-X-Rays," OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science (CLEO/QELS), San Jose, CA, May 2008. Paper CWA6. Presented by Mark Siemens.

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583. **Contributed talk**, Daisy A. Raymondson, Sterling Backus, Dirk Mueller, Etienne Gagnon, Ming-Chang Chen, Paul Arpin, Margaret M. Murnane, Henry C. Kapteyn, "Carrier-Envelope Stabilization of High-Average-Power Ultrafast Laser Amplifier Systems," OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science (CLEO/QELS), San Jose, CA, May 2008. Paper CThU1. Presented by Daisy Raymondson.
582. **Invited talk**, Oren Cohen, Amy L. Lytle, Tenio Popmintchev, Henry Kapteyn, Margaret M. Murnane, "All-Optical Quasi-Phase Matching Techniques in High-Harmonic Generation," OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science (CLEO/QELS), San Jose, CA, May 2008. Paper CThX1. Presented by Oren Cohen.
581. **Postdeadline talk**, Tenio Popmintchev, Ming-Chang Chen, Oren Cohen, Michael E. Grisham, Jorge J. Rocca, Margaret M. Murnane, Henry C. Kapteyn, "Extended Phase-Matching of High-Order Harmonics Driven by Mid-Infrared Light," OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science (CLEO/QELS), San Jose, CA, May 2008. Paper CPDA9. Presented by Tenio Popmintchev.
580. **Contributed talk**, Amy L. Lytle, Xiaoshi Zhang, Paul Arpin, Oren Cohen, Margaret M. Murnane, Henry C. Kapteyn, "All-Optical Quasi-Phase Matching and Quantum Path Selection of High-Order Harmonic Generation at 140 eV Using Counterpropagating Light," OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science (CLEO/QELS), San Jose, CA, May 2008. Paper JFD2. Presented by Amy Lytle.
579. **Contributed talk**, Isabell Thomann, Robynne Lock, Etienne Gagnon, Arvinder Sandhu, Henry C. Kapteyn, Margaret M. Murnane, Wen Li, "Angular-Dependence of Molecular Photoionization Cross-Sections Studied by Time-Resolved EUV Spectroscopy," OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science (CLEO/QELS), San Jose, CA, May 2008. Paper JFF1. Presented by Isabell Thomann.
578. **Contributed talk**, Robynne Lock, Xibin Zhou, Nick Wagner, Wen Li, Henry C. Kapteyn, Margaret M. Murnane, "Molecular Recollision Interferometry in High Harmonic Generation," OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science (CLEO/QELS), San Jose, CA, May 2008. Paper JFH4. Presented by Robynne Lock.
577. **Contributed talk**, Wen Li, Xibin Zhou, Robynne Lock, Nick L. Wagner, Henry C. Kapteyn, Margaret M. Murnane, Serguei Patchkovskii, Albert A. Stolow, "Large Amplitude Modulation of High Order Harmonic Generation from Vibrationally Excited Molecules," OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science (CLEO/QELS), San Jose, CA, May 2008. Paper JFH5. Presented by Wen Li.
576. **Contributed talk**, Luis Miaja-Avila, Guido Saathoff, Stefan Mathias, Jing Yin, Chan La-o-vorakiat, Michael Bauer, Martin Aeschlimann, Margaret Murnane, Henry Kapteyn, "Direct Measurement of Core-Level Relaxation Dynamics on a Surface-Adsorbate System Using Ultrafast X-Rays," OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science (CLEO/QELS), San Jose, CA, May 2008. Paper QFN1. Presented by Luis Miaja-Avila.
575. **Seminar**, Luis Miaja-Avila, Guido Saathoff, Stefan Mathias, Jing Yin, Chan La-o-vorakiat, Michael Bauer, Martin Aeschlimann, Margaret Murnane, Henry Kapteyn, "Ultrafast Surface science," PULSE, Stanford, CA, May 2008. Presented by Luis Miaja-Avila.

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574. **Poster Presentation**, Amy Lytle, Xiaoshi Zhang, Paul Arpin, Oren Cohen, Margaret Murnane, and Henry Kapteyn, "All-Optical Quasi-Phase Matching and Electron Trajectory Control of High-Order Harmonic Generation at 140 eV," Annual Site Visit of the NSF Engineering Research Center in EUV Science and Technology, Berkeley, CA, May 2008. Presented by Amy Lytle.
573. **Poster Presentation**, Wen Li, Isabell Thomann, Robynne Lock, Vandana Sharma, Etienne Gagnon, Stephen T. Pratt, Margaret M. Murnane, and Henry C. Kapteyn, "Direct Measurement of Transition Dipoles of Photoionization of N₂ and CO₂," Annual Site Visit of the NSF Engineering Research Center in EUV Science and Technology, Berkeley, CA, May 2008. Presented by Wen Li.
572. **Poster Presentation**, Tenio Popmintchev, Ming-Chang Chen, Oren Cohen, Michael Gerrity, Margaret M. Murnane and Henry C. Kapteyn, Michael E. Grisham and Jorge J. Rocca, "Extended Phase-Matching of High-Order Harmonics Driven by Mid-Infrared Light," Annual Site Visit of the NSF Engineering Research Center in EUV Science and Technology, Berkeley, CA, May 2008. Presented by Tenio Popmintchev.
571. **Poster Presentation**, Mark E. Siemens, Qing Li, Ra'anan I. Tobey, Oren Cohen, Margaret M. Murnane, Henry C. Kapteyn, Ronggui Yang, and Keith A. Nelson, "Ultrasensitive, Ultrafast Holographic Detection of Nanothermal Transients with Extreme Ultraviolet Radiation," Annual Site Visit of the NSF Engineering Research Center in EUV Science and Technology, Berkeley, CA, May 2008. Presented by Mark Siemens.
570. **Poster Presentation**, Etienne Gagnon, Margaret M. Murnane, Henry C. Kapteyn, Arvinder S. Sandhu, C Lewis Cocke, Predrag Ranitovic, and Vandana Sharma, "Studying fragmentation dynamics of autoionizing states of O₂⁺ in real time," Annual Site Visit of the NSF Engineering Research Center in EUV Science and Technology, Berkeley, CA, May 2008. Presented by Vandana Sharma.
569. **Research Update Presentation**, M. M. Murnane et al, "High Harmonic EUV Sources and Applications in Imaging," Annual Site Visit of the NSF Engineering Research Center in EUV Science and Technology, Berkeley, CA, May 2008. Presented by Margaret Murnane.
568. **Research Update Presentation**, Mark Siemens, Qing Li, F. Dong, S. Heinbuch, Xibin Zhou, Robynne Lock, Nick Wagner, Isabell Thomann, Luis Miaja-Avila, Jing Yin, Etienne Gagnon, Wen Li, Guido Saathoff, Arvinder Sandhu, Martin Aeschlimann, Michael Bauer, Albert Stolow, Serguei Patchkovskii, Chris Greene, Xiao-Min Tong, Lew Cocke, Predrag Ranitovic, Achim Czasch, Till Jahnke, Keith Nelson, Henry Kapteyn, Margaret Murnane, Ronggui Yang, Elliot Bernstein, Jorge Rocca, Erik Anderson, "EUV Materials and Molecular Science," Annual Site Visit of the NSF Engineering Research Center in EUV Science and Technology, Berkeley, CA, May 2008. Presented by Henry Kapteyn.
567. **Malmstrom Lecture**, Margaret Murnane et al, "How to Make Atoms Sing and Molecules Dance: Using Fast Light Pulses to Observe and Control Nature," 17th annual Kay Malmstrom Lecture in Physics, Hamline University, St. Paul, MN, May 2008. Presented by Margaret Murnane.
566. **Colloquium**, Margaret M. Murnane et al, "The Science and Technology of Coherent X-Rays: Harnessing Attosecond Science". Penn State University, April 2008. Presented by Margaret Murnane.
565. **Colloquium**, Margaret Murnane et al, "The Science and Technology of Coherent X-rays," All-JILA Colloquium Series, JILA, University of Colorado, Boulder, CO, April 2008. Presented by Margaret Murnane.

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564. **Contributed talk**, Luis Miaja-Avila, Guido Saathoff, Chifong Lei, Martin Aeschlimann, John L. Gland, Margaret M. Murnane, and Henry C. Kapteyn, "Laser-assisted dynamics on metallic surfaces," Pan American Advanced Studies Institute Workshop on Ultrafast and Ultrasmall: New Frontiers and AMO Physics, Buzios, Brazil, March-April 2008. Presented by Luis Miaja-Avila.
563. **Contributed Talk**, Jing Yin, Luis Miaja-Avila, Guido Saathoff, Chan La-o-Vorakiat, Margaret Murnane, Henry Kapteyn, Stefan Mathias, Martin Aeschlimann, Michael Bauer, "Direct measurement of core-level relaxation dynamics on a surface- adsorbate system," 2008 APS March Meeting, March 2008, New Orleans, Louisiana. Paper J20.00015. Presented by Jing Yin.
562. **Colloquium**, Henry Kapteyn et al, "Ultrafast X-ray Molecular Science," Argonne National Laboratory, Argonne, IL, March 2008. Presented by Henry Kapteyn.
561. **Munushian Lecturer**, Margaret Murnane et al, "The Science and Technology of Coherent X-Rays: Harnessing Attosecond Science," University of Southern California, February 2008. Presented by Margaret Murnane.
560. **Research Update talk**, Henry Kapteyn et al, "Imaging and Nanothermal Spectroscopy using High Harmonic EUV Sources," Industrial Advisory Board Meeting of the NSF Engineering Research Center in EUV Science and Technology, San Jose, CA February 2008. Presented by Henry Kapteyn.
559. **Research Update Talk**, Henry Kapteyn et al, "Ultrafast Plasma Science," 2008 Stewardship Science Academic Alliances Program Symposium, Washington, DC, Feb 2008. Presented by Henry Kapteyn.
558. **Poster Presentation**, Mark Siemens, Qing Li, Ra'anan Tobey, Oren Cohen, Margaret Murnane, Henry Kapteyn, Ronggui Yang, Keith Nelson, "Ultrasensitive, Ultrafast Holographic Detection of Thermal Transients with Extreme Ultraviolet Radiation," 2008 Gordon Research Conference on Photoacoustic and Photothermal Phenomena: Photoinduced Processes and Applications, Ventura, CA, February 2008. Presented by Mark Siemens.
557. **Postdeadline Presentation**, Sterling J Backus, Iain T McKinnie, Dirk Müller, Hsiao-Hua Liu, Henry C Kapteyn and Margaret M Murnane, "Efficient 100 kHz Repetition Rate Ultrafast Laser System with OPA/NOPA Frequency Conversion," 2008 Advanced Solid-State Photonics Topical Meeting, Nara, Japan, January 2008. Presented by Iain McKinnie.
556. **Invited Talk**, Margaret Murnane et al, "Probing Molecular Dynamics using Coherent X-rays and Electrons," 2008 Photoions, Photoionization & Photodetachment Gordon Research Conference, Il Ciocco, Italy, January 2008. Presented by Margaret Murnane.
555. **Colloquium**, Margaret Murnane and Henry Kapteyn, "Harnessing Attosecond Science for Probing Molecules and Materials," Brigham Young University, Provo, UT, January 2008.
554. **Invited talk**, Xibin Zhou, Nick Wagner, Wen Li, Robynne Hooper, Henry Kapteyn and Margaret Murnane, "Probing Molecular Structure using Coherent Electrons and X-Rays - Molecular Recollision Interferometry," Winter Colloquium on the Physics of Quantum Electronics (PQE), Snowbird UT, January 2008. Presented by Margaret Murnane.
553. **Plenary talk**, Henry C. Kapteyn and Margaret M. Murnane "Probing molecular dynamics using ultrafast x-rays," Winter Colloquium on the Physics of Quantum Electronics (PQE), Snowbird UT, January 2008. Presented by Henry Kapteyn.

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552. **Invited Seminar**, Henry Kapteyn et al, “Applications in Soft X-ray-Driven Femtosecond Molecular Dynamics, and High Average power Ultrafast Lasers and Application in Coherent EUV/x-ray Generation,” Advanced Instrumentation Seminar Series, Stanford Linear Accelerator Center, Stanford, CA, December 2007. Presented by Henry Kapteyn.
551. **Invited workshop talk**, Margaret Murnane et al, “Ultrafast X-ray Science using High Average Power Lasers,” Workshop on High Average Power Lasers and High Harmonics, Lawrence Berkeley National Laboratory, Berkeley, CA, December 2007. Presented by Margaret Murnane.
550. **Invited overview**, H. C. Kapteyn et al, “Overview of NSF Engineering Research Center in Extreme-Ultraviolet Science and Technology,” Colorado Photonics Industries Association annual University Research Symposium, Boulder, CO, November 2007. Presented by H. Kapteyn.
549. **Hertha Spomer Presidential Lectureship**, Margaret Murnane et al, “How to Make Atoms Sing and Molecules Dance,” Duke University, Durham, NC, November 2007. Presented by Margaret Murnane. This was the inaugural lecture of this new endowed series at Duke.
548. **Distinguished Women in Science and Engineering Lecture Series**, Margaret Murnane et al, “Harnessing Attosecond Science in the Quest for Coherent X-Rays,” Colorado State University, Ft. Collins, CO, November 2007. Presented by Margaret Murnane.
547. **Invited workshop talk**, Henry Kapteyn, Margaret Murnane, Keith Nelson, John Miao, Martin Aeschlimann, Ronggui Yang, “Ultrafast Probes of Materials using Table-top Coherent EUV Beams,” Division of Materials Sciences and Engineering Council Workshop on Ultrafast Materials Science, Santa Fe, NM, October 2007. Presented by Henry Kapteyn.
546. **Research update talk**, Mark Siemens, Luis Avila, Xibin Zhou, Wen Li, Nick Wagner, Robynne Hooper, Qing Li, Jing Yin, Etienne Gagnon, Arvinder Sandhu, Ronggui Yang, Henry Kapteyn, Margaret Murnane, Erik Anderson, Keith Nelson, Martin Aeschlimann, “Ultrafast Probes of Molecules and Materials using Table-top Coherent EUV Beams,” 2007 Retreat of the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, Estes Park, CO, October 2007. Presented by Henry Kapteyn.
545. **Research update talk**, Richard Sandberg et al, “Lensless Imaging using High Harmonic Beams,” 2007 Retreat of the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, Estes Park, CO, October 2007. Presented by Richard Sandberg.
544. **Research update talk**, Amy Lytle et al., “Manipulating Attosecond Electron Recollisions to Generate Bright High Harmonic Beams,” 2007 Retreat of the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, Estes Park, CO, October 2007. Presented by Amy Lytle.
543. **ADVANCE Distinguished Lecture**, Margaret Murnane et al, “How to Make Atoms Sing and Molecules Dance: Using Fast Light Pulses to Observe and Control Nature,” University of Arizona, Tucson, AZ, October 2007. Presented by Margaret Murnane.
542. **Contributed talk**, Richard Sandberg, Ariel Paul, Daisy Raymondson, Margaret Murnane, Henry Kapteyn, Przemyslaw Wachulak, Mario Marconi, Carmen Menoni, Jorge Rocca, Changyong Song, Janwei Miao, Anne Sakdinawat, “Lensless Imaging Using Tabletop EUV sources,” Directed Energy Professional Society Ultrashort Pulse Laser Materials Interaction Workshop, Boulder, CO, October 2007. Presented by Richard Sandberg.

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541. **Contributed talk**, Mark Siemens, Qing Li, Margaret Murnane, Henry Kapteyn, Ronggui Yang, Keith A. Nelson, “Observing quasi-ballistic heat transport with EUV light from HHG,” Directed Energy Professional Society Ultrashort Pulse Laser Materials Interaction Workshop, Boulder, CO, October 2007. Presented by Mark Siemens.
540. **Contributed talk**, Mark Siemens, Qing Li, Margaret Murnane, Henry Kapteyn, Ronggui Yang, Keith A. Nelson, “Observing heat transport in the quasi-ballistic regime using ultrafast EUV diffraction,” Ultrafast Optics / High Field Short Wavelength Conference, Bishop's Lodge, Santa Fe, NM, Sept. 2007. Presented by Qing Li.
539. **Contributed talk**, Richard Sandberg, Ariel Paul, Daisy Raymondson, Margaret Murnane, Henry Kapteyn, Przemyslaw Wachulak, Mario Marconi, Carmen Menoni, Jorge Rocca, Changyong Song, Janwei Miao, Anne Sakdinawat, “Lensless Imaging Using Tabletop EUV sources,” Ultrafast Optics / High Field Short Wavelength Conference, Bishop's Lodge, Santa Fe, NM, Sept. 2007. Presented by Daisy Raymondson.
538. **Contributed talk**, M. E. Grisham, T. Popmintchev, B. A. Reagan, D. M. Gaudiosi, M. Berrill, O. Cohen, J. J. Rocca, M. M. Murnane, and H. C. Kapteyn, “Enhanced High Harmonic Generation from Ions in a Capillary Discharge,” Ultrafast Optics / High Field Short Wavelength Conference, Bishop's Lodge, Santa Fe, NM, Sept. 2007. Presented by Mike Grisham.
537. **Contributed talk**, Arvinder S. Sandhu, Etienne Gagnon, Predrag Ranitovic, Xiao-Min Tong, C. L. Cocke, Margaret M. Murnane and Henry C. Kapteyn, “Soft x-ray driven femtosecond fragmentation dynamics of molecular shakeup states,” Ultrafast Optics / High Field Short Wavelength Conference, Bishop's Lodge, Santa Fe, NM, Sept. 2007. Presented by Etienne Gagnon.
536. **Invited talk**, Margaret M. Murnane et al, “Harnessing Attosecond Science for Coherent X-ray Generation and Applications,” Ultrafast Optics / High Field Short Wavelength Conference, Bishop's Lodge, Santa Fe, NM, Sept. 2007. Presented by Margaret Murnane.
535. **Contributed talk**, Sterling Backus, Dirk Muller, Margaret Murnane, and Henry Kapteyn, “Carrier-envelope stabilization of high-average power ultrafast laser amplifier systems,” Ultrafast Optics / High Field Short Wavelength Conference, Bishop's Lodge, Santa Fe, NM, Sept. 2007. Presented by Henry Kapteyn.
534. **Poster**, Isabell Thomann, Emily Gregonis, Margaret M. Murnane, Henry C. Kapteyn, “Sub-cycle EUV generation and characterization in a phase matched geometry,” Ultrafast Optics / High Field Short Wavelength Conference, Bishop's Lodge, Santa Fe, NM, Sept. 2007. Presented by Henry Kapteyn.
533. **Poster**, Nicholas Wagner, Xibin Zhou, Robynne Hooper, Wen Li, Margaret Murnane and Henry Kapteyn, “Extracting the orientation dependence of the phase of high harmonic emission from molecules using gas mixtures,” Ultrafast Optics / High Field Short Wavelength Conference, Bishop's Lodge, Santa Fe, NM, Sept. 2007. Presented by Nick Wagner.
532. **Plenary talk**, Margaret Murnane et al, “The Quest for Coherent X-Rays Using Attosecond Nonlinear Optics,” 16th International Laser Physics Workshop (LPHYS'07), Leon, Mexico, August 2007. Presented by Margaret Murnane.
531. **Invited talk**, A. Sandhu, E. Gagnon, N. Wagner, X. Zhou, R. Hooper, M.M. Murnane, and H.C. Kapteyn, “Molecular science using strong-field and high-order harmonic generation,” 16th International Laser Physics Workshop (LPHYS'07), Leon, Mexico, August 2007. Presented by Henry Kapteyn.

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530. **Invited Topic Introduction**, session on Strong Field Coherent Control, Gordon Research Conference on Coherent Control, Salve Regina College, Newport, RI, August 2007. Presented by Margaret Murnane.
529. **Invited talk**, Oren Cohen, Xiaoshi Zhang, Amy L. Lytle, Henry C. Kapteyn and Margaret M. Murnane, "Attosecond x-ray photonics: all-optical quasi-phase matching for high harmonic generation," OSA Topical Meeting on Nonlinear Optics: Materials, Fundamentals and Applications, Kona, Hawaii, July-August 2007. Talk ThB1. Presented by Oren Cohen.
528. **Research Update**, Henry Kapteyn et al, "Compact Sources and Applications I: High Order Harmonics," Scientific Advisory Board Meeting of the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, Ft. Collins, CO, August 2007.
527. **Research Update**, Margaret Murnane et al, "Attosecond Coherent Electron Probes of Molecules," Presentation to JILA NSF AMO Physics Frontier Center PI's, Boulder, CO, August 2007. Presented by Margaret Murnane.
526. **Invited talk**, H. Kapteyn et al, "Attosecond Nonlinear Optics," Gordon Research Conference on Atomic Physics, Tilton, NH, July 2007. Presented by Henry Kapteyn.
525. **Contributed talk**, Arvinder Sandhu, Etienne Gagnon, Ariel Paul, Henry Kapteyn, Margaret Murnane, Predrag Ranitovic and Lew Cocke, "Direct Time Resolved Observation Of Molecular Dynamics Induced By Extreme-Ultraviolet Photoionization," XXV International Conference on Photonic, Electronic, and Atomic Collisions (ICPEAC 2007), Freiburg, Germany, July 25-31, 2007. Presented by Etienne Gagnon.
524. **Invited talk**, Tenio Popmintchev, Michael E. Grisham, David M. Gaudiosi, Brendan A. Reagan, Oren Cohen, Mark A. Berrill, Margaret M. Murnane, Henry C. Kapteyn, Jorge J. Rocca, "Enhanced High Harmonic Generation in Xe, Kr and Ar Using a Capillary Discharge," 3rd International Conference on Frontiers of Nonlinear Physics, Nizhny Novgorod, Russia, July 2007. Presented by Tenio Popmintchev.
523. **Invited talk**, O. Cohen, X. Zhang, A. Lytle, M. M. Murnane, and H. C. Kapteyn, "Attosecond nonlinear optics in high harmonic generation", 3rd International Conference on Frontiers of Nonlinear Physics, Nizhny Novgorod, Russia, July 2007. Presented by Oren Cohen.
522. **Contributed talk**, Richard Sandberg, Przemyslaw Wachulak, Ariel Paul, Daisy Raymondson, Changyong Song, Mario Marconi, Carmen Menoni, Jorge Rocca, Margaret Murnane, Henry Kapteyn, Janwei Miao, "Lensless Imaging Using Tabletop Extreme-Ultraviolet Sources," Coherence 2007: International Workshop on Phase Retrieval and Coherent Scattering, Asilomar, CA, June 2007. Presented by Richard Sandberg.
521. **Summer School talk**, Margaret Murnane et al, "Attosecond Nonlinear Optics," Stanford University PULSE Center 2007 Ultrafast Summer School, Stanford Linear Accelerator Center, Stanford, CA, June 2007. Presented by Margaret Murnane.
520. **Invited talk**, Margaret Murnane, Henry Kapteyn, "Extreme Nonlinear Optics for Coherent X-ray Generation," The Ninth Rochester Conference on Coherence and Quantum Optics (CQO9), Rochester, NY, June 2007. Presented by Margaret Murnane

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519. **Contributed talk**, Richard L. Sandberg, Amy L. Lytle, Xiaoshi Zhang, Oren Cohen, Henry C. Kapteyn, Margaret M. Murnane, “Quasi Phase Matching and In-situ Probing of High Harmonic Generation in a Hollow Waveguide Using Counterpropagating Light,” 38th Annual Meeting of the American Physical Society Division of Atomic, Molecular, and Optical Physics (DAMOP), Calgary, Alberta Canada, June 2007. Paper N5.00009. Presented by Arvinder Sandhu.
518. **Contributed talk**, Luis Miaja-Avila, Guido Saathoff, Margaret Murnane, Henry Kapteyn, Martin Aeschlimann, “Laser-Assisted Photoemission from Surfaces,” 38th Annual Meeting of the American Physical Society Division of Atomic, Molecular, and Optical Physics (DAMOP), Calgary, Alberta, Canada, June 2007. Paper N5.00012. Presented by Luis Miaja-Avila.
517. **Contributed talk**, Arvinder Sandhu, Etienne Gagnon, Ariel Paul, Margaret Murnane, Henry Kapteyn, Predrag Ranitovic, C. Lewis Cocke, “Direct time-resolved observation of molecular dynamics induced by extreme- ultraviolet photoionization,” 38th Annual Meeting of the American Physical Society Division of Atomic, Molecular, and Optical Physics (DAMOP), Calgary, Alberta Canada, June 2007. Paper J6.00002. Presented by Arvinder Sandhu.
516. **Contributed talk**, Robynne Hooper, Xibin Zhou, Wen Li, Nick Wagner, Henry Kapteyn, Margaret Murnane, “Intramolecular Dynamics Probed using High Harmonic Generation,” 38th Annual Meeting of the American Physical Society Division of Atomic, Molecular, and Optical Physics (DAMOP), Calgary, Alberta Canada, June 2007. Paper P5.00005. Presented by Robynne Hooper.
515. **Poster Presentation**, Etienne Gagnon, Arvinder S. Sandhu, Predrag Ranitovic, C. Lewis Cocke, Henry C. Kapteyn, Margaret M. Murnane, “Soft x-ray driven femtosecond dynamics of ionic Rydberg states in N₂,” 38th Annual Meeting of the American Physical Society Division of Atomic, Molecular, and Optical Physics (DAMOP), Calgary, Alberta, Canada, June 2007. Paper R1.00141. Presented by Arvinder Sandhu.
514. **Contributed talk**, R. Sandberg, A. Paul, D. Raymondson, M. Murnane, H. Kapteyn, C. Song, J. Miao, “Tabletop Lensless Imaging Using Coherent High Harmonic Beams,” The 51st International Conference on Electron, Ion, and Photon Beam Technology and Nanofabrication, Denver, CO, May 2007. Presented by Richard Sandberg.
513. **Invited talk**, Henry Kapteyn et al, “Tabletop Coherent EUV Spectroscopy and Imaging,” IBM Almaden Research Center, San Jose, CA, May 2007. Presented by H. Kapteyn.
512. **Edison Memorial Lecture**, Margaret Murnane and Henry Kapteyn, “The Quest for Coherent X-Rays,” Naval Research Laboratory, Washington DC, May 2007. Presented by Margaret Murnane.
511. **Postdeadline talk**, Arvinder S. Sandhu, Etienne Gagnon, Ariel Paul, Predrag Ranitovic, C. Lewis Cocke, Margaret M. Murnane and Henry C. Kapteyn, “Soft x-ray driven femtosecond molecular dynamics,” OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science (CLEO/QELS), Baltimore, MD, May 2007. Paper QPDA5. Presented by Arvinder Sandhu.
510. **Postdeadline talk**, Isabell Thomann, Emily Gregonis, Margaret M. Murnane, Henry C. Kapteyn, “Temporal Characterization of energy-tunable EUV pulses in the sub-optical-cycle regime using FROG-CRAB,” OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science (CLEO/QELS), Baltimore, MD, May 2007. Paper CPDB4. Presented by Isabell Thomann.
509. **Contributed talk**, Oren Cohen, Xiaoshi Zhang, Amy Lytle, Tenio Popmintchev, Margaret M. Murnane, Henry C. Kapteyn, “Grating-Assisted Phase Matching in Extreme Nonlinear Optics,” OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science (CLEO/QELS), Baltimore, MD, May 2007. Paper CTuW1. Presented by Henry Kapteyn.

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508. **Contributed talk**, Richard Sandberg, Ariel Paul, Daisy Raymondson, David Gaudiosi, James Holtsnider, Margaret Murnane, Henry Kapteyn, Changyong Song, Jianwei Miao, “Tabletop Lensless Imaging Using Coherent High Harmonic Beams,” OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science (CLEO/QELS), Baltimore, MD, May 2007. Paper CTuW4. Presented by Richard Sandberg.
507. **Contributed talk**, Amy L. Lytle, Xiaoshi Zhang, Margaret M. Murnane, Henry C. Kapteyn, Oren Cohen, “In-situ Probing of Coherence in Hollow Waveguide High-Order Harmonic Generation,” OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science (CLEO/QELS), Baltimore, MD, May 2007. Paper JTuD2. Presented by Margaret Murnane.
506. **Poster presentation**, Oren Cohen, Henry C. Kapteyn, Margaret M. Murnane, LipFah Chong, “Incoherent Solitons in Fast and Local Nonlinear Media,” OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science (CLEO/QELS), Baltimore, MD, May 2007. Paper JWA65. Presented by Oren Cohen.
505. **Invited talk**, Xiaoshi Zhang, Amy Lytle, Henry Kapteyn, Margaret Murnane, Oren Cohen, “All-Optical Quasi-Phase Matching and Quantum Path Control by Counter Propagating Pulse Trains,” OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science (CLEO/QELS), Baltimore, MD, May 2007. Paper JThA3. Presented by Amy Lytle.
504. **Contributed talk**, Luis Miaja-Avila, Guido Saathoff, Margaret M. Murnane, Henry C. Kapteyn, Martin Aeschlimann, “Laser-Assisted Photoemission from Surfaces,” OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science (CLEO/QELS), Baltimore, MD, May 2007. Paper QThD1. Presented by Luis Miaja-Avila.
503. **Contributed talk**, Etienne Gagnon, Margaret Murnane, Henry Kapteyn, Arvinder Sandhu, “Using High-Order Harmonics with Momentum Imaging Techniques to Study Atomic and Molecular Dynamics,” OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science (CLEO/QELS), Baltimore, MD, May 2007. Paper QThD4. Presented by Etienne Gagnon.
502. **Poster Presentation**, Xibin Zhou, Wen Li, Robynne Hooper, Nick Wagner, Henry Kapteyn, Margaret Murnane, “Intra-Molecular Dynamics Probed Using High-Harmonic Generation,” OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science (CLEO/QELS), Baltimore, MD, May 2007. Paper JThD32. Presented by Xibin Zhou.
501. **Contributed talk**, Tenio Popmintchev, Michael E. Grisham, David M. Gaudiosi, Brendan A. Reagan, Oren Cohen, Mark A. Berrill, Margaret M. Murnane, Henry C. Kapteyn, Jorge J. Rocca, “Enhanced High Harmonic Generation in Xe, Kr and Ar Using a Capillary Discharge,” OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science (CLEO/QELS), Baltimore, MD, May 2007. Paper JFA3. Presented by Tenio Popmintchev.
500. **Resesarch Update**, Henry C. Kapteyn, Margaret Murnane et al, “Spectroscopy at the EUV ERC: Brief Overview Highlights in Ultrafast EUV Spectroscopy,” 2007 Site Visit for the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, Boulder, CO, May 2007. Presented by Henry Kapteyn.
499. **Poster Presentation**, Amy L. Lytle, Xiaoshi Zhang, Ariel Paul, Oren Cohen, Margaret M. Murnane, and Henry C. Kapteyn, “Probe of High-Order Harmonic Generation in a Hollow Waveguide Using Counterpropagating Light,” 2007 Site Visit for the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, Boulder, CO, May 2007. Presented by Amy Lytle.

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498. **Poster Presentation**, Tenio Popmintchev, David M. Gaudiosi, Oren Cohen, Margaret M. Murnane, Henry C. Kapteyn, Michael E. Grisham, Brendan A. Reagan, Mark Berrill and Jorge J. Rocca, “Enhanced High Harmonic Generation from Ions in a Capillary Discharge,” 2007 Site Visit for the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, Boulder, CO, May 2007. Presented by Tenio Popmintchev.
497. **Poster Presentation**, Mark Siemens, Qing Li, Oren Cohen, Margaret Murnane, Henry Kapteyn, Ronggui Yang, and Keith Nelson, “Ultrafast Holographic Detection of Dynamic Surface Modulation with Extreme Ultraviolet Radiation,” 2007 Site Visit for the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, Boulder, CO, May 2007. Presented by Mark Siemens.
496. **Poster Presentation**, Etienne Gagnon, Margaret M. Murnane, Henry C. Kapteyn, and Arvinder S. Sandhu, “Using High-Order Harmonics with Momentum Imaging Techniques to Study Atomic and Molecular Dynamics,” 2007 Site Visit for the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, Boulder, CO, May 2007. Presented by Etienne Gagnon.
495. **Poster Presentation**, Etienne Gagnon, Isabell Thomann, Ariel Paul, Amy L. Lytle, Margaret M. Murnane, Henry C. Kapteyn, Arvinder S. Sandhu, “Long term carrier-envelope phase stability with grating-based cryo-cooled amplifier,” 2007 Site Visit for the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, Boulder, CO, May 2007. Presented by Isabell Thomann.
494. **Poster Presentation**, Nick Wagner, Xibin Zhou, Robynne Hooper, Wen Li, Andrea Wüest, Margaret M. Murnane and Henry C. Kapteyn, “Phase Measurement of HHG from Aligned Molecules Using Gas Mixtures,” 2007 Site Visit for the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, Boulder, CO, May 2007. Presented by Nick Wagner.
493. **Poster Presentation**, Isabell Thomann, Emily Gregonis, Arvinder S. Sandhu, Etienne Gagnon, Margaret M. Murnane, Henry C. Kapteyn, “Temporal Characterization of energy-tunable EUV pulses in the sub-optical-cycle regime using FROGCRAb,” 2007 Site Visit for the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, Boulder, CO, May 2007. Presented by Isabell Thomann.
492. **Poster Presentation**, Xibin Zhou, Robynne Hooper, Wen Li, Nick Wagner, Andrea Wüest, Margaret M. Murnane and Henry C. Kapteyn, “Observation of Intra-molecular Vibrational Dynamics using High-Harmonic Generation as a Probe,” 2007 Site Visit for the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, Boulder, CO, May 2007. Presented by Xibin Zhou.
491. **Research Update**, Margaret Murnane et al, “Extreme Nonlinear Optics for Coherent X-Ray Generation,” 2007 Industrial Advisory Board Meeting for the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, Berkeley, CA, April 2007. Presented by Margaret Murnane.
490. **Invited talk**, “Extreme Light,” 2007 Meeting of the Northeast Section, American Physical Society, West Point Academy, NY, April 2007. Presented by Margaret Murnane.
489. **Research Update**, Henry Kapteyn et al, “Attosecond Science- Manipulating Electron Recollisions with Atoms and Molecules,” Presentation to JILA NSF AMO Physics Frontier Center, Boulder, CO, April 2007. Presented by Henry Kapteyn.
488. **Physics Colloquium**, Margaret Murnane et al, “Attosecond Science,” University of Richmond, Richmond, VA March 2007. Presented by Margaret Murnane.

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487. **Contributed talk**, Martin Aeschlimann, Luis Miaja-Avila, Guido Saathoff, Margaret M. Murnane, Henry C. Kapteyn, “The Laser-Assisted Photoelectric Effect on Surfaces,” 2007 Spring Meeting of the German Physical Society, Regensburg, Germany, March 2007. Presented by Martin Aeschlimann.
486. **Contributed talk**, Mark Siemens, Oren Cohen, Qing Li, Margaret Murnane, Henry Kapteyn, Ra'anan Tobey, and Keith Nelson, “Ultrafast Extreme Ultraviolet Holography: Dynamic Measurement of Surface Deformation,” 2007 March Meeting of the American Physical Society, Denver, CO, March 8, 2007. Talk U23.00004. Presented by Mark Siemens.
485. **Contributed talk**, Luis Miaja-Avila, Guido Saathoff, Chifong Lei, Margaret Murnane, Henry Kapteyn, Martin Aeschlimann, and John Gland, “The Laser-Assisted Photoelectric Effect on Surfaces,” 2007 March Meeting of the American Physical Society, Denver, CO, March 8, 2007. Talk V19.00004. Presented by Luis Miaja-Avila.
484. **Contributed talk**, Nick Wagner, Xibin Zhou, Wen Li, Robynne Hooper, Margaret Murnane and Henry Kapteyn, “Observation of Intra-molecular Dynamics using High-Harmonic Generation as a Probe,” 2007 March Meeting of the American Physical Society, Denver, CO, March 8, 2007. Talk W19.00004. Presented by Nick Wagner.
483. **Contributed talk**, Arvinder Sandhu, Etienne Gagnon, Ariel Paul, Margaret Murnane, and Henry Kapteyn, “Using high-order harmonics with momentum imaging techniques to study atomic and molecular dynamics,” 2007 March Meeting of the American Physical Society, Denver, CO, March 8, 2007. Talk W19.00009. Presented by Arvinder Sandhu.
482. **Contributed talk**, Amy Lytle, Xiaoshi Zhang, Margaret Murnane, Henry Kapteyn, Oren Cohen, “In-situ probe of ionization and coherent buildup for high-order harmonic generation in hollow waveguides using counterpropagating light,” 2007 March Meeting of the American Physical Society, Denver, CO, March 5, 2007. Talk B32.00009. Presented by Amy Lytle.
481. **Contributed talk**, Xiaoshi Zhang, Amy Lytle, Oren Cohen, Henry Kapteyn, and Margaret Murnane, “Quasi Phase Matching and Quantum Path Control of High Harmonic Generation using Counterpropagating Light,” 2007 March Meeting of the American Physical Society, Denver, CO, March 5, 2007. Talk B32.00004. Presented by Xiaoshi Zhang.
480. **Contributed talk**, Tenio Popmintchev, David M. Gaudiosi, Oren Cohen, Margaret M. Murnane, Henry C. Kapteyn, Michael Grisham, Brendan Reagan, Mark Berrill, Jorge J. Rocca, Barry C. Walker, “High harmonic generation from ions in a capillary discharge,” 2007 March Meeting of the American Physical Society, Denver, CO, March 5, 2007. Talk B32.00010. Presented by Tenio Popmintchev.
479. **Tutorial**, “Attosecond Nonlinear Optics: Controlling Attosecond Recollisions in Atoms and Molecules”, 2007 March Meeting of the American Physical Society, Denver, CO, March 4, 2007. Presented by Henry Kapteyn.
478. **Invited talk**, “Ultrasensitive Molecular and Materials Spectroscopies probed by Attosecond Electron Recollisions”, Atomic Processes in Plasmas, Gaithersburg DC, March 21, 2007. Presented by Henry Kapteyn.
477. **Research update talk**, Amy Lytle, Xiaoshi Zhang, Dr. Oren Cohen, Daisy Raymondson, Richard Sandberg, Ariel Paul, Margaret Murnane, Henry Kapteyn, “Imaging and probing intense laser matter interactions using high-order harmonic generation,” 2007 Stewardship Science Academic Alliances Program Symposium, Washington, DC, Feb 5, 2007. Presented by Henry Kapteyn.

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476. **Poster Presentation**, Mark Siemens, Qing Li, Oren Cohen, Margaret Murnane, Henry Kapteyn, and Keith Nelson, "Ultrafast Holographic Detection of Dynamic Surface Modulation with Extreme Ultraviolet Radiation," 2006-7 Retreat for the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, Winter Park, CO, January 2007. Presented by Mark Siemens.
475. **Poster Presentation**, Xiaoshi Zhang, Amy Lytle, Oren Cohen, Ariel Paul, Margaret Murnane, and Henry Kapteyn, "All-Optical Quasi Phase Matching and Quantum Path Control of High Harmonic Generation Using Counterpropagating Light," 2006-7 Retreat for the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, Winter Park, CO, January 2007. Presented by Xiaoshi Zhang.
474. **Poster Presentation**, David M. Gaudiosi, Tenio Popmintchev, Oren Cohen, Barry Walker, Margaret Murnane, Henry Kapteyn, Brendan Reagan, Michael Grisham, Mark Berrill and Jorge Rocca, "High Harmonic Generation from Ions in a Capillary Discharge," 2006-7 Retreat for the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, Winter Park, CO, January 2007. Presented by Tenio Popmintchev.
473. **Poster Presentation**, Amy L. Lytle, Xiaoshi Zhang, Ariel Paul, Oren Cohen, Margaret M. Murnane, and Henry C. Kapteyn, "Probe of High-Order Harmonic Generation in a Hollow Waveguide Using Counterpropagating Light," 2006-7 Retreat for the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, Winter Park, CO, January 2007. Presented by Amy Lytle.
472. **Research update talk**, Xiaoshi Zhang et al, "Attosecond Science and Extreme Nonlinear optics," 2006-7 Retreat for the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, Winter Park, CO, January 2007. Presented by Xiaoshi Zhang.
471. **Research update talk**, Nick Wagner et al, 2006-7 Retreat for the NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, Winter Park, CO, January 2007. Presented by Nick Wagner.
470. **Invited talk**, X. Zhang, A. Lytle, O. Cohen, D. Gaudiosi, T. Popmintchev, H. C. Kapteyn, M. M. Murnane, "Nonlinear optics for high-order frequency conversion: applied attosecond science," SPIE Photonics West, San Jose, CA, January 2007. Presented by Xiaoshi Zhang.
469. **Contributed talk**, R.I. Tobey, M.E. Siemens, O. Cohen, Q. Li, M.M. Murnane, H.C. Kapteyn, D.H. Torchinsky, and K.A. Nelson, "Table-Top Ultrafast Soft X-Rays and their Application to Monitoring Dynamic Surface Deformation," 6th EBASI International Conference on Physics and Technology for Sustainable Development in Africa, Cape Town, South Africa, January 2007. Presented by Raanan Tobey.
468. **Invited talk**, "Attosecond Science on Surfaces," Winter Colloquium on the Physics of Quantum Electronics (PQE), Snowbird UT, January 2007. Presented by Guido Saathoff.
467. **Invited talk**, "Monitoring Molecular Dynamics using Attosecond Electron Recollisions", Winter Colloquium on the Physics of Quantum Electronics (PQE), Snowbird UT, January 2007. Presented by Nick Wagner.
466. **Plenary talk**, "Attosecond Science - Latest Developments and Expanding Opportunities," Winter Colloquium on the Physics of Quantum Electronics (PQE), Snowbird UT, January 2007. Presented by Margaret Murnane.
465. **Invited presentation**, Henry C. Kapteyn, "Gaining "thrust" in your thrust: Experiences as a founding thrust leader," Annual Meeting of the NSF Engineering Research Centers, Bethesda, MD, December 2006. Presented by H. Kapteyn

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464. **Invited overview**, H. C. Kapteyn et al., “Overview of NSF Engineering Research Center in extreme-ultraviolet science and technology,” Colorado Photonics Industries Association annual university research symposium, Boulder, CO, November 2006. Presented by H. Kapteyn.
463. **Invited Presentation**, H.C. Kapteyn et al., “Application of coherent high-order harmonic emission in time-resolved imaging and photoemission,” 5th International Conference on Low Energy Electron Microscopy/ Photoelectron Emission Microscopy (LEEM/PEEM), Himeji, Japan, October 2006. Presented by H. Kapteyn.
462. **Invited Presentation**, M. Murnane et al., “In-situ probe of intense femtosecond pulse propagation in waveguides,” 2006 AFOSR Workshop on Nonlinear Optics, Tucson, AZ, October 2006. Presented by M. Murnane.
461. **Invited Presentation**, Margaret Murnane, Henry C. Kapteyn, Nicholas L. Wagner, Andrea Wuest, and Ivan P. Christov, “Observation of intra-molecular vibrational dynamics using high-harmonic generation as a probe,” Frontiers in Optics/ Optical Society of America Annual Meeting, Rochester, NY, October 2006. Presented by M. Murnane.
460. **Invited Presentation**, G. Saathoff et al., “The laser-assisted photoelectric effect from surfaces,” 33rd Annual SSRL Users Meeting Workshop on Ultrafast Processes on Surfaces and in Liquids, Stanford, CA, October 2006. Presented by G. Saathoff.
459. **Invited Presentation**, L. Miaja-avila et al., “Molecular and materials dynamics probed by coherent electrons from high harmonic generation,” International Conference on the Interaction of Atoms, Molecules and Plasmas with Intense Ultrashort Laser Pulses (IAMPI 2006), October, 2006, Szeged, Hungary. Presented by L. Miaja-avila.
458. **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.
457. **Research Update**, Henry Kapteyn and Margaret Murnane, “Monitoring molecular vibrations using coherent electrons from high-harmonic generation,” 2006 Research Meeting of the Atomic, Molecular, and Optical Sciences (AMOS) Program of the Department of Energy Office of Basic Energy Sciences, Airlie, VA, September 2006. Presented by M. Murnane.
456. **Invited Presentation**, X. Zhang, A. Lytle, O. Cohen, I.P. Christov, M.M. Murnane, and H.C. Kapteyn, “Attosecond technology: quantum control of high harmonic generation for phase matching,” Kavli Institute of Theoretical Physics Attosecond Science Workshop, Santa Barbara, CA, September 2006. Presented by H. Kapteyn.
455. **Invited Presentation**, M.M. Murnane et al., “Probing Vibrational Dynamics in Molecules using Coherent Electrons from High-Order Harmonic Generation,” Kavli Institute of Theoretical Physics Attosecond Science Workshop, Santa Barbara, CA, August 2006. Presented by M. Murnane.
454. **Postdeadline Oral Presentation**, X. Zhang, A. L. Lytle, M. M. Murnane, H. C. Kapteyn, and O. Cohen, “Quasi phase matching and quantum control of high harmonic generation in waveguides using counterpropagating beams,” 15th International Conference on Ultrafast Phenomena, Pacific Grove, CA, July 2006. Paper PD9. Presented by X. Zhang.
453. **Poster Presentation**, Xubin Zhou, Henry Kapteyn, and Margaret Murnane, “MHz-rate white light generation using a novel positive-dispersion cavity-dumped Ti:sapphire laser,” 15th International Conference on Ultrafast Phenomena, Pacific Grove, CA, July 2006. Paper TuG14. Presented by X. Zhou.

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452. **Contributed Presentation**, Nick Wagner, Andrea Wüest, Henry Kapteyn, and Margaret Murnane, "Observation of intra-molecular vibrational dynamics using high-harmonic generation as a probe," 15th International Conference on Ultrafast Phenomena, Pacific Grove, CA, July 2006. Paper MD2. Presented by H. Kapteyn.
451. **Poster Presentation**, Luis Miaja, Guido Saathoff, Chifong Lei, Margaret M. Murnane, Henry C. Kapteyn, Martin Aeschlimann, John. L. Gland, "Laser-assisted photoelectric effect on Pt(111)," 15th International Conference on Ultrafast Phenomena, Pacific Grove, CA, July 2006. Paper ThD18. Presented by L. Miaja
450. **Contributed Presentation**, Tenio Popmintchev, Brendan Reagan, David M. Gaudiosi, Michael Grisham, Mark Berrill, Oren Cohen, Barry C. Walker, Margaret M. Murnane, Henry C. Kapteyn, and Jorge J. Rocca, "Enhanced high harmonic generation from ions using a capillary discharge," 15th International Conference on Ultrafast Phenomena, Pacific Grove, CA, July 2006. Paper MD5. Presented by D. Gaudiosi.
449. **Poster Presentation**, Ra'anan I. Tobey, Mark E. Siemens, Oren Cohen, Henry C. Kapteyn, Margaret M. Murnane, and Keith A. Nelson, "Transient holographic detection of surface displacement using extreme ultraviolet radiation," 15th International Conference on Ultrafast Phenomena, Pacific Grove, CA, July 2006. Paper TuH9. Presented by M. Siemens.
448. **Poster Presentation**, Arvinder Sandhu, Etienne Gagnon, Ariel Paul, Isabell Thomann, Amy Lytle, Tracey Keep, Margaret Murnane, Henry Kapteyn, and Ivan Christov, "Isolated EUV pulses via CEP-insensitive nonlinear stabilization in a waveguide," 15th International Conference on Ultrafast Phenomena, Pacific Grove, CA, July 2006. Paper TuG16. Presented by A. Sandhu.
447. **Poster Presentation**, David M. Gaudiosi, Emily A. Gibson, Steve Kane, Rachel Huff, Henry C. Kapteyn, Charles Durfee, Jeff Squier, and Ralph Jimenez "Grism based stretcher/compressor system for amplified, femtosecond kilohertz lasers," 15th International Conference on Ultrafast Phenomena, Pacific Grove, CA, July 2006. Paper MH26. Presented by E. Gibson.
446. **Invited Presentation**, N. Wagner, A. Wüest, R. Tobey, M. Siemens, I. Christov, T. Popmintchev, X. Zhou, M.M. Murnane, and H.C. Kapteyn, "Ultrafast coherent X-ray spectroscopies of molecules and materials," 15th International Laser Physics Workshop, Lausanne, Switzerland, July 2006. Presented by M. Murnane.
445. **Invited Presentation**, Xiaoshi Zhang, Amy Lytle, Oren Cohen, Ariel Paul, Henry Kapteyn, and Margaret Murnane, "Quasi-phase matching of high-order harmonic generation," International Conference on Coherent Control of the Fundamental Processes in Optics and X-ray-Optics (CCFP 2006), Nizhny Novgorod, Russia, July 2006. Presented by M. Murnane.
444. **Invited Presentation**, Nick Wagner, Andrea Wuest, Margaret Murnane, and Henry Kapteyn, "Observing molecular dynamics through the high-order harmonic generation process," International Conference on Coherent Control of the Fundamental Processes in Optics and X-ray-Optics (CCFP 2006), Nizhny Novgorod, Russia, July 2006. Presented by H. Kapteyn.
443. **Invited Presentation**, Margaret Murnane et al., "Monitoring intra-molecular dynamics using coherent electrons from high-harmonic generation," 2006 Gordon Research Conference on Multiphoton Processes, Tilton, NH, June 2006. Presented by M. Murnane.
442. **Special Presentation**, H. Kapteyn, "Overview of Kapteyn-Murnane Laboratories Inc.," Presentation for Colorado Lt. Governor Hon. Jane Norton, on behalf of the NSF Engineering Research Center for Extreme Ultraviolet Science and Technology, July 2006. Presented by H. Kapteyn.

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441. **Short Course**, Henry C. Kapteyn et al., “Ultrafast lasers: A tutorial,” Optical Society of America IFSC Student Chapter School in Optics and Photonics, Physics Institute of São Carlos, University of São Paulo, São Carlos, Brazil, June 2006. Presented by H. Kapteyn.
440. **Short Course**, Henry Kapteyn, Margaret Murnane, and Ivan Christov, “Extreme nonlinear optics of coherent X-ray generation,” Optical Society of America IFSC Student Chapter School in Optics and Photonics, Physics Institute of São Carlos, University of São Paulo, São Carlos, Brazil, June 2006. Presented by M. Murnane.
439. **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.
438. **Short Course**, Margaret Murnane, David Attwood, and Jorge Rocca, “Tabletop EUV sources for nanoscale microscopy and metrology,” OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science (CLEO/QELS), Long Beach, CA, May 2006. Short course SC247.
437. **Contributed presentation**, Arvinder Sandhu, Etienne Gagnon, Ariel Paul, Isabell Thomann, Amy Lytle, Margaret Murnane, Henry Kapteyn, and Ivan Christov, “Sub-femtosecond XUV pulses via energy selective non-linear stabilization in a waveguide,” OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science (CLEO/QELS), Long Beach, CA, May 2006. Paper JTUE4. Presented by Arvinder Sandhu.
436. **Contributed presentation**, Oren Cohen, Tenio Popmintchev, Margaret M. Murnane, and Henry C. Kapteyn, “Phase-matching in isotropic and homogeneous materials via Talbot effect,” OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science (CLEO/QELS), Long Beach, CA, May 2006. Paper CThEE4. Presented by Oren Cohen.
435. **Contributed presentation**, Mark Siemens, Ra'anan Tobey, Oren Cohen, Margaret Murnane, Henry Kapteyn, and Keith Nelson, “Transient 1D holographic detection of surface waves/displacement with extreme ultraviolet radiation,” OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science (CLEO/QELS), Long Beach, CA, May 2006. Paper QMH6. Presented by Mark Siemens.
434. **Contributed presentation**, Emily A. Gibson, Steve Kane, Rachael Huff, David Gaudiosi, Henry C. Kapteyn, Charles Durfee, Jeff Squier, and Ralph Jimenez, “Grism based stretcher/compressor system for amplified, femtosecond kilohertz lasers,” OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science (CLEO/QELS), Long Beach, CA, May 2006. Paper CThA3. Presented by Emily Gibson.
433. **Contributed presentation**, David M. Gaudiosi, Brendan Reagan, Tenio Popmintchev, Michael Grisham, Oren Cohen, Barry Walker, Jorge Rocca, Margaret Murnane, and Henry Kapteyn, “High harmonic generation from ions in a capillary discharge,” OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science (CLEO/QELS), Long Beach, CA, May 2006. Paper JThB4. Presented by David Gaudiosi.
432. **Contributed presentation**, Nick Wagner, Andrea Wüest, Henry Kapteyn, and Margaret Murnane, “Observation of intra-molecular vibrational dynamics using high-harmonic generation as a probe,” OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science (CLEO/QELS), Long Beach, CA, May 2006. Paper JFB2.

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431. **Contributed presentation**, Amy L. Lytle, Xiaoshi Zhang, Ariel Paul, Henry C. Kapteyn, and Margaret M. Murnane, "Enhancement of extreme ultraviolet flux using quasi-phase matching," OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science (CLEO/QELS), Long Beach, CA, May 2006. Paper JThD3. Presented by Amy Lytle.
430. **Contributed presentation**, Luis Miaja, Guido Saathoff, Chifong Lei, Margaret Murnane, Henry Kapteyn, Martin Aeschlimann, and John. L. Gland, "The laser-assisted photoelectric effect on surfaces," OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science (CLEO/QELS), Long Beach, CA, May 2006. Paper QMH7.
429. **Contributed presentation**, Nick Wagner, Andrea Wuest, Margaret Murnane, and Henry Kapteyn, "Observation of intra-molecular vibrational dynamics using high-harmonic generation as a probe," 37th Meeting of the APS Division of Atomic, Molecular and Optical Physics (DAMOP), Knoxville, TN, May 2006. Paper S3.00005. Presented by Nick Wagner.
428. **Contributed presentation**, David M. Gaudiosi, Brendan Reagan, Tenio Popmintchev, Michael Grisham, Mark Berrill, Oren Cohen, Barry C. Walker, Margaret M. Murnane, Henry C. Kapteyn, and Jorge J. Rocca, "High harmonic generation from ions in a capillary discharge," 37th Meeting of the APS Division of Atomic, Molecular and Optical Physics (DAMOP), Knoxville, TN, May 2006. Paper S3.00006.
427. **Contributed presentation**, L. Miaja, G. Saathoff, C. Lei, M.M. Murnane, H.C. Kapteyn, M. Aeschlimann, and J.L. Gland, "The laser-assisted photoelectric effect on surfaces," 37th Meeting of the APS Division of Atomic, Molecular and Optical Physics (DAMOP), Knoxville, TN, May 2006. Paper E6.00001. Presented by Guido Saathoff.
426. **Research Update Presentation**, Henry Kapteyn, Elliot Bernstein, Steve Leone, Dan Dessau, John Gland, Chris Greene, Tamar Seideman, Martin Aeschlimann, Ronggui Yang, Keith Nelson, Ivan Christov, Barry Walker, Tom Silva, and Rich Mirin, "Novel linear and nonlinear spectroscopies using small-scale EUV light sources," NSF Engineering Research Center for Extreme Ultraviolet Science and Technology Annual Site Visit, May 2006. Presented by H. Kapteyn.
425. **Research Update Presentation**, M. Murnane et al., "Compact EUV light sources based on high harmonic generation," NSF Engineering Research Center for Extreme Ultraviolet Science and Technology Annual Site Visit, May 2006. Presented by M. Murnane.
424. **Physics Colloquium**, M. Murnane et al., "Extreme nonlinear optics for coherent X-ray generation," IBM Yorktown Heights Research Center, Yorktown, NY, April 2006. Presented by M. Murnane.
423. **Invited Presentation**, Xiaoshi Zhang, Amy Lytle, Ariel Paul, Oren Cohen, Jorge Rocca, Barry Walker, Carmen Menoni, David Attwood, Eric Anderson, Ivan Christov, Margaret Murnane, and Henry Kapteyn, "Extreme nonlinear optics for coherent EUV generation," ESF network meeting on: Future Advanced Light Sources (FALS), Daresbury Laboratory, Warrington, Cheshire, United Kingdom, March 2006. Presented by M. Murnane.
422. **Invited Presentation**, Henry C. Kapteyn and Margaret M. Murnane, "High-power femtosecond Ti:sapphire lasers for ultrafast x-ray sources," ESF network meeting on: Future Advanced Light Sources (FALS), Daresbury Laboratory, Warrington, Cheshire, United Kingdom, March 2006. Presented by H. Kapteyn.
421. **Contributed Presentation**, Nick Wagner, Andrea Wuest, Ivan Christov, Tenio Popmintchev, Xibin Zhou, Margaret Murnane, and Henry Kapteyn, "Monitoring molecular dynamics using coherent electrons from high-harmonic generation," 2006 March Meeting of the American Physical Society, Baltimore, MD, March 2006. Abstract P13.00005. Presented by N. Wagner.

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420. **Contributed Presentation**, Jake Koralek, Fraser Douglas, Nick Plumb, Zhe Sun, Margaret Murnane, Henry Kapteyn, Steve Cundiff, Y. Aiura, K. Oka, H. Eisaki, and Dan Dessau, "Laser ARPES on the cuprate superconductor Bi2212," 2006 March Meeting of the American Physical Society, Baltimore, MD, March 2006. Abstract Z38.00008. Presented by J. Koralek.
419. **Invited Presentation**, M. M. Murnane et al., "Probing molecular dynamics using coherent electrons from high order harmonic generation," Annual Meeting of the German Physical Society, Frankfurt, Germany, March 2006. Presented by M. Murnane.
418. **Physics Colloquium**, Emily Gibson, Randy Bartels, Nick Wagner, Dr. Andrea Wüest, Margaret Murnane, Henry Kapteyn, Ivan Christov, Chris Greene, and Tamar Seidemann, "Coherent x-rays from lasers," College of Charleston, Charleston SC, February 2006. Presented by H. Kapteyn.
417. **Physics Colloquium**, Emily Gibson, Randy Bartels, Nick Wagner, Dr. Andrea Wüest, Margaret Murnane and Henry Kapteyn, Ivan Christov (Sofia), Chris Greene (JILA), and Tamar Seidemann (NW), "Extreme nonlinear optics for coherent X-ray generation," University of California at Santa Barbara, February 2006. Presented by M. Murnane.
416. **Research Update Presentation**, Elliot Bernstein, Dan Dessau, John Gland, Martin Aeschlimann, Keith Nelson, Steve Leone, and Henry Kapteyn, "Spectroscopy using small-scale EUV light sources," NSF Engineering Research Center for Extreme Ultraviolet Science and Technology Industrial Advisory Board Meeting, February 2006. Presented by H. Kapteyn.
415. **Research Update Presentation**, Xiaoshi Zhang, Amy Lytle, Ariel Paul, Oren Cohen, Ivan Christov, Margaret Murnane, Henry Kapteyn, and Barry Walker, "Extreme nonlinear optics for coherent EUV generation," NSF Engineering Research Center for Extreme Ultraviolet Science and Technology Annual Retreat, Winter Park, CO, January 2006. Presented by H. Kapteyn.
414. **Invited Presentation**, R. I. Tobey, M. E. Siemens, M. M. Murnane, H. C. Kapteyn, and K. A. Nelson, "Detection of high frequency acoustic transients using coherent EUV light," SPIE Conference on Ultrafast Phenomena in Semiconductors and Nanostructure Materials X, Photonics West, San Jose, CA January 2006. Presented by Ra'anana Tobey.
413. **Invited Presentation**, 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 M. Murnane.
412. **Poster**, Andrea Wüest, Nick Wagner, Henry Kapteyn and Margaret Murnane, "Observation of intramolecular vibrational dynamics using high-harmonic generation as a probe," 4th International Workshop on Optimal Control of Quantum Dynamics: Theory and Experiment, Ringberg, Bavaria, Germany, Dec 2005. Presented by A. Wüest.
411. **Invited Presentation**, Prof. Henry C. Kapteyn, David Gaudiosi, Emily Gibson, Mike Grisham, Amy Lytle, Ariel Paul, Tenio Popmintchev, Brandon Reagan, Nick Wagner, Xiaoshi Zhang, Randy Bartels, Sterling Backus, Tom Weinacht, Andrea Wüest, Prof. Margaret M. Murnane, Prof. Ivan Christov, Prof. Jorge Rocca, and Prof. Barry Walker, "Coherent x-rays from lasers: applied attosecond science," Army Research Office Attosecond Optics Workshop, Durham, NC, November 2005. Presented by H. Kapteyn.
410. **Invited overview talk**, H. Kapteyn, "Overview of the NSF Engineering Research Center in Extreme-ultraviolet Science and Technology," Colorado Photonics Industry Association Annual Symposium, November 2005. Presented by H. Kapteyn.

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409. **Poster**, R. I. Tobey, M. E. Siemens, R. L. Sandberg, M. M. Murnane, and H. C. Kapteyn, and R. P. Mirin, “Transient core level spectroscopy with ultrafast extreme ultraviolet radiation,” University of Colorado/NIST Fall Symposium, Boulder, CO, November 2005. Presented by Mark Siemens.
408. **Invited talk**, R. Tobey et al., “Nonlinear optics with extreme ultraviolet radiation: Investigating acoustic responses in materials,” US-Africa Advanced Studies Institute on Photon Interactions with Atoms and Molecules, Durban, South Africa, November 2005. Presented by R. Tobey.
407. **Poster**, Nick Wagner, Andrea Wuest, Margaret M. Murnane, and Henry C. Kapteyn, “Observation of intra-molecular vibrational dynamics using high-harmonic generation,” Colorado Photonics Industry Association Annual Symposium, November 2005. Poster presented by Nick Wagner—First Prize Award for student poster competition.
406. **Poster**, Luis Miaja-Avila et al., “Probing ultrafast dynamics of molecules on surfaces,” Site visit review, JILA NSF Physics Frontiers Center, November 2005. Presented by L. Miaja-Avila.
405. **Invited Talk**, Nick Wagner, Dr. Andrea Wüest, Prof. Margaret M. Murnane, and Prof. Henry C. Kapteyn, “Probing molecular structure and dynamics using high-order harmonic generation,” 10th International Conference on Multiphoton Processes (ICOMP), Orford, Quebec, October 2005. Presented by Henry Kapteyn.
404. **Poster**, Nick Wagner, Andrea Wuest, Margaret M. Murnane, and Henry C. Kapteyn, “Observation of intra-molecular vibrational dynamics using high-harmonic generation,” 10th International Conference on Multiphoton Processes (ICOMP), Orford, Quebec, October 2005. Presented by Nick Wagner.
403. **Poster**, A. Sandhu et al., “Long-term carrier envelope phase stability with grating based amplifier,” 10th International Conference on Multiphoton Processes (ICOMP), Orford, Quebec, October 2005. Presented by A. Sandhu.
402. **Invited Talk**, David Gaudiosi, Nick Wagner, Dr. Andrea Wüest, Prof. Margaret M. Murnane, Prof. Henry C. Kapteyn, Brandon Reagan, Mike Grisham, and Jorge Rocca, “High-order harmonics from molecules and ions,” 89th Annual Meeting of the Optical Society of America, Frontiers in Optics/Laser Science XXI (OSA/ILS), Tucson, AZ, October 2005. Presented by H. Kapteyn.
401. **Contributed talk**, Etienne Gagnon, Arvinder Sandhu, Isabell Thomann, Ariel Paul, Amy L. Lytle, Sterling Backus, Margaret Murnane, and Henry Kapteyn, “Long term carrier-envelope phase coherence in a grating-based chirped pulse amplifier system,” 89th Annual Meeting of the Optical Society of America, Frontiers in Optics/Laser Science XXI (OSA/ILS), Tucson, AZ, October 2005. Presented by E. Gagnon.
400. **Seminar**, Henry C. Kapteyn and Margaret M. Murnane, “High-power femtosecond Ti:sapphire lasers using cryogenic cooling,” Northrup-Grumman Space Technology Center, El Segundo, CA, October 2005. Presented by H. Kapteyn.
399. **Lunchtime Seminar**, Margaret Murnane et al., “Extreme nonlinear optics for coherent x-ray generation,” Harvey Mudd College, October 2005. Presented by Margaret Murnane.
398. **Seminar**, Nick Wagner, Dr. Andrea Wüest, Amy Lytle, Dr. Arvinder Sandhu, Etienne Gagnon, Isabelle Thomann, Prof. Margaret M. Murnane, Prof. Henry C. Kapteyn, Ivan Christov (Sofia), Mark Baertschy, Chris Greene, and Tamar Seidemann (NW), “HHG in molecular systems,” Seminar for JILA NSF Group Grant, October 2005. Presented by H. Kapteyn.

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397. **Invited talk**, Ivan Christov, Jorge Rocca, Barry Walker, Keith Nelson, John Gland, Chris Greene, Tamar Sideman, Henry Kapteyn, and Margaret Murnane, “Extreme nonlinear optics for coherent X-ray generation,” Workshop on Opportunities for an ultrafast laser-based x-ray light source facility, Gatlinberg TN, October 2005. Presented by Margaret Murnane.
396. **Plenary lecture**, M. Murnane, “How to make atoms sing and molecules dance: using ultrashort light pulses to control nature,” British Association for the Advancement of Science (BA) Festival of Science, Dublin, Ireland, September 2005. Presented by Margaret Murnane.
395. **Contributed talk**, R. Tobey et al., “Nonlinear optics with extreme ultraviolet radiation: Investigating acoustic responses in materials,” Directed Energy Professional Society's Third Ultrashort Pulse Laser Materials Interaction Workshop, Boulder, CO, September 2005. Presented by R. Tobey.
394. **Plenary talk**, “Extreme nonlinear optics for coherent X-ray generation: applied attosecond science,” 37th Conference of the European Group for Atomic Systems (EGAS), Dublin, Ireland, August 2005. Presented by M. Murnane.
393. **Contractors Meeting**, Henry Kapteyn et al., “Coherent imaging of laser plasmas using XUV high harmonic radiation,” Stockpile Stewardship Academic Alliances Review Symposium, Las Vegas, NV, August 2005. Presented by H. Kapteyn.
392. **Invited Talk**, Etienne Gagnon, Isabelle Thomann, Nick Wagner, Amy Lytle, Dr. Arvinder Sandhu, Dr. Andrea Wüest, Prof. Margaret M. Murnane, Prof. Henry C. Kapteyn, Ivan Christov, Mark Baertschy, Chris Greene, Jun Ye, Jason Jones, and Tamar Seidemann, “Two topics relevant to QC,” 2005 Gordon Conference on Quantum Control Of Light And Matter, Waterville, Maine, August 2005. Presented by Henry Kapteyn.
391. **Invited Talk**, H. Kapteyn, “Extreme nonlinear optics: high-order harmonic generation and applications in molecular science,” 230th American Chemical Society National Meeting, Washington DC, August 2005. Presented by H. Kapteyn.
390. **Plenary lecture**, “Extreme nonlinear optics – attosecond science and applications,” 20th International Conference on X-ray and Inner-Shell Processes, Victoria, Australia, July 2005. Presented by Margaret Murnane.
389. **Invited talk**, Ron Tobey, Mark Siemens, Luis Avrila, Guido, Emily Gibson, Xiaoshi Zhang, Ariel Paul, Amy Lytle, Arvinder Sandhu, Isabell Thomann, Etienne Gagnon, Ivan Christov, Keith Nelson, Martin Aeschliman, John Gland, David Attwood, Henry Kapteyn, and Margaret Murnane, “Extreme nonlinear optics for coherent X-ray generation: applied attosecond science,” Femtochemistry VII, Washington DC, July 2005. Presented by M. Murnane.
388. **Seminar**, Nick Wagner, Andrea Wüest, Margaret Murnane, and Henry Kapteyn, “High-harmonic generation from aligned molecules,” Northwestern University, Department of Chemistry, Evanston, IL, July 2005. Presented by Andrea Wuest.
387. **Invited tutorial talk**, M. Murnane et al., NATO Advanced Study Institute on New Developments in Optics and Related Fields: Modern Techniques, Materials, and Applications, Ettore Majorana Center, Erice, Italy, June 6, 2005. Presented by M Murnane.
386. **Invited Tutorial talk**, H. Kapteyn et al., “Applications of ultrafast EUV light sources,” NATO Advanced Study Institute on New Developments in Optics and Related Fields: Modern Techniques, Materials, and Applications, Ettore Majorana Center, Erice, Italy, June 6, 2005. Presented by H Kapteyn.

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385. **Invited talk**, Emily Gibson, Xiaoshi Zhang, Ariel Paul, Amy Lytle, Arvinder Sandhu, Isabell Thomann, Etienne Gagnon, Henry Kapteyn, Margaret Murnane, and Ivan Christov, "Extreme nonlinear optics for coherent X-ray generation: applied attosecond science," Gordon Research Conference on Atomic Physics, Tilton, New Hampshire, June 2005. Presented by Margaret Murnane.
384. **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.
383. **Contributed talk**, Ra'anan Tobey, Mark Siemens, Margaret Murnane, Henry Kapteyn, and Keith Nelson, "Detection of ultrahigh frequency acoustic transients using coherent EUV light," Talk QFC5, OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science (CLEO/QELS), Baltimore, MD, May 2005. Presented by M. Siemens.
382. **Contributed talk**, Xiaoshi Zhang, Amy Lytle, Tenio Popminchev, Ariel Paul, Nick Wagner, Oren Cohen, Ivan Christov, Margaret Murnane, and Henry Kapteyn, "Phase matching, quasi phase matching and pulse compression in a single waveguide for enhanced high harmonic generation," Talk JTuD6, OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science (CLEO/QELS), Baltimore, MD, May 2005. Presented by X. Zhang.
381. **Contributed talk**, Isabell Thomann, Etienne Gagnon, R. Jason Jones, Arvinder S. Sandhu, Amy Lytle, Ryan Anderson, Margaret Murnane, and Henry Kapteyn, "Characterization of carrier-envelope phase noise from grating-based stretcher/compressors for chirped-pulse amplification," Talk CTuR3, OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science (CLEO/QELS), Baltimore, MD, May 2005. Presented by I. Thomann.
380. **Contributed talk**, Nick Wagner, Andrea Wuest, Margaret Murnane, and Henry Kapteyn, "Molecular structure effects on high harmonic generation in CO₂," Talk JThH2, OSA Conference on Lasers and Electro-optics/ Quantum Electronics and Laser Science (CLEO/QELS), Baltimore, MD, May 2005. Presented by N. Wagner.
379. Henry Kapteyn, Steve Leone, Elliot Bernstein, Dan Dessau, John Gland, Martin Aeschlimann, and Keith Nelson, "Spectroscopy using small-scale EUV light sources," Second Annual Site Visit of the NSF Engineering Research Center in Extreme-ultraviolet Science and Technology, Berkeley, CA May 2005. Presented by H. Kapteyn.
378. **Poster**, Andrea Wuest, Nick Wagner, Margaret Murnane, and Henry Kapteyn, "High-harmonic generation from aligned molecules," Second Annual Site Visit of the NSF Engineering Research Center in Extreme-ultraviolet Science and Technology, Berkeley, CA May 2005. Presented by A. Wuest.
377. M. Murnane, "Extreme nonlinear optics for coherent EUV generation," Second Annual Site Visit of the NSF Engineering Research Center in Extreme-ultraviolet Science and Technology, Berkeley, CA May 2005. Presented by M. Murnane.
376. **Seminar**, Ra'anan Tobey, Mark Siemens, Erez Gershgoren, Henry Kapteyn, Margaret Murnane, Thomas Feurer, and Keith Nelson, "Nonlinear optics with extreme ultraviolet radiation: Investigating acoustic responses in materials," Los Alamos National Laboratory, May 2005. Presented by R. Tobey.
375. **Invited tutorial talk**, H. Kapteyn, "Coherent X-rays from lasers: applied attosecond science," Tutorial Workshop on Modern Laser Technology at the 2005 APS Division of Atomic, Molecular, and Optical Physics Meeting (DAMOP), Lincoln, NE, May 2005. Presented by H. Kapteyn.

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374. **Invited talk**, “Extreme nonlinear optics – applied attosecond science,” Hot Topics Session at the 2005 APS Division of Atomic, Molecular, and Optical Physics Meeting (DAMOP), Lincoln, NE, May 2005. Presented by M. Murnane.
373. **Invited talk**, Emily Gibson, Ariel Paul, Isabell Thomann, Amy Lytle, Etienne Gagnon, Xiaoshi Zhang, Ariel Libertun, Daisy Raymondson, Margaret Murnane, Henry C. Kapteyn, Ivan Christov, David Attwood, and Yanwei Liu, “EUV “Photonics” of high-harmonic generation and applications,” X-ray Driver for FELs Meeting, Berkeley CA, April 2005. Presented by H. Kapteyn.
372. **Invited participant**, H. Kapteyn, Workshop on Advancing the Fundamentals of Controlling Quantum Systems, Princeton NJ, March 2005 (workshop was a two-day working group with no formal agenda of talks)
371. **Colloquium**, M. Murnane et al., “Extreme nonlinear optics: attosecond science and applications,” Princeton University, February 2005. Presented by M. Murnane.
370. Mark Siemens et al., “High frequency photo-acoustic spectroscopy: 4-wave mixing with extreme ultraviolet radiation,” Retreat of the NSF Engineering Research Center in EUV Science and Technology, Estes Park, CO, February 2005. Presented by M. Siemens.
369. Nick Wagner, Andrea Wüest, Margaret Murnane, and Henry Kapteyn, “High-harmonic generation from aligned molecules,” Retreat of the NSF Engineering Research Center in EUV Science and Technology, Estes Park, CO, February 2005. Presented by N. Wagner.
368. **Invited talk**, “Ultrafast photoacoustic spectroscopy probed by extreme ultraviolet light,” 2005 Winter Colloquium on the Physics of Quantum Electronics (PQE), Snowbird UT, January 2005. Presented by Raanan Tobey.
367. **Invited**, H. C. Kapteyn and M. Murnane, “Coherent control and chemical sensing,” 34th Winter Colloquium on The Physics of Quantum Electronics, Snowbird, UT, January 2004.
366. **Invited**, M. M. Murnane and H. C. Kapteyn, “Multiphoton photonics,” 34th Winter Colloquium on The Physics of Quantum Electronics, Snowbird, UT, January 2004.
365. **Invited**, M. M. Murnane and H. C. Kapteyn, “Ultrafast EUV spectroscopy,” Conference on Molecular Reaction Dynamics March, 2004.
364. **Contributed**, H. C. Kapteyn, X. Zhang, A. Paul, A. R. Libertun, M. M. Murnane, Y. Liu, and D. T. Attwood, “Coherent imaging of laser-plasma interactions using XUV high harmonic radiation,” Stockpile Stewardship Academic Alliances annual grant symposium, Albuquerque, NM, March 2004.
363. **Invited**, M. M. Murnane and H. C. Kapteyn, DARPA DSO workshop on Ultra-Short Pulse Lasers as Next Generation Hyperspectral Radiography Sources (HPP), Arlington, VA, March 2004.
362. **Invited**, H. C. Kapteyn and M. M. Murnane, “Ultrafast pulse shaping for control and automated learning in quantum systems,” 227th ACS National Meeting, Division of Physical Chemistry Symposium on Mixed Quantum, Classical, and Semiclassical Dynamics, Anaheim, CA, March 2004.
361. **Invited**, M. M. Murnane and H. C. Kapteyn, “Multiphoton EUV photonics and applications in ultrafast chemical spectroscopies,” 227th ACS National Meeting, Division of Physical Chemistry Symposium on Emerging Ultrafast Spectroscopies: From Chemistry to Biophysics, Anaheim, CA, March 2004.

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360. **Invited**, M. M. Murnane and H. C. Kapteyn, "EUV photonics: The role of phase matching in attosecond science and applications in nonlinear material spectroscopies," ATTO-network symposium: "Attosecond generation, metrology and applications," Ringberg Castle, Bavaria, Germany, April 2004.
359. **Invited**, H. C. Kapteyn, R. A. Bartels, S. J. Backus, M. M. Murnane, I. P. Christov, and H. Rabitz, "Ultrafast pulse shaping for control and automated learning in quantum systems," ATTO-network symposium: "Attosecond generation, metrology and applications," Ringberg Castle, Bavaria, Germany, April 2004.
358. **Invited**, H. C. Kapteyn and M. M. Murnane, "EUV photonics and applications in ultrafast materials dynamics," Workshop on Ultrafast X-ray Science, San Diego, CA, April 2004.
357. **Invited**, M. M. Murnane and H. C. Kapteyn, "How to present current research to undergrads: Phys. Rev. focus authors," "Can we make atoms sing and molecules dance? Using fast light pulses to observe and control nature," American Physical Society April Annual Meeting, Denver, CO, May 2004.
356. **Contributed**, E. A. Gibson, A. Paul, R. Tobey, N. Wagner, M. Murnane, H. Kapteyn, and I. P. Christov, "High-order harmonic generation from argon ions up to 250 eV," Conference on Lasers and Electro-optics / Quantum Electronics and Laser Science Conference (CLEO/QELS), San Francisco, CA, May 2004.
355. **Contributed**, A. R. Libertun, X. Zhang, A. Paul, D. Raymondson, E. Gershgoren, E. Gagnon, S. Backus, M. M. Murnane, H. C. Kapteyn, A. A. Bartels, Y. Liu, and D. T. Attwood, "High-resolution EUV imaging using high harmonic generation," Conference on Lasers and Electro-optics / Quantum Electronics and Laser Science Conference (CLEO/QELS), San Francisco, CA, May 2004.
354. **Invited**, M. M. Murnane and H. C. Kapteyn, "Multiphoton EUV photonics," Conference on Lasers and Electro-optics / Quantum Electronics and Laser Science Conference (CLEO/QELS), San Francisco, CA, May 2004.
353. **Contributed**, R. Tobey, E. Gershgoren, M. Murnane, H. Kapteyn, T. Feurer, and K. Nelson, "Detection of thermal and acoustic transients in materials using heterodyned EUV radiation," Conference on Lasers and Electro-optics / Quantum Electronics and Laser Science Conference (CLEO/QELS), San Francisco, CA, May 2004.
352. **Contributed**, X. Zhang, A. R. Libertun, A. Paul, E. Gagnon, S. J. Backus, H. C. Kapteyn, M. M. Murnane, R. Bartels, Y. Liu, and D. Attwood, "Fully coherent light at 13 nm using quasi phase matching in gas-filled modulated waveguides," Conference on Lasers and Electro-optics / Quantum Electronics and Laser Science Conference (CLEO/QELS), San Francisco, CA, May 2004.
351. **Poster**, R. A. Bartels, I. P. Christov, M. M. Murnane, and H. C. Kapteyn, "Statistical study of attosecond dynamics from learning control of extreme nonlinear optics," Conference on Lasers and Electro-optics / Quantum Electronics and Laser Science Conference (CLEO/QELS), San Francisco, CA, May 2004.
350. **Contributed**, P. Kohl, A. Lytle, H. Kapteyn, M. Murnane, and S. Backus, "High average power 10 W Ti:sapphire laser amplifier system using downchirped pulse amplification," Conference on Lasers and Electro-optics / Quantum Electronics and Laser Science Conference (CLEO/QELS), San Francisco, CA, May 2004.

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349. **Poster**, D. Samuels, E. Gershgoren, M. O. Scully, M. Murnane, and H. Kapteyn, "Ultrafast UV spectroscopy of dipicolinic acid," American Physical Society Division of Atomic, Molecular, and Optical Physics Annual Meeting (DAMOP), Boulder, CO, May 2004.
348. **Invited** (DAMOP thesis award finalist), R. A. Bartels, M. M. Murnane, and H. C. Kapteyn, "Learning control of atomic and molecular dynamics," American Physical Society Division of Atomic, Molecular, and Optical Physics Annual Meeting (DAMOP), Boulder, CO, May 2004.
347. **Poster**, N. Wagner, I. Christov, M. Murnane, H. Kapteyn, and E. Gibson, "Self-compression of high power laser pulses in an atomic gas," American Physical Society Division of Atomic, Molecular, and Optical Physics Annual Meeting (DAMOP), Boulder, CO, May 2004.
346. **Poster**, I. Thomann, E. Gagnon, A. S. Sandhu, J. R. Jones, A. Lytle, R. Anderson, M. M. Murnane, and H. C. Kapteyn, "Investigation of a grating-based stretcher-compressor system For amplification of CEP stabilized pulses," Gordon Research Conference on Multiphoton Processes, Tilton, NH, June 2004.
345. **Invited**, H. C. Kapteyn and M. M. Murnane, "High-harmonic generation technology for high-coherence, high-brightness VUV/EUV sources," ICFA Beam Dynamics Mini Workshop: Workshop on the Physics of Seeded Free Electron Lasers, MIT, Cambridge, MA, June 2004.
344. **Poster**, E. A. Gibson, A. Paul, N. Wagner, S. Backus, M. M. Murnane, H. C. Kapteyn, and I. P. Christov, "High-order harmonic generation from argon ions up to 250 eV," 14th International Conference on Ultrafast Phenomena, Niigata, Japan, July 2004.
343. **Contributed**, H. C. Kapteyn, X. Zhang, A. R. Libertun, A. J. Paul, M. M. Murnane, H. Kapteyn, Y. Liu, and D. Attwood, "Coherent imaging of laser-plasma interactions using high-harmonic EUV light," 14th International Conference on Ultrafast Phenomena, Niigata, Japan, July 2004.
342. **Poster**, E. A. Gibson, N. Wagner, S. Backus, M. M. Murnane, H. C. Kapteyn, and I. P. Christov, "Temporal self-compression of intense femtosecond pulses propagating in argon-filled hollow waveguides," 14th International Conference on Ultrafast Phenomena, Niigata, Japan, July 2004.
341. **Contributed**, R. I. Tobey, E. H. Gershgoren, M. E. Siemens, H. C. Kapteyn, M. M. Murnane, T. Feurer, and K. A. Nelson, "Probing of thermal acoustic transients in materials using EUV radiation," 14th International Conference on Ultrafast Phenomena, Niigata, Japan, July 2004.
340. **Invited**, E. A. Gibson, A. Paul, S. Backus, R. Tobey, M. M. Murnane, H. C. Kapteyn, and I. P. Christov, "Quasi-phase matching of high harmonic generation in the 'water window' soft x-ray region," 14th International Conference on Ultrafast Phenomena, Niigata, Japan, July 2004.
339. **Contributed**, D. Raymondson, A. R. Libertun, X. Zhang, S. Backus, M. M. Murnane, and H. C. Kapteyn, "High-resolution imaging system using a tabletop EUV source," SPIE Annual Meeting, Symposium #5534: Fourth Generation X-Ray Sources and Optics, Denver, CO, August 2004.
338. **Contributed**, A. Paul, E. Gibson, S. Backus, R. Tobey, M. M. Murnane, H. C. Kapteyn, and I. Christov, "Quasi-phase matching of high harmonic generation in the water window at 100% ionization levels," OSA Topical Conference on Nonlinear Optics: Materials, Fundamentals and Applications, Waikoloa, HI, August 2004.
337. **Contributed**, N. Wagner, E. Gibson, S. Backus, M. M. Murnane, H. C. Kapteyn, and I. P. Christov, "Temporal self-compression of intense femtosecond pulses propagating in argon-filled hollow waveguides," OSA Topical Conference on Nonlinear Optics: Materials, Fundamentals and Applications, Waikoloa, HI, August 2004.

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336. **Invited**, H. C. Kapteyn and M. M. Murnane, "Short pulse light sources," Workshop on Frontiers in Soft X-ray, VUV, and Infrared Research, Madison, WI, September 2004.
335. **Invited**, H. C. Kapteyn, E. Gibson, A. Paul, T. Lei, X. Zhang, A. Libertun, D. Raymondson, M. M. Murnane, I. Christov, D. Attwood, and Y. Liu, "High-harmonic generation: Technology and applications," 26th International Congress on High-Speed Photography and Photonics 2004, Arlington, VA, September 2004.
334. **Invited**, H. C. Kapteyn, "Multiphoton EUV photonics," Directed Energy Professional Society, Second Ultrashort Pulse Laser Materials Interaction Workshop, Boulder, CO, September 2004.
333. **Overview Presentation**, H. C. Kapteyn, "National Science Foundation Engineering Research Center in Extreme Ultraviolet Science and Technology," Annual Meeting of the Colorado Photonics Industries Association, Boulder, CO, November 2004.
332. **Condensed Matter and Applied Physics Colloquium**, M. M. Murnane and H. C. Kapteyn, "Nonlinear optics at short wavelengths: attosecond science and applications," Harvard University, Division of Engineering and Applied Sciences, Cambridge, MA, November 2004.
331. **Institute of Physics Invited Seminar Series**, M. M. Murnane and H. C. Kapteyn, "Ultrafast EUV photonics," University College, Department of Physics, Cork, Ireland, January 2004.
330. **Institute of Physics Invited Seminar Series**, M. M. Murnane and H. C. Kapteyn, "Ultrafast EUV photonics," University College, Department of Physics, Dublin, Ireland, January 2004.
329. **Institute of Physics Invited Seminar Series**, M. M. Murnane and H. C. Kapteyn, "Ultrafast EUV photonics," Queens University, Department of Physics, Belfast, Northern Ireland, January 2004.
328. **Overview Presentation**, H. C. Kapteyn, "Kapteyn-Murnane Laboratories Inc," Meeting of the Rocky Mountain Chapter of the Optical Society of America, Boulder, CO, February 2004.
327. **Physical Chemistry Seminar**, M. M. Murnane and H. C. Kapteyn, "Coherent control for enhancing ultrafast visible and EUV spectroscopies," University of Southern California, Los Angeles, CA, February 2004.
326. **Seminar**, H. C. Kapteyn and M. M. Murnane, "High-power ultrafast lasers based on Ti:sapphire," Stanford Linear Accelerator Center, Stanford, CA, March 2004.
325. **Seminar**, M. M. Murnane and H. C. Kapteyn, "Multiphoton EUV photonics: attosecond science and applications," Harvard/MIT Center for Ultracold Atoms, Cambridge, MA, March 2004.
324. **Physics Colloquium**, M. M. Murnane and H. C. Kapteyn, "Multiphoton EUV photonics," Los Alamos National Laboratory, Los Alamos, NM, March 2004.
323. **Colloquium**, M. M. Murnane and H. C. Kapteyn, "Multiphoton EUV photonics," Ohio State University, Columbus, OH, May 2004.
322. **Colloquium**, H. C. Kapteyn, E. Gibson, A. Paul, R. Tobey, N. Wagner, T. Lei, I. Christov, J. Gland, T. Feurer, K. Nelson, and M. Murnane, "Compact coherent EUV sources and applications," National Institutes of Health, Bethesda, MD, May 2004.
321. **Report**, H. C. Kapteyn and S. R. Leone, "Spectroscopy using small-scale EUV light sources," First annual site visit for NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, Boulder, CO, June 2004.
320. **Invited**, M. M. Murnane and H. C. Kapteyn, "Multiphoton EUV photonics," Roman Baths Summer School on Advanced Glass-Based Nano-Photonics, Newton St.Loe, Bath, United Kingdom, July 2004.

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319. **Seminar**, M. M. Murnane, “Can we make atoms sing and molecules dance? Using fast light pulses to observe and control them,” Stanford Linear Accelerator Center, Stanford, CA, October 2004.
318. **Colloquium**, M. M. Murnane and H. C. Kapteyn, “Can we make atoms sing and molecules dance? Using fast light pulses to observe and control nature,” California State University, Sacramento, CA, October 2004.
317. **Colloquium**, M. M. Murnane and H. C. Kapteyn, “Ultrafast coherent X-ray generation and applications,” Northwestern University, Evanston, IL, November 2004.
316. **Report**, H. C. Kapteyn, E. Bernstein, and S. R. Leone, “Spectroscopy using small-scale EUV light sources,” Industrial Advisory Board meeting for NSF Engineering Research Center in Extreme Ultraviolet Science and Technology, Boulder, CO, December 2004.
315. **Invited**, H.C. Kapteyn, “Attosecond timescale coherent control of EUV generation,” Workshop on Coherent Control, Ringberg, Germany, December 2003.
314. **Poster**, H.C. Kapteyn, “The NSF Engineering Research Center in Extreme-Ultraviolet Science and Technology,” Colorado Photonics Industry Association Annual Meeting and poster session, Boulder, CO, November 2003.
313. **Poster**, D. Samuels, “CARS spectroscopy for biological agent detection,” Colorado Photonics Industry Association Annual Meeting and poster session, Boulder, CO, November 2003.
312. **Poster**, A.R. Libertun, “Coherence characteristics and imaging applications of EUV beams generated by high harmonic generation,” Colorado Photonics Industry Association Annual Meeting and poster session, Boulder, CO, November 2003.
311. **Poster**, E. Gibson, “Extreme non-linear optics in hollow-core fibers,” Colorado Photonics Industry Association Annual Meeting and poster session, Boulder, CO, November 2003.
310. **Poster**, N. Wagner, “Using molecular wavepackets as an ultrafast phase modulator,” Colorado Photonics Industry Association Annual Meeting and poster session, Boulder, CO, November 2003.
309. **Poster**—1st prize in poster competition, D. Gaudiosi, “Amplification of high order harmonic pulses in a discharge-pumped EUV laser amplifier,” Colorado Photonics Industry Association Annual Meeting and poster session, Boulder, CO, November 2003.
308. **Invited**, M. Murnane, “Quasi phase matching of EUV high harmonic generation,” International Workshop on Attosecond Science, Boston, MA, November 2003.
307. **Invited**, M.M. Murnane, “Resonant UV spectroscopy for enhanced biological agent detection,” DARPA/DSO Workshop on Remote Detection of Chemical and Biological Agents, Arlington, VA, November 2003.
306. **Invited**, H.C. Kapteyn, “Extreme nonlinear optics,” American Mathematical Society Annual Meeting, Boulder, CO, October 2003.
305. **Invited**, H. Kapteyn, “Ultrafast high average power lasers,” Directed Energy Professional Society Annual Meeting, Albuquerque, NM, October 2003.
304. **Invited**, M. Murnane, “Multiphoton EUV photonics,” Four Corners Section of the American Physical Society, Tempe, AZ, October 2003.
303. **Invited**, M. Murnane, “Multiphoton EUV photonics,” Annual IEEE LEOS Meeting, Tucson, AZ, October 26-30, 2003.
302. **Invited**, M. Murnane, “Table-top EUV sources,” ALFF Workshop, Argonne National Lab, Argonne, IL, October 30-31, 2003.

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301. **Invited**, E. Gibson et al., "Multiphoton EUV photonics: Quasi phase matching at short wavelengths," Applications of High Field & Short Wavelength Sources X, Biarritz, France, October 12-15, 2003.
300. **Contributed**, S. Backus, "High average power ultrafast lasers and applications," Ultrashort Pulse Laser Materials Interaction Workshop, Directed Energy Professional Society, Boulder, CO, September 25-26, 2003.
299. **Contributed**, P. Messmer (Tech-X corporation), "Particle-in-cell simulations of electron and ion dynamics due to ultrashort laser pulse interactions with solid density aluminum," Ultrashort Pulse Laser Materials Interaction Workshop, Directed Energy Professional Society, Boulder, CO, September 25-26, 2003.
298. **Invited**, M.M. Murnane, "EUV photonics: Applications in tabletop linear and nonlinear EUV spectroscopies," Department of Energy Basic Energy Sciences Atomic, Molecular, and Optical physics program contractors meeting, Lake Tahoe, CA September 2003.
297. **Invited**, M. Murnane, Gordon Research Conference on Photoions, Photoionization and Photodetachment, Queen's College, Oxford, England, 21-26 September 21-26, 2003.
296. **Invited**, H. Kapteyn, International Symposium on Ultrafast Intense Laser Science 2: propagation and interaction, Quebec City, Canada, September 27-29, 2003.
295. **Short introductory talk**, H.C. Kapteyn, "Advances in coherent light sources: what can we do now?" Gordon Research Conference on Electronic Spectroscopy and Dynamics, Bates College, Lewiston, ME, July 6-11, 2003.
294. **Invited**, M. Murnane, Gordon Research Conference on Electronic Spectroscopy and Dynamics, Bates College, Lewiston, ME, July 6-11, 2003.
293. **Contributed**, R. Bartels, "Ultra-broadband phase matching of optical frequency conversion using transient molecular birefringence," CLEO/QELS Conference, Baltimore, MD, June 2003.
292. **Contributed**, H. Kapteyn, "Probing adsorbate oscillation on metal surfaces using ultrafast extreme ultraviolet pulses," CLEO/QELS Conference, Baltimore, MD, June 2003.
291. **Postdeadline**, E. Gibson, "Generation of coherent "water window" soft x-rays using quasi-phase-matching," CLEO/QELS Conference, Baltimore, MD, June 2003.
290. **Contributed**, E. Gershgoren, "Simplified setup for high-resolution spectroscopy using ultrashort pulses," CLEO/QELS Conference, Baltimore, MD, June 2003.
289. **Invited**, A. Paul, "Multiphoton EUV photonics: Quasi phase matching of EUV high harmonic generation," CLEO/QELS Conference, Baltimore, MD, June 2003.
288. **Invited**, E. Gibson, "Quasi phase matching of EUV high harmonic generation at high ionization levels," International Conference on Ultrafast Optics, Vienna, Austria, June 2003.
287. **Contributed**, C. Lei, "Probing adsorbate oscillation on metal surfaces using ultrafast extreme ultraviolet pulses," CLEO/QELS, Baltimore, MD, June 2003.
286. **Contributed**, C. Lei, "Probing adsorbate oscillation on metal surfaces using ultrafast extreme ultraviolet pulses," APS Division of Atomic, Molecular, and Optical Physics (DAMOP) Conference, Boulder, CO, May 2003.
285. **Contributed**, E. Gibson, "Demonstration of quasi-phase-matched high harmonic generation at 200eV photon energies," APS Division of Atomic, Molecular, and Optical Physics (DAMOP) Conference, Boulder, CO, May 2003.

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284. **Contributed**, E. Gershgoren, "Simplified setup for high-resolution spectroscopy using ultrashort pulses," APS Division of Atomic, Molecular, and Optical Physics (DAMOP) Conference, Boulder, CO, May 2003.
283. **Contributed**, X. Zhang, "Generation of spatially coherent light at 11-13nm using quasi phase matching in modulated hollow core fibers," APS Division of Atomic, Molecular, and Optical Physics (DAMOP) Conference, Boulder, CO, May 2003.
282. **Contributed**, N. Wagner, "Generation of ultrafast 10fs light pulses using molecular phase modulation," APS Division of Atomic, Molecular, and Optical Physics (DAMOP) Conference, Boulder, CO, May 2003.
281. **Contributed**, C. Lei, "Probing adsorbate oscillation on metal surfaces using ultrafast extreme ultraviolet pulses," American Physical Society March Meeting, Austin, TX, March 2003.
280. **Contributed**, T. Lei, "Probing adsorbate oscillation on metal surfaces using ultrafast extreme ultraviolet pulses," IUUSTA Workshop on Ultrafast Surface Dynamics, Telluride, CO, 2003.
279. **Contributed**, M. Bauer, "Excitation of a vibrational mode of adsorbed CO observed in real-time using time-resolved UPS," European Conference on Surface Science (ECOSS) 2003.
278. **Invited**, M. Murnane, "Ultrafast, coherent, laser and x-ray science," AAAS Annual Meeting, Denver, CO, February 2003.
277. **Invited**, M. M. Murnane, "Ultrafast, coherent, laser and x-ray science," Western Spectroscopy Annual Meeting, Asilomar, CA, January 2003.
276. **Invited**, H. C. Kapteyn, "Controlling molecules using broad-bandwidth light pulses," Winter Colloquium on the Physics of Quantum Electronics, Snowbird UT, January 2003.
275. **Invited**, M. M. Murnane, Winter Colloquium on the Physics of Quantum Electronics, Snowbird UT, January 2003.
274. **Invited**, M. Murnane, "Non-resonant control of multimode molecular wave packets in room temperature gasses," APS Division of Laser Science conference, Orlando, FL October 2002.
273. **Invited**, R. Bartels, "Phase modulation and pulse compression of ultrashort light pulses using molecular rotational wave packets," APS Division of Laser Science conference, Orlando, FL October 2002.
272. **Invited**, M. M. Murnane, "Nonlinear optics for coherent EUV generation," International Workshop on Photoionization, IWP2002, Spring-8, Japan, August 2002.
271. **Invited**, H. Kapteyn, "Coherent control of atoms and molecules, for applications in nonlinear optics," OSA Conference on Nonlinear Optics, Maui, Hawaii, July 2002.
270. M. M. Murnane, "Fully spatially coherent EUV light generated using a small-scale laser," OSA Conference on Nonlinear Optics, Maui, HI, July 2002.
269. **Postdeadline**, M. M. Murnane, "Multiphoton EUV photonics: Demonstration of quasi phase matching at short wavelengths," OSA Conference on Nonlinear Optics, Maui, HI, July 2002.
268. H. C. Kapteyn, "Small-scale coherent EUV light sources from high-harmonic generation," 8th International Conference on X-ray Lasers, Aspen, CO, May 2002.
267. **Poster**, D. M. Gaudiosi, "Amplification of high-harmonic radiation by a discharge-pumped amplifier," 8th International Conference on X-ray Lasers, Aspen, CO, May 2002.
266. **Poster**, E. A. Gibson, "Simple in-line X-ray pulse characterization," 8th International Conference on X-ray Lasers, Aspen, CO, May 2002.

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265. **Poster**, R. Tobey, "Nonlinear EUV spectroscopy and grating lithography," 8th International Conference on X-ray Lasers, Aspen, CO, May 2002.
264. **Poster**, Y. Liu, "Spatial coherence of currently available soft X-ray sources," 8th International Conference on X-ray Lasers, Aspen, CO, May 2002.
263. H. C. Kapteyn, "Compressing light pulses with coherently spinning molecules," APS Division of Atomic, Molecular, and Optical Physics (DAMOP) Annual Meeting, Williamsburg, VA, May 2002.
262. **Poster**, M. Baertschy, "Rotational revivals in a gas of linear molecules," APS Division of Atomic, Molecular, and Optical Physics (DAMOP) Annual Meeting, Williamsburg, VA, May 2002.
261. **Poster**, T. C. Weinacht, "Making and measuring vibrational wavepackets in small molecules," 13th International Conference on Ultrafast Phenomena, Vancouver, Canada, May 2002.
260. R. A. Bartels, "Fully spatially coherent EUV source for coherent imaging applications," 13th International Conference on Ultrafast Phenomena, Vancouver, Canada, May 2002.
259. S. Backus, "High average power, >10 kHz, ultrafast laser systems," 13th International Conference on Ultrafast Phenomena, Vancouver, Canada, May 2002.
258. **Poster**, R. A. Bartels, "Determination of HHG spectrum by measuring the mutual coherence," 13th International Conference on Ultrafast Phenomena, Vancouver, Canada, May 2002.
257. R. A. Bartels and N. A. Wagner, "Self-compression of ultrafast optical pulses using molecular phase modulation," 13th International Conference on Ultrafast Phenomena, Vancouver, Canada, May 2002.
256. C. Lei and H. C. Kapteyn, "Hot-electron-driven charge transfer processes on surfaces," 13th International Conference on Ultrafast Phenomena, Vancouver, Canada, May 2002.
255. S. Backus, "High average power, >10 kHz, ultrafast laser systems," Conference on Laser and Electro-optics (CLEO), Long Beach, CA, May 2002.
254. **Invited**, H. Kapteyn et al., "Compressing light pulses with spinning molecules," APS Division of Atomic, Molecular and Optical Physics Meeting (DAMOP), Williamsburg, VA, May 2002.
253. **Invited**, M. Murnane, "How to make atoms sing and molecules dance: using fast light pulses to observe and control nature," APS Division of Atomic, Molecular and Optical Physics Meeting (DAMOP), Williamsburg, VA, May 2002.
252. **Contributed**, T. Weinacht, "Creation control and measurement of large amplitude vibrational wave packets," 2002 Quantum Electronics and Laser Science Conference (CLEO/QELS), Long Beach, CA May 2002.
251. **Colloquium**, M. M. Murnane, Stanford University, Department of Applied Physics, April 2002.
250. **Seminar**, H. C. Kapteyn, Stanford University, Department of Applied Physics, April 2002.
249. **Invited**, H. Kapteyn, "Coherent control of quantum systems using shaped light pulses," Fourth Annual Meeting of the Southwestern Quantum Information and Technology Network (SQUINT 2002), Boulder, CO, March 2002.
248. **Invited**, T. Weinacht, "Making and measuring vibrational wave packets in small molecules through impulsive non-resonant stimulated Raman scattering," American Physical Society Annual March Meeting, Indianapolis, IN, March 2002.
247. C. Lei, "Ultrafast hot-electron mediated surface/adsorbate dynamics probed by EUV light," American Physical Society Annual March Meeting, Indianapolis, IN, March 2002.

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246. **Science Innovation Topical Lecture**, M. M. Murnane, "Can we make atoms sing and molecules dance? Using fast light pulses to observe and control nature," AAAS Annual Meeting, Boston, MA, February 2002.
245. **Invited**, H. Kapteyn, "Compressing light pulses with spinning molecules," Winter Quantum Electronics Conference, Snowbird, UT, January 2002.
244. **Plenary**, M. M. Murnane, "Coherent control techniques in quantum systems," Winter Quantum Electronics Conference, Snowbird, UT, January 2002.
243. **Invited**, M. M. Murnane, International Workshop on Optimum Control of Quantum Dynamics: Theory and Experiment, Tegernsee, Germany, December 2001.
242. **Colloquium**, M. M. Murnane, Reed College, November 2001.
241. **Colloquium**, M. M. Murnane, Vanderbilt University, November 2001.
240. **Poster**, R. Shelton, et al., "Sub-femtosecond timing jitter between two independent mode-locked lasers," fall meeting of the Colorado Photonics Industry Association, Boulder, CO November 2001.
239. **Invited**, T. Weinacht, "Learning to control vibrational motion in multimode molecular gases and liquids," Optical Society of America Annual Meeting, Long Beach, CA, October 2001.
238. **New Focus Award Winner**, R. A. Bartels, "Control of atoms and molecules using shaped light pulses," Optical Society of America Annual Meeting, Long Beach, CA, October 2001.
237. **Invited**, J. Ye, "Coherent optical pulse synthesis from separate femtosecond lasers," Optical Society of America Annual Meeting, Long Beach, CA, October 2001.
236. **Invited**, H. C. Kapteyn, "Generation of high power ultrafast optical "waveforms" for applications in extreme nonlinear optics," Optical Society of America Annual Meeting, Long Beach, CA, October 2001.
235. R. A. Bartels, "Phase-matching on attosecond timescales," OSA Conference on High Fields and Short Wavelengths, Palm Springs, CA, October 2001
234. C. F. Lei, "Direct observation of surface chemistry on sub-picosecond timescales using ultrafast EUV pulses," OSA Conference on High Fields and Short Wavelengths, Palm Springs, CA, October 2001.
233. **Poster**, R. A. Bartels, "Observation of EUV nonlinear optics," OSA Conference on High Fields and Short Wavelengths, Palm Springs, CA, October 2001.
232. **Invited**, H. C. Kapteyn, "Nonlinear Optics in the EUV," DoE Atomic Molecular and Optical Physics Research Meeting, Tahoe City, CA, October 2001.
231. **Invited**, T. Weinacht, "Coherent control of rotations and vibrations in molecules," International Workshop on Coherent Control and Cold Molecules, Gif-sur-Yvette, France, October 2001.
230. **Poster**, H. C. Kapteyn, "Dynamic imaging using high-order harmonics," U.S. DoE 2001 High Energy Density Science Grants Symposium, Livermore, CA, October 2001.
229. **Colloquium**, H. C. Kapteyn, "Coherent control of molecular systems using high fields, and application to NLO," JILA, University of Colorado (Chemical Physics Colloquium), September 2001.
228. **Invited**, M. M. Murnane, "Coherent control of extreme nonlinear systems," ACMS Workshop, Cork, Ireland, September 2001.

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227. **Invited**, H. C. Kapteyn, "Compression of ultrafast optical pulses using rotational phase modulation," ACMS Workshop, Cork, Ireland, September 2001.
226. **Invited**, R. A. Bartels, "Shaped-pulse optimization of soft-x-rays," Conference on Ultrafast Optics, Canada, July 2001.
225. **Invited**, R. A. Bartels, "Shaped-pulse optimization of soft-x-rays," Conference on Superstrong Fields and Plasmas, Varenna, Italy, July 2001.
224. **Poster**, H. C. Kapteyn, "Coherent pulse synthesis from two (formerly) independent passively mode-locked Ti:sapphire oscillators," Gordon Conference on Nonlinear Optics and Lasers, New London, NH, July 2001.
223. **Invited**, I. P. Christov, "Novel phase-matching techniques for high-harmonic generation," Gordon Conference on Nonlinear Optics and Lasers, New London, NH, July 2001.
222. **Invited**, M. M. Murnane, "Generation of coherent, ultrafast, EUV pulses," 13th Annual Conference on Vacuum Ultraviolet Radiation Physics, Trieste, Italy, July 2001.
221. **Invited**, S. Backus, "Phase matching techniques in the UV - EUV," IEEE/LEOS Summer Topical Meeting on Ultraviolet and Blue Lasers and their Applications, Copper Mountain, CO, July 2001.
220. **Contributed**, M. Bauer, "Use of high order harmonics for time-resolved photoemission spectroscopy," International Workshop on Ultrafast Surface Dynamics, San Sebastian (Spain), June 2001.
219. **Invited**, J. Ye, "Sub 10-femtosecond active synchronization of two passively mode-locked Ti:sapphire oscillators— application to phase lock of two femtosecond lasers," 2001 IEEE/EIA International Frequency Control Symposium and Exhibition, Seattle, Washington, June 6-8, 2001.
218. R. Bartels, "Novel single-atom and quasi phase-matching techniques at short wavelengths," Quantum Electronics and Laser Science Conference (CLEO/QELS 2001), Baltimore, MD May 2001.
217. T. Weinacht, "Mode-selective excitation mechanisms in molecules using shaped pulses," Quantum Electronics and Laser Science Conference (CLEO/QELS 2001), Baltimore, MD, May 2001.
216. C. G. Durfee, "Phase matching in cascaded third-order frequency mixing," Quantum Electronics and Laser Science Conference (CLEO/QELS 2001), Baltimore, MD, May 2001.
215. L. Misoguti, "Cascaded nonlinear frequency conversion into the deep-ultraviolet," Quantum Electronics and Laser Science Conference (CLEO/QELS 2001), Baltimore, MD, May 2001.
214. R. Shelton, "Sub-15 femtosecond active synchronization of two passively mode-locked Ti:sapphire oscillators," Conference on Lasers and Electro-Optics (CLEO/QELS 2001), Baltimore, MD, May 2001.
213. S. Backus, "High-efficiency single-stage, 7 kHz, high average power ultrafast laser system," Conference on Lasers and Electro-Optics (CLEO/QELS 2001), Baltimore, MD, May 2001.
212. **Invited**, H. C. Kapteyn, "Small-scale coherent short-wavelength sources," U. S. DoE BES Workshop on Scientific Applications of Ultrafast, Intense, Coherent X-Rays, Washington, DC, May 2001.
211. **Invited**, H. C. Kapteyn, "Generation of coherent EUV light using extreme nonlinear optics," U. S. DoE BES Workshop on Scientific Applications of Ultrafast, Intense, Coherent X-Rays, Washington, DC, May 2001.
210. **Colloquium**, M. M. Murnane, Yale University, May 2001.

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209. **Seminar**, M. M. Murnane, MIT, May 2001.
208. **Seminar**, M. M. Murnane, Lund University (Sweden), May 2001.
207. R. Bartels, "Impulsive chirped Raman excitation of molecular vibrations," APS Division of Atomic, Molecular, and Optical Physics Meeting (DAMOP 2001), London, Ontario, Canada, May 2001.
206. S. Backus, "Novel single-atom and quasi phase-matching techniques in the XUV," APS Division of Atomic, Molecular, and Optical Physics Meeting (DAMOP 2001), London, Ontario, Canada, May 2001.
205. T. Weinacht, "Coherent "learning" control of vibrational motion in room-temperature molecular gases," APS Division of Atomic, Molecular, and Optical Physics Meeting (DAMOP 2001), London, Ontario, Canada, May 2001.
204. L. Misogut, "X-ray nonlinear optics: Observation of low-order parametric wavemixing in XUV region," APS Division of Atomic, Molecular, and Optical Physics Meeting (DAMOP 2001), London, Ontario, Canada, May 2001.
203. **Postdeadline**, R. K. Shelton, "Coherent pulse synthesis from two (formerly) independent passively mode-locked Ti:sapphire oscillators," Conference on Lasers and Electro-Optics (CLEO/QELS 2001), Baltimore, MD, May 2001.
202. **Invited**, H. C. Kapteyn, "Coherent control of electronic wavefunctions in the strong field regime," 221st American Chemical Society National Meeting, San Diego, CA, April 2001.
201. H. C. Kapteyn, "Extreme nonlinear optics: Generation of coherent EUV light," informal presentation at Intel, Inc., Hillsboro, OR, April 2001.
200. **Contributed**, M. Bauer, "Time-resolved UPS for investigations of surface dynamics on femtosecond timescales," German Physical Society Meeting, Hamburg (Germany), March 2001.
199. C. F. Lei, "Direct observation of surface chemistry using ultrafast EUV pulses," March Meeting of the American Physical Society, Seattle, WA, March 2001.
198. **Invited**, H. C. Kapteyn, "Learning from "learning algorithms": Experiment and modeling in atomic and molecular systems," March Meeting of the American Physical Society, Seattle, WA, March 2001.
197. **Invited**, H. C. Kapteyn, "Advanced high-average-power ultrafast lasers," Ultrashort Laser Workshop for Department of Defense Applications, Albuquerque, NM, March 2001
196. C. Durfee, "Phase matching in cascaded third-order frequency mixing," OSA Conference on Nonlinear Guided Waves and Their Applications, Clearwater, FL, March 2001.
195. **Colloquium (Loeb Lecture)**, M. M. Murnane, Harvard University, March 2001.
194. **Colloquium**, M. M. Murnane, Colorado State University, March 2001.
193. **Invited**, M. M. Murnane, "Feedback optimization of coherent X-ray generation using shaped X-ray pulses," March Meeting of the American Physical Society, Seattle, WA, March 2001.
192. **Colloquium (Director's Colloquium Series)**, M. M. Murnane, Argonne National Laboratory, February 2001.
191. **Colloquium**, M. M. Murnane, University of Chicago, February 2001.
190. **Colloquium**, M. M. Murnane, University of San Diego, February 2001.
189. **Invited**, H. C. Kapteyn, "Quantum control in high field science," Winter Quantum Electronics Conference, Snowbird, UT, January 2001.

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188. **Invited**, M. M. Murnane, "Direct observation of surface chemistry using ultrafast x-ray pulses," Winter Quantum Electronics Conference, Snowbird, UT, January 2001.
187. S. Backus, "Millijoule, continuously tunable ultrafast laser system for XUV generation, from 1 to 10 kHz," OSA Conference on Advanced Solid State Lasers, Seattle, WA, January 2001.
186. **Invited**, M. M. Murnane, "Optics - where does it belong?" AAPT Meeting, San Diego, CA, January 2001.
185. **Colloquium**, M. Bauer, "Femtosecond pump-probe experiment using soft X-rays to study dynamics at surfaces," Physics Colloquium at the University Essen, Germany, October 2000.
184. **Colloquium**, M. M. Murnane, University of Arizona, October 2000.
183. **Colloquium**, M. M. Murnane, University of Michigan, October 2000.
182. **Invited**, R. A. Bartels, "Coherent control of x-ray generation," OSA Conference on Nonlinear Optics, Kauai, HI, August 2000.
181. L. Misoguti, "Ultrafast tunable VUV generation and measurement," 12th International Conference on Ultrafast Phenomena, Charleston, SC, July 2000.
180. R. Bartels, "Coherent control of XUV radiation," 12th International Conference on Ultrafast Phenomena, Charleston, SC, July 2000.
179. **Invited**, M. M. Murnane, Advanced Accelerator Concepts Workshop, Santa Fe, NM, June 2000.
178. R. Bartels, "Feedback-controlled optimization of high-harmonic generation," American Physical Society Division of Atomic, Molecular and Optical Physics (DAMOP 2000) Storrs, CT, June 2000.
177. **Invited**, R. A. Bartels, "Coherent control of high harmonic generation," Conference on Atoms, Molecules and Quantum Dots in Laser Fields, Pisa, Italy, June 2000.
176. **Postdeadline**, R. A. Bartels, "Coherent control of high-order harmonic generation," CLEO/QELS, San Francisco, CA, May 2000.
175. L. Misoguti, "Ultrafast tunable light in the deep UV," QELS '00, San Francisco, CA, May 2000.
174. K. Read, "Ultrafast photoelectron spectroscopy of dye-doped organic films," Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference (CLEO/QELS) San Francisco, CA, May 2000.
173. R. Bartels, "High average power 15fs transform-limited laser system," Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference (CLEO/QELS) San Francisco, CA, May 2000.
172. **Poster**, R. Bartels, "Adaptive optimization of high harmonic generation," Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference (CLEO/QELS) San Francisco, CA, May 2000.
171. **Colloquium**, M. M. Murnane, College of William and Mary, April 2000.
170. **Colloquium**, M. M. Murnane, Temple University, April 2000.
169. H. C. Kapteyn, "Extreme nonlinear optics - generation of coherent, femtosecond, soft x-rays," Dept. of Physics, Georgia Institute of Technology, Atlanta, GA, February 2000.
168. **Colloquium**, M. M. Murnane, Colorado School of Mines, January 2000.
167. **Invited**, S. Backus, "Extreme nonlinear optics: Phase-matching techniques in the UV and XUV," IEEE Lasers and Electro-Optics Society (LEOS) Annual Meeting, November 1999.

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166. **Plenary Speaker**, M. M. Murnane, "Extreme nonlinear optics," Israeli Optical Society, Tel Aviv, Israel, November 1999.
165. **Retreat**, University of Colorado Optoelectronic Computing Systems Center, Boulder, CO, November 1999.
164. **Invited**, M. M. Murnane, "Methods for control of high-order harmonic generation," 8th International Conference on Multiphoton Processes (ICOMP 8), Monterey, CA, October 1999.
163. R. Bartels, "15fs transform-limited, compact, all-diode-pumped, 1-kHz laser system with active computer pulse shape control," Optical Society of America Annual Meeting/ALS, San Jose, CA, October 1999.
162. **Invited**, M. M. Murnane, "Nonperturbative laser-atom interactions for nonlinear optics," DOE AMOP Program Contractors Meeting, Boulder, CO, October 1999.
161. **Invited**, M. M. Murnane, "Phase-matching at short wavelengths," International Conference on Ultrafast Spectroscopy, Taipei, Taiwan, October 1999.
160. **Invited**, H. C. Kapteyn, "Ultrafast coherent soft-x-ray sources," International Conference on X-Ray Microscopy, Berkeley, CA, August 1999.
159. **Invited**, M. M. Murnane, "Ultrafast coherent soft-x-ray sources," International Conference on X-Ray Processes, Chicago, IL, August 1999.
158. **Plenary Speaker**, M. M. Murnane, "Extreme nonlinear optics," OSA Conference on Generation and Application of Short Wavelength Sources, Potsdam, Germany, July 1999.
157. **Invited**, S. Backus, "UV and XUV pulse generation and measurement," Ultrafast Optics 1999, Ascona, Switzerland, July 1999.
156. **Invited**, M. M. Murnane, "Extreme nonlinear optics," Gordon Conference on Atomic Physics, July 1999.
155. **Poster**, C. Herne, "Femtosecond vacuum ultraviolet light source," Gordon Conference on Nonlinear Optics and Lasers, Colby-Sawyer College, New London, NH, July 1999.
154. **Poster**, H. C. Kapteyn, "Coherent imaging of laser-plasma interactions using XUV harmonic radiation," 1999 High Energy Density Science Grants Symposium, Los Alamos National Laboratory, Los Alamos, NM, June 1999.
153. **Invited**, H. C. Kapteyn, "Extreme nonlinear optics: The generation of short-wavelength, ultrashort light pulses using novel phase-matching techniques," 1st Cross-Border Workshop on Laser Science, "Coherent Dynamics in Quantum Complex Systems," Ottawa, Canada, May 1999.
152. **Postdeadline**, C. Durfee, "Efficient, controlled femtosecond XUV continuum generation," Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference (CLEO/QELS), Baltimore, MD, May 1999.
151. E. Zeek, "Adaptive compression of high-energy pulses to 15 fs," Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference (CLEO/QELS), Baltimore, MD, May 1999.
150. **Poster**, A. R. Libertun, "A 36 nJ - 15.5 MHz extended-cavity Ti:sapphire oscillator," Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference (CLEO/QELS), Baltimore, MD, May 1999.
149. **Invited**, H. C. Kapteyn, "Extreme nonlinear optics," QELS, Baltimore, MD, May 1999.

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148. **Invited**, H. C. Kapteyn, "Phase-matching at short wavelengths," UILA Euroconference, Crete, May 1999.
147. **Invited**, H. C. Kapteyn, "Phase matching in the x-ray region," SILAP (Super Intense Laser Atom Physics Conference), Baltimore, MD, May 1999.
146. **Invited**, H. C. Kapteyn, "Extreme nonlinear optics," QELS, Baltimore, MD, May 1999.
145. **Invited**, H. C. Kapteyn, "Phase-matching at short wavelengths," ULIA Euroconference, Crete, May 1999.
144. **Colloquium**, M. M. Murnane, Caltech, April 1999.
143. **Seminar**, M. M. Murnane, Princeton University, April 1999.
142. M. M. Murnane, "Extreme nonlinear optics with femtosecond lasers," Princeton University, Dept. of Electrical Engineering, Princeton, NJ, April 1999.
141. **Invited**, S. Backus, "Ultrafast lasers and laser-based coherent x-ray sources," 17th Advanced Beam Dynamics Workshop on Future Light Sources, Argonne, IL, April 1999.
140. **Invited**, M. M. Murnane, "New physics with femtosecond lasers," APS Centennial Symposium, Atlanta, GA, March 1999.
139. **Colloquium**, H. C. Kapteyn, "Phase matching at short wavelengths," FOM Institute, Amsterdam, The Netherlands, February 1999.
138. **Invited**, H. C. Kapteyn, "Small-scale, coherent, ultrashort-pulse soft x-ray light sources based on high harmonic generation," Workshop Beyond Classical Lasers and Synchrotron Radiation II, Amsterdam, The Netherlands, February 1999.
137. **Invited**, M. Bauer, "Ultrafast soft-x-ray sources," SPIE, San Jose, CA, January 1999.
136. **Seminar**, M. M. Murnane, MIT, November 1998.
135. **Invited**, M. M. Murnane, "Extreme nonlinear optics: Phase-matching of ultraviolet and soft x-ray generation," 6th International Conference on X-Ray lasers, Kyoto, Japan, September 1998.
134. **Colloquium**, M. M. Murnane, Purdue University (Physics), September 1998.
133. **Colloquium**, M. M. Murnane, University of California at Berkeley, September 1998.
132. **Invited**, M. M. Murnane, "Femtosecond coherent x-ray generation: Phase matching at short wavelengths," Sixteenth International Conference on Atomic Physics (ICAP 16), Windsor, Canada, August 1998.
131. **Poster**, S. Backus, "High average-power terawatt lasers," XIth International Conference on Ultrafast Phenomena, Garmish-Partenkirchen, Germany, July 1998.
130. **Invited**, M. M. Murnane, "Extreme nonlinear optics: Phase control of high-harmonic generation," XIth International Conference on Ultrafast Phenomena, Garmish-Partenkirchen, Germany, July 1998.
129. C. G. Durfee III, "Phase-matched generation of short wavelength, ultrashort-pulse light in capillary waveguides," XIth International Conference on Ultrafast Phenomena, Garmish-Partenkirchen, Germany, July 1998.
128. H. C. Kapteyn, "Phase-matched generation of short wavelength, ultrashort pulse light in capillary waveguides," APS Division of Atomic Molecular and Optical Physics, Santa Fe, NM, May 1998.
127. **Postdeadline**, C. G. Durfee, "Phase-matching of high-order harmonic generation in capillary waveguides," Conference on Lasers and Electro-Optics, San Francisco, CA, May 1998.

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126. **Colloquium**, Z. Chang, "Femtosecond x-ray generation in the "Water Window" using 25 fs laser pulses," Conference on Lasers and Electro-Optics, San Francisco, CA, May 1998.
125. A. Rundquist, "Controlling the intrinsic phase in high-harmonic generation," Conference on Lasers and Electro-Optics, San Francisco, CA, May 1998.
124. S. Backus, "0.27 terawatt, sub-17 fs laser system at 1 kHz," Conference on Lasers and Electro-Optics, San Francisco, CA, May 1998.
123. Z. Chang, "Coherent x-ray generation in the "water window" using ultrashort pulses," 1998 APS/AAPT Joint April Meeting, Columbus, OH, April 1998.
122. Wagner, "Characterization of a resonant laser wakefield accelerator and optical electron injector," 1998 APS/AAPT Joint April Meeting, Columbus, OH, April 1998.
121. **Colloquium**, M. M. Murnane Bryn Mawr College, March 1998
120. **Colloquium**, M. M. Murnane, University of Rochester, February 1998.
119. **Colloquium**, M. M. Murnane, University of Toronto, February 1998.
118. **Colloquium**, M. M. Murnane, University of Michigan, February 1998.
117. **Colloquium**, M. M. Murnane, University of Groningen, Holland, December 1997.
116. **Colloquium**, M. M. Murnane, University of Illinois at Urbana-Champaign, October 1997.
115. **Colloquium**, M. M. Murnane, Argonne National Laboratory, October 1997.
114. **Colloquium**, M. M. Murnane, Williams College, October 1997.
113. **Invited**, M. M. Murnane, "Generation and applications of coherent soft-x-rays," European Femtochemistry Conference, Lund, Sweden, August 1997.
112. **Invited**, M. M. Murnane, "Attosecond pulse generation using high harmonic emission," International Conference on Superstrong Fields in Plasmas, Varenna, Italy, August 1997.
111. **Invited**, H. C. Kapteyn, "High-harmonic generation using 25 fs laser pulses," Gordon Conference on Nonlinear Optics, Colby-Sawyer, NH, July 1997.
110. **Colloquium**, M. M. Murnane, University of Connecticut, June 1997.
109. **Invited Tutorial**, H. C. Kapteyn, "The physics of ultrafast lasers," Conference on Lasers and Electro-Optics, Baltimore, MD, May 1997.
108. **Invited**, M. M. Murnane, "Femtosecond superhigh, supershort, harmonics," Quantum Electronics and Laser Science Conference, QELS '97, Baltimore, MD, May 1997.
107. S. Backus, "0.2 TW kilohertz laser system," CLEO '97, Baltimore, MD, May 1997.
106. A. Rundquist, "Generation and measurement of ultrafast shaped pulses," QELS '97, Baltimore, MD, May 1997.
105. C. Durfee, "Amplitude and phase characterization of 10fs pulses," QELS '97, Baltimore, MD, May 1997.
104. **Colloquium**, M. M. Murnane, University of Minnesota, May 1997.
103. **Seminar**, M. M. Murnane, Case Western University, April 1997.
102. **Invited**, M. M. Murnane, "The science of ultrashort pulse generation in the visible and x-ray regions," American Physical Society/AAPT Joint Meeting, Washington, DC 1997.
101. Z. Chang, "X-ray streak camera with 0.54ps resolution," SPIE 22nd International Congress on High Speed photography and Photonics, Santa Fe, NM, 1996.

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100. J. Larsson, "Time-resolved x-ray diffraction from laser-excited crystals," OSA Conference on Generation and Applications of High Field and Short Wavelength Sources, Santa Fe, NM, 1997.
99. Z. Chang, "Coherent, tunable, x-ray emission at 5 nm using high harmonic generation," OSA Conference on Generation and Applications of High Field and Short Wavelength Sources, Santa Fe, NM, 1997.
98. C. Durfee, "Amplitude and phase characterization of 10fs pulses," OSA Conference on Generation and Applications of High Field and Short Wavelength Sources, Santa Fe, NM, 1997.
97. **Postdeadline**, C. Durfee, "Amplitude and phase characterization of 10 fs pulses generated by hollow core fiber pulse compression," International Laser Science Conference, ILS XI, Rochester, NY, 1996.
96. Z. Chang, "Demonstration of a sub-picosecond x-ray streak camera," International Laser Science Conference, ILS XI, Rochester, NY, 1996.
95. **Invited**, A. Rundquist, "Femtosecond X-ray generation using high-harmonic generation of 25 fs pulses," International Laser Science Conference, ILS XI, Rochester, NY, 1996.
94. **Invited**, M. M. Murnane, "High-harmonic generation using 25 fs laser pulses," Gordon Conference on Nonlinear Optics, Tilton, NH, 1996.
93. S. Backus, "16 fs pulse generation and measurement in the ultraviolet and vacuum ultraviolet," International Quantum Electronics Conference, IQEC, Sydney, Australia, 1996.
92. H. C. Kapteyn, "Enhanced high-harmonic generation using 25 fs laser pulses," International Quantum Electronics Conference, IQEC, Sydney, Australia, 1996.
91. **Colloquium**, M. M. Murnane, Swarthmore College, October 1996.
90. **Invited**, H. C. Kapteyn, "Generation of 12 fs UV pulses by third-harmonic generation in air," Nonlinear Optics: Materials, Fundamentals, and Applications, Maui, HI, July 1996.
89. **Invited**, H. C. Kapteyn, "Ultrafast x-ray generation with sub-30 fs TW pulses," APS Division of Atomic and Molecular Physics Meeting, DAMOP, Ann Arbor, MI, 1996.
88. H. C. Kapteyn, "Enhanced high-harmonic generation with ultrashort 25 fs pulses," Ultrafast Phenomena X, Coronado, CA, 1996.
87. S. Backus, "Sub-20 fs pulse generation in the ultraviolet," Conference on Lasers and Electro-optics, CLEO '96, Anaheim, CA, May 1996.
86. **Invited**, H. C. Kapteyn, "XUV High-harmonic generation using 25 fs laser pulses," Quantum Electronics and Laser Science Conference, QELS '96, Anaheim, CA, May 1996.
85. **Colloquium**, M. M. Murnane, Ohio State University, April 1996.
84. **Colloquium**, M. M. Murnane, Harvard University, April 1996.
83. **Seminar**, M. M. Murnane, Purdue University (Engineering), April 1996.
82. A. Rundquist, "Temporal characterization of ultrashort high-power laser pulses," SPIE Annual Symposium OE/LASE 96, San Jose, CA, January 1996.
81. S. Backus, "Ti:sapphire amplifier producing millijoule-level 21 fs pulses," SPIE Annual Symposium OE/LASE 96, San Jose, CA, January 1996.
80. **Invited**, H. C. Kapteyn, "Advances in femtosecond lasers: Applications in research, teaching and business," AAPT Summer Meeting, Spokane, WA, August 1995.
79. **Colloquium**, M. M. Murnane, University of Texas at Austin, November 1995.

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78. **Postdeadline**, S. Backus, "16 femtosecond, 1 μ J pulses generated by third-harmonic conversion in air," Optical Society of America Annual Meeting, Portland, OR, October 1995.
77. S. Backus, "High repetition rate amplification of 20 fs optical pulses at the millijoule level," Optical Society of America Annual Meeting, Portland, OR, October 1995.
76. G. Taft, "Measurements of the amplitude and phase of 10 fs optical pulses," Optical Society of America Annual Meeting, Portland, OR, October 1995.
75. J. Zhou, "Ultrafast x-ray generation with sub-30 fs TW pulses," Optical Society of America Annual Meeting, Portland, OR, October 1995.
74. **Colloquium**, M. M. Murnane, State University of New York at Stony Brook, October 1995.
73. **Invited**, M. M. Murnane, "High intensity laser-matter interactions with sub-30 fs optical pulses," Euroconference on Generation and Application of Ultrashort X-Ray Pulses II, Pisa, Italy, September 1995.
72. **Invited**, M. M. Murnane, "Dispersive limits of ultrashort-pulse generation," Gordon Conference on Nonlinear Optics, July 1995.
71. **Plenary Talk**, M. M. Murnane, "Advances in femtosecond lasers," Australian Optical Society Annual Meeting, Brisbane, Australia, July 1995.
70. **Invited**, J. Peatross, "High-order harmonic generation with a 25 femtosecond laser pulse," NATO Advanced Research Workshop on Super-Intense Laser Atom Physics (SILAP IV) Moscow, 1995.
69. **Invited Seminar**, H. C. Kapteyn, "Recent advances in femtosecond laser technology," Canadian National Research Council, Ottawa, Canada, 1995.
68. **Invited**, H. C. Kapteyn, "Advances in short-pulse femtosecond laser technology," Canadian Association of Physicists Annual Meeting, Quebec, Canada, 1995.
67. **Invited**, M. M. Murnane, "Advances in high-power femtosecond laser technology," NSF Forum on Optical Science and Engineering, SPIE Annual Meeting, San Diego, CA, 1995.
66. **Invited**, H. C. Kapteyn, "Generation and applications of high power ultrashort pulses," NSF Forum on Optical Science and Engineering, SPIE Annual Meeting, San Diego, CA, July 1995.
65. **Colloquium**, M. M. Murnane, Utah State University, April 1995.
64. **Seminar**, M. M. Murnane, University of Washington, May 1995.
63. **Invited Tutorial**, M. M. Murnane, "Advances in femtosecond lasers," APS March Meeting, San Jose, CA, March 1995.
62. **Colloquium**, M. M. Murnane, University of Michigan, Ann Arbor, MI, March 1995.
61. **Seminar**, M. M. Murnane, Lawrence Livermore National Laboratory, March 1995.
60. **Colloquium**, M. M. Murnane, University of Maryland, February 1995.
59. A. Rundquist, "Sub-10 fs waveform measurements using frequency resolved optical gating," SPIE Annual Symposium OE/LASE, San Jose, CA, February 1995.
58. **Invited**, J. Zhou, "Generation of 26 fs, 2 TW pulses near the gain-narrowing limit in Ti:sapphire," SPIE Annual Symposium OE/LASE, San Jose, CA, February 1995.
57. **Colloquium**, H. C. Kapteyn, "Ultrashort-pulse lasers--An introduction," Physics Colloquium at Oregon State University, November 1994.
56. **Invited**, M. M. Murnane, "Review of ultrashort pulse generation in solid-state lasers - capabilities and limitations," Optical Society of America Annual Meeting, Dallas, TX, October 1994.

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55. **Invited**, H. C. Kapteyn, "High-intensity lasers with ~20 fs pulse duration," OSA Topical Conference on High-Field Interactions and Short-Wavelength Generation, St. Malo, France, August 1994.
54. C. P. Huang, "Amplification of 20 fs pulses to the TW power level in Ti:sapphire," Conference on Lasers and Electro-Optics, Los Angeles, CA, May 1994.
53. J. P. Zhou, "Ultrashort-pulse amplification in Ti:sapphire," Ninth International Conference on Ultrafast Phenomena, Dana Point, CA, May 1994.
52. G. Taft, "Sub-10 fs pulse generation from a Ti:sapphire laser: capabilities and ultimate limits," Ninth International Conference on Ultrafast Phenomena, Dana Point, CA, May 1994.
51. M. T. Asaki, "Frequency doubling of ultrashort pulses in a Ti:sapphire laser," poster presentation at the Ninth International Conference on Ultrafast Phenomena, Dana Point, CA, May 1994.
50. **Colloquium**, H. C. Kapteyn, "High-intensity lasers with 20 fs pulse duration," CEA Saclay, France, March 1994.
49. **Invited**, H. C. Kapteyn, "High-intensity lasers and physics," National Institute of Laser Enhanced Sciences International Conference (NILES '94), Cairo, Egypt, March 1994.
48. **Invited**, M. M. Murnane, "Ultrashort-pulse lasers," National Institute of Laser Enhanced Sciences International Conference (NILES '94), Cairo, Egypt, March 1994.
47. **Invited**, H. C. Kapteyn, "High-intensity lasers with 20 fs pulse duration," International Research Conference (Euroconference) on Generation and Application of Ultrashort X-Ray Pulses, Salamanca, Spain, March 1994.
46. **Colloquium**, M. M. Murnane, "Ultrashort-pulse lasers based on Ti:sapphire," University of Michigan, Ann Arbor, MI, January 1994.
45. **Colloquium**, H. C. Kapteyn, "Ultrashort-pulse lasers--An introduction," Physics Colloquium at Washington State University, January 1994.
44. **Invited**, C. P. Huang, "Ultrashort-pulse amplification in Ti:sapphire," SPIE Annual International Symposium on Optical and Optoelectronic Applied Science and Engineering, Los Angeles, CA, January 1994.
43. **Invited**, J. P. Zhou, "Ultrashort-pulse generation and amplification in Ti:sapphire," Invited presentation at IEEE Lasers and Electro-Optics Society (LEOS) San Jose, CA, November 1993.
42. M. T. Asaki, "Intracavity frequency doubling of ultrashort pulses in a Ti:sapphire laser," IEEE Lasers and Electro-Optics Society (LEOS) San Jose, CA, November 1993.
41. **Invited**, M. M. Murnane, "Generation and amplification of ultrashort light pulses," Annual Meeting of the Optical Society of America, Toronto, Ontario, Canada, October 1993.
40. **Postdeadline poster**, M. T. Asaki, "Intracavity frequency doubling in Ti:sapphire: Generation of 14 fs pulses at 416 nm," Annual Meeting of the Optical Society of America, Toronto, Ontario, Canada, October 1993.
39. **Postdeadline poster**, C. P. Huang, "Generation of 20 femtosecond, millijoule-energy pulses using Ti:sapphire," Annual Meeting of the Optical Society of America, Toronto, Ontario, Canada, October 1993.
38. **Invited**, H. C. Kapteyn, "Advances in femtosecond pulse generation and amplification in solid state lasers," Quantum Electronics and Laser Science Conference (QELS '93), Baltimore, MD, May 1993.

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37. **Invited**, M. M. Murnane, “Applications of ultrashort x-ray pulses,” Workshop on Short Scale-length Plasmas, Ann Arbor, MI, April 1993.
36. H. C. Kapteyn, “Ultrashort-pulse plasmas using 20-fs pulses,” Workshop on Short Scale-length Plasmas, Ann Arbor, MI, April 1993.
35. **Colloquium**, M. M. Murnane, “Ultrashort-pulse lasers based on Ti:sapphire,” Quantum Electronics Seminar, Stanford University, Stanford, CA, January 1993.
34. **Colloquium**, H. C. Kapteyn, “Ultrashort light pulses—generation and applications,” Harvey Mudd College, January 1993.
33. **Invited**, M. M. Murnane, “Ultrashort-pulse solid-state lasers,” SPIE Annual International Symposium on Optical and Optoelectronic Applied Science and Engineering, Los Angeles, CA, January 1993.
32. **Invited**, H. C. Kapteyn, “Ultrashort light pulses—generation and applications,” Meeting of the Columbia Chapter of Optical Society of America, Portland, OR, March 1993.
31. **Postdeadline**, C. P. Huang, “11 femtosecond pulses from a modelocked Ti:sapphire laser,” OSA Annual Meeting, Albuquerque, NM, October 1992.
30. **Postdeadline**, H. C. Kapteyn, C.-P. Huang, M. Asaki, S. Backus, H. Nathel, and M. M. Murnane, “17 femtosecond pulses from a modelocked Ti:sapphire laser,” Eighth International Conference on Ultrafast Phenomena, Antibes, France, June 1992.
29. H. C. Kapteyn, C.-P. Huang, M. Asaki, S. Backus, H. Nathel, and M. M. Murnane, “Short-pulse optimization of a modelocked Ti:sapphire laser,” Conference on Lasers and Electrooptics (CLEO), Anaheim, CA, May 1992.
28. **Invited**, M. M. Murnane, “Intense femtosecond x-ray emission from waveguides and clusters,” American Physical Society March Meeting, Indianapolis, IN, March 1992.
27. **Invited**, M. M. Murnane, “High-power lasers and applications,” Oregon Center for Advanced Technology Education, March 1992.
26. M. M. Murnane, “Optimization of intracavity dispersion compensation in a self-modelocked Ti:sapphire laser,” Optical Society of America Annual Meeting, San Jose, CA, 1991.
25. **Colloquium**, H. C. Kapteyn, “Short-wavelength lasers,” University of Idaho, September 1991.
24. **Invited**, M. M. Murnane, “Generation of efficient sub-picosecond x-ray sources,” Gordon Conference on Nonlinear Optics, Wolfboro, NH, July 1991.
23. H. C. Kapteyn and M. M. Murnane, “Relativistic pulse compression,” poster presentation at the Gordon Conference on Non-linear Optics, Wolfboro, NH, July 1991.
22. H. C. Kapteyn and M. M. Murnane, “Generation of ultrafast VUV radiation by reflection from a relativistic ionization front,” OSA Topical Meeting on Short Wavelength Coherent Radiation: Generation and Application, Monterey, CA, April 1991.
21. M. M. Murnane, “Efficient coupling of high-intensity, sub-picosecond laser pulses into solids,” OSA Topical Meeting on Short Wavelength Coherent Radiation: Generation and Application, Monterey, CA, April 1991.
20. **Colloquium**, M. M. Murnane, “Ultrashort-pulse laser plasmas,” Department of Physics, Oregon State University, March 1991.
19. **Colloquium**, M. M. Murnane, “Ultrashort-pulse laser plasmas,” University of Idaho, February 1991.

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18. **Colloquium**, M. M. Murnane, Department of Physics Colloquium, University of Maryland, 1990.
17. **Seminar**, M. M. Murnane, Department of Physics Seminar, SUNY Stony Brook, 1990.
16. H. C. Kapteyn and M. M. Murnane, "Relativistic pulse compression," seminar at Lawrence Livermore National Laboratory, Livermore, CA, December 1990.
15. H. C. Kapteyn, M. M. Murnane, A. Szoke, and R. W. Falcone, "Pedestal suppression for high-energy ultrashort pulses using self-induced plasma shuttering," APS Division of Plasma Physics Meeting, Cincinnati, OH, November 1990.
14. **Invited**, M. M. Murnane, "High-density plasmas - generation of efficient sub-picosecond x-ray sources," APS Division of Plasma Physics Meeting, Cincinnati, OH, November 1990.
13. M. M. Murnane, "Ultrashort x-ray pulses from laser-heated solids," OSA Annual Meeting, Boston, MA, November 1990.
12. M. M. Murnane, "Ultrashort x-ray pulses," Oregon Conference on Modern Optics, Eugene, OR, September 1990.
11. H. C. Kapteyn, M. M. Murnane, A. Szoke, A. Hawryluk, and R. W. Falcone, "Enhanced absorption and ASE pedestal suppression in the generation of ultrashort-pulse solid-density plasmas," Postdeadline paper at the Seventh International Conference on Ultrafast Phenomena, Monterey, CA, May 1990.
10. **Seminar**, M. M. Murnane, Condensed Matter Physics Seminar, University of California at Davis, May 1990.
9. **Seminar**, M. M. Murnane, Plasma Physics Seminar, University of California at Los Angeles, May 1990.
8. H. C. Kapteyn, "Short-wavelength lasers," Physics Colloquium at Washington State University, April 1990.
7. H. C. Kapteyn, A. Sullivan, H. Hamster, and R. W. Falcone, "Multi-terawatt femtosecond laser based on Ti:sapphire," SPIE symposium on High Power Lasers and Optical Computing, Los Angeles, CA, January 1990.
6. H. C. Kapteyn, M. M. Murnane, and R. W. Falcone, "Photoionization-pumped short-wavelength lasers," Stanford University Quantum Electronics Seminar, Stanford, CA, January 1989.
5. H. C. Kapteyn, M. M. Murnane, and R. W. Falcone, "Photoionization-pumped short-wavelength lasers," seminar at Lawrence Livermore National Laboratory, November 1988.
4. H. C. Kapteyn and R. W. Falcone, "Photoionization-pumped short-wavelength lasers," Optical Society of America Annual Meeting, Santa Clara, CA, November 1988.
3. H. C. Kapteyn, R. W. Falcone, M. M. Murnane, and R. W. Lee, "Photopumped short-wavelength lasers in xenon and krypton," International Conference on Lasers, Lake Tahoe, NV, December 1987.
2. H. C. Kapteyn, W. W. Craig, G. D. Power, J. Schachter, and R. W. Falcone, "Soft x-ray streak camera using a microchannel plate photocathode," SPIE Annual Meeting, San Diego, CA, August 1987.
1. H. C. Kapteyn, M. M. Murnane, and R. W. Falcone, "Measurements on a proposed short-wavelength laser system in xenon III," SPIE Annual Meeting, San Diego, CA, August 1986.

Henry C. Kapteyn

Graduate Students supervised by Kapteyn/Murnane Group

- Chung-Po Huang M.S. 1992, Ph.D. 1995
- John McIntosh M.S. 1992
- Jianping Zhou M.S. 1993, Ph.D. 1995
- Melanie Asaki M.S. 1993
- Sterling Backus M.S. 1993, Ph.D. 1996
- Chengyu Shi M.S. 1994
- Greg Taft M.S. 1994, Ph.D. 1997
- Donna Argento M.S. 1996
- Kendall Read M.S. 1995, Ph.D. 1999
- Andy Rundquist M.S. 1995, Ph.D. 1998
- Haiwen Wang M.S. 1995, Ph.D. 1999
- Erik Zeek M.S. 1995, Ph.D. 1999
- Kira Maginnis M.S. 1997
- Catherine Herne M.S. 1998
- Randy Bartels M.S. 1999, Ph.D. 2002
- Robert Shelton M.S. 1999, Ph.D. 2002
- Kyoungsik Kim M.S. 1999
- Chi-Fong (Tim) Lei M.S. 1999, Ph.D. 2003
- Robert Dollinger M.S. 2001
- Scott Christensen M.S. 2001
- David Samuels M.S. 2002
- Emily Gibson M.S. 2002, Ph.D. 2004
- Ra Anan Tobey M.S. 2002, Ph.D. 2005
- David Gaudiosi M.S. 2002, Ph.D. 2006
- Ariel Paul M.S. 2003 Ph.D. 2007
- Nick Wagner M.S. 2003, Ph.D. 2007
- Xiaoshi Zhang PhD 2007
- Etienne Gagnon Ph.D. 2007
- Amy Lytle Ph.D. 2008
- Richard Sandberg Ph.D. 2008
- Isabell Thomann PhD 2009
- Daisy Raymondson PhD 2009
- Mark Siemens PhD 2009
- Qing Li PhD 2011

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- Tenio Popmintchev PhD 2009
- Luis Miaja-Avila PhD 2009
- Robynne Lock PhD 2011
- Xibin Zhou PhD 2009
- Paul Arpin PhD 2011
- Chan La-o-Vorakiat PhD 2011
- Ming-Chang Chen PhD 2012
- Jing Yin MS 2008 (deceased)
- Michael Gerrity PhD 2014
- Matt Seaberg PhD 2014
- Ethan Townsend MS 2009 (deceased)
- Craig Hogle PhD 2014
- Daniel Hickstein PhD 2014
- Adra Carr PhD 2015
- Chengyuan Ding PhD 2014
- Kathleen Hoogeboom-Pot PhD 2015
- Susannah Brown PhD 2016
- Bosheng Zhang PhD 2015
- Betsy Hall MS ECE 2010
- Emrah Turgut PhD 2014
- Cong Chen PhD 2017
- Dimitar Popmintchev PhD 2016
- Tingting Fan PhD 2017
- Dennis Gardner PhD 2016
- Christopher Mancuso PhD 2016
- Elizabeth Shanblatt PhD 2017
- Jennifer Ellis current PhD student
- Benjamin Galloway current PhD student
- Jorge Hernandez-Charpak PhD 2017
- Dmitriy Zusin current PhD student
- David Couch current PhD student
- Christian Gentry current PhD student
- Christina Porter current PhD student
- Robert Karl current PhD student
- Michael Tankslava current PhD student, ECE

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- Charles Bevis current PhD student
- Adam Blonsky current PhD student
- Nathan Brooks current PhD student
- Kevin Dorney current PhD student
- Yuka Esashi current PhD student
- Travis Frazer current PhD student
- Guan Gui current PhD student
- Peter Johnsen current PhD student
- Joshua Knobloch current PhD student
- Drew Morrill current PhD student
- Quynh Nguyen current PhD student
- Xun Shi current PhD student
- Bin Wang current PhD student
- Wenjing You current PhD student
- Yingchao Zhang current PhD student
- Melia Morris current PhD student
- Jonathan Nesper current PhD student

Undergraduate Students supervised by Kapteyn/Murnane Group

- Larry Roy B.S. 1991
- Alisa Ellingson B.S. 1993
- Chris Baldwin B.S. 1994
- Colette Sackstedter B.S. 1995
- Nicole Dawson B.S. 1995
- Chris Wark B.S. 1996
- Julie Brinson B.S. 1999
- Marie Tripp B.S. 1999
- Kolt Peightal B.S. 2006
- Nate Kirchhofer B.S.
- Emily Gregonis B.S.
- Leigh Marin B.S. 2012
- Carson Teale B.S. 2012
- Matthew Clark B.S. 2013
- Maithreyi Gopalakrishnan B.S. 2016
- Laura Woolridge B.S. 2017

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Postdoctoral fellows

- Dr. Jaiwen Fang 1994
- Dr. Justin Peatross 1995
- Dr. Charles Durfee 1996-1999
- Dr. Sterling Backus 1997-2000
- Dr. Zenghu Chang 1995-1999
- Dr. Lino Misoguti 1996-1998
- Dr. Michael Bauer 1998-2001
- Dr. Randy Bartels 2002
- Dr. Thomas Weinacht 2000-2002
- Dr. Erez Gershgoran 2001-2002
- Dr. Ariel Libertun 2002-2003
- Dr. Andrea Wuest 2004-2006
- Dr. Arvinder Sandhu 2004-2006
- Dr. Guido Saathoff 2005-2007
- Dr. Raanan Tobey 2005-2006
- Dr. Oren Cohen 2005-2008
- Dr. Wen Li 2006-2008
- Dr. Alon Bahabad 2007-2010
- Dr. Vandana Sharma 2007-2008
- Dr. Predrag Ranitovic 2008-2011
- Dr. Xibin Zhou 2009-2010
- Dr. Tenio Popmintchev 2009-2015
- Dr. Stefan Mathias 2009-2011
- Dr. Stefan Witte 2010-2011
- Dr. Daniel Adams 2010-present
- Dr. Damiano Nardi 2011-2013
- Dr. Ellen Kiester 2011-2013
- Dr. Wei Xiong 2011-2014
- Dr. Chan La-o-vorakiat 2011-2012
- Dr. Piotr Matyba 2011-2014
- Dr. Franklin Dollar 2012-2015
- Dr. William Peters 2013-present
- Dr. Patrik Grychtol 2011-2014

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- Dr. Michael Gerrity 2014-present
- Dr. Craig Hogle 2014-2016
- Dr. Dan Hickstein 2014-2016
- Dr. Giulia Mancini 2015-2017
- Dr. Zhensheng Tao 2015-present
- Dr. Seth Cousin 2016-present
- Dr. Begonia Abad Mayor 2017-present
- Dr. Amitava Adak 2017-present
- Dr. Manika Dandipat 2017-present
- Dr. Chen-Ting Liao 2017-present
- Dr. Xun Shi 2017-present

JILA Visiting Fellows and other Scientists Collaborating with Kapteyn/Murnane Group

- Prof. John Gland 2003
- Prof. Martin Aeschlimann 2004-present
- Prof. Keith Nelson 2002-present
- Prof. John Fourkas 2003
- Prof. Barry Walker 2005-2006
- Prof. Ivan Christov 1994-2007
- Prof. Thomas Feurer 2002-2004
- Prof. Lew Cocke 2006-2008
- Prof. David Jonas 2009-present
- Prof. Ralph Jimenez 2010-present
- Dr. Thomas Silva 2009-present
- Dr. Hans Nembach 2009-present