



## Aaron Lindenberg

Associate Professor of Materials Science and Engineering and of Photon Science

### CONTACT INFORMATION

- **Administrator**

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### Bio

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#### BIO

Lindenberg's research is focused on visualizing the ultrafast dynamics and atomic-scale structure of materials on femtosecond and picosecond time-scales. X-ray and electron scattering and spectroscopic techniques are combined with ultrafast optical techniques to provide a new way of taking snapshots of materials in motion. Current research is focused on the dynamics of phase transitions, ultrafast properties of nanoscale materials, and charge transport, with a focus on materials for information storage technologies, energy-related materials, and nanoscale optoelectronic devices.

#### ACADEMIC APPOINTMENTS

- Associate Professor, Materials Science and Engineering
- Associate Professor, Photon Science Directorate
- Affiliate, Precourt Institute for Energy
- Principal Investigator, Stanford Institute for Materials and Energy Sciences

#### HONORS AND AWARDS

- Chambers Fellow, Stanford University (2015-2018)
- Young Faculty Award, DARPA (2010)
- DOE Outstanding Mentor Award, Department of Energy (2009)
- Terman Fellow, Stanford University (2007-2009)
- Faculty Fellow Post-doctoral Fellowship, University of California, Berkeley (2001-2003)
- Alfred Moritz Michaelis Prize in Physics, Columbia University (1996)
- I.I. Rabi Scholar, Columbia University (1992-1996)

#### PROFESSIONAL EDUCATION

- BA, Columbia University (1996)
- PhD, UC Berkeley (2001)

## LINKS

- Group Site: <http://www.stanford.edu/group/lindenberg/cgi-bin/drupal/>

## Teaching

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### COURSES

#### 2019-20

- Quantum Mechanics of Nanoscale Materials: MATSCI 142 (Spr)

#### 2018-19

- Quantum Mechanics of Nanoscale Materials: MATSCI 142 (Spr)

#### 2017-18

- Quantum Mechanics of Nanoscale Materials: MATSCI 142 (Spr)
- X-Ray Science and Techniques: MATSCI 326, PHOTON 326 (Aut)

#### 2016-17

- Quantum Mechanics of Nanoscale Materials: MATSCI 157 (Win)

### STANFORD ADVISEES

#### Doctoral Dissertation Reader (AC)

Andrey Poletayev, Benjamin Reeves, Michelle Solomon, Chun-Lan Wu

#### Postdoctoral Faculty Sponsor

Burak Guzelturk, Duan Luo, Aditya Sood, Jun Xiao

#### Doctoral Dissertation Advisor (AC)

Anudeep Mangu, Philipp Muscher, Clara Nyby, Marc Zajac

#### Master's Program Advisor

Timothy Goh, Hanshi Li

#### Doctoral Dissertation Co-Advisor (AC)

Wei He

#### Doctoral (Program)

Qingyuan Fan, Elissa Klopfer, Yufei Yang, Marc Zajac

#### Postdoctoral Research Mentor

Jun Xiao, Gilberto de la Pena Munoz

## Publications

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### PUBLICATIONS

- **Anisotropic structural dynamics of monolayer crystals revealed by femtosecond surface X-ray scattering** *NATURE PHOTONICS*  
Tung, I., Krishnamoorthy, A., Sadasivam, S., Zhou, H., Zhang, Q., Seyler, K. L., Clark, G., Mannebach, E. M., Nyby, C., Ernst, F., Zhu, D., Glowonia, J. M., Kozina, et al  
2019; 13 (6): 425-+
- **Molecule-like trap states in halide perovskites: From solar-cell absorbers to white-light emitters**  
Smith, M., Jaffe, A., Lindenberg, A., Karunadasa, H.

AMER CHEMICAL SOC.2019

- **Recording interfacial currents on the subnanometer length and femtosecond time scale by terahertz emission.** *Science advances*  
Ma, E. Y., Guzelturk, B., Li, G., Cao, L., Shen, Z., Lindenberg, A. M., Heinz, T. F.  
2019; 5 (2): eaau0073
- **Femtosecond x-ray diffraction reveals a liquid-liquid phase transition in phase-change materials.** *Science (New York, N.Y.)*  
Zalden, P., Quirin, F., Schumacher, M., Siegel, J., Wei, S., Koc, A., Nicoul, M., Trigo, M., Andreasson, P., Enquist, H., Shu, M. J., Pardini, T., Chollet, et al  
2019; 364 (6445): 1062–67
- **Terahertz Kerr Effect in beta-Alumina Ion Conductors**  
Poletayev, A. D., Hoffmann, M. C., Teitelbaum, S. W., Trigo, M., Chueh, W. C., Lindenberg, A. M., IEEE  
IEEE.2019
- **THz-Pump UED-Probe on a Topological Weyl Semimetal**  
Sie, E. J., Nyby, C. M., Pemmaraju, C. D., Park, S., Shen, X., Yang, J., Hoffmann, M. C., Ofori-Okai, B. K., Li, R., Reid, A. H., Weathersby, S., Mannebach, E., Finney, et al  
IEEE.2019
- **Monitoring Charge Separation Dynamics Using THz Emission Spectroscopy**  
Guzelturk, B., Ma, E., Li, G., Cao, L., Shen, Z., Heinz, T., Lindenberg, A., IEEE  
IEEE.2019
- **An ultrafast symmetry switch in a Weyl semimetal.** *Nature*  
Sie, E. J., Nyby, C. M., Pemmaraju, C. D., Park, S. J., Shen, X., Yang, J., Hoffmann, M. C., Ofori-Okai, B. K., Li, R., Reid, A. H., Weathersby, S., Mannebach, E., Finney, et al  
2019; 565 (7737): 61–66
- **Atomic-scale imaging of ultrafast materials dynamics** *MRS BULLETIN*  
Flannigan, D. J., Lindenberg, A. M.  
2018; 43 (7): 485–90
- **Obtaining white light from layered perovskites**  
Smith, M., Jaffe, A., Dohner, E., Lindenberg, A., Karunadasa, H.  
AMER CHEMICAL SOC.2018
- **Terahertz Emission from Hybrid Perovskites Driven by Ultrafast Charge Separation and Strong Electron-Phonon Coupling** *ADVANCED MATERIALS*  
Guzelturk, B., Belisle, R. A., Smith, M. D., Bruening, K., Prasanna, R., Yuan, Y., Gopalan, V., Tassone, C. J., Karunadasa, H. I., McGehee, M. D., Lindenberg, A. M.  
2018; 30 (11)
- **Anharmonicity of the vibrational modes of phase-change materials: A far-infrared, terahertz, and Raman study** *VIBRATIONAL SPECTROSCOPY*  
Shportko, K., Zalden, P., Lindenberg, A. M., Rueckamp, R., Grueninger, M.  
2018; 95: 51–56
- **Ultrafast Electric Field Pulse Control of Giant Temperature Change in Ferroelectrics** *PHYSICAL REVIEW LETTERS*  
Qi, Y., Liu, S., Lindenberg, A. M., Rappe, A. M.  
2018; 120 (5): 055901
- **Engineering the Structural and Electronic Phases of MoTe<sub>2</sub> through W Substitution** *NANO LETTERS*  
Rhodes, D., Chenet, D. A., Janicek, B. E., Nyby, C., Lin, Y., Jin, W., Edelberg, D., Mannebach, E., Finney, N., Antony, A., Schiros, T., Klarr, T., Mazzoni, et al  
2017; 17 (3): 1616-1622
- **Ultrafast light-induced symmetry changes in single BaTiO<sub>3</sub> nanowires** *JOURNAL OF MATERIALS CHEMISTRY C*  
Kuo, Y., Nah, S., He, K., Hu, T., Lindenberg, A. M.  
2017; 5 (6): 1522-1528
- **Light-induced picosecond rotational disordering of the inorganic sublattice in hybrid perovskites.** *Science advances*  
Wu, X., Tan, L. Z., Shen, X., Hu, T., Miyata, K., Trinh, M. T., Li, R., Coffee, R., Liu, S., Egger, D. A., Makasyuk, I., Zheng, Q., Fry, et al  
2017; 3 (7): e1602388

- **Structural origins of broadband emission from layered Pb-Br hybrid perovskites.** *Chemical science*  
Smith, M. D., Jaffe, A., Dohner, E. R., Lindenberg, A. M., Karunadasa, H. I.  
2017; 8 (6): 4497–4504
- **Visualization of Atomic-Scale Motions in Materials via Femtosecond X-Ray Scattering Techniques** *ANNUAL REVIEW OF MATERIALS RESEARCH, VOL 47*  
Lindenberg, A. M., Johnson, S. L., Reis, D. A., Clarke, D. R.  
2017; 47: 425–49
- **Dynamic Optical Tuning of Interlayer Interactions in the Transition Metal Dichalcogenides.** *Nano letters*  
Mannebach, E. M., Nyby, C., Ernst, F., Zhou, Y., Tolsma, J., Li, Y., Sher, M. J., Tung, I. C., Zhou, H., Zhang, Q., Seyler, K. L., Clark, G., Lin, et al  
2017; 17 (12): 7761–66
- **2D materials advances: from large scale synthesis and controlled heterostructures to improved characterization techniques, defects and applications** *2D MATERIALS*  
Lin, Z., McCreary, A., Briggs, N., Subramanian, S., Zhang, K., Sun, Y., Li, X., Borys, N. J., Yuan, H., Fullerton-Shirey, S. K., Chernikov, A., Zhao, H., McDonnell, et al  
2016; 3 (4)
- **Ultrafast terahertz-field-driven ionic response in ferroelectric BaTiO<sub>3</sub>** *PHYSICAL REVIEW B*  
Chen, F., Zhu, Y., Liu, S., Qi, Y., Hwang, H. Y., Brandt, N. C., Lu, J., QUIRIN, F., Enquist, H., Zalden, P., Hu, T., Goodfellow, J., Sher, et al  
2016; 94 (18)
- **Picosecond Electric-Field-Induced Threshold Switching in Phase-Change Materials.** *Physical review letters*  
Zalden, P., Shu, M. J., Chen, F., Wu, X., Zhu, Y., Wen, H., Johnston, S., Shen, Z., Landreman, P., Brongersma, M., Fong, S. W., Wong, H. P., Sher, et al  
2016; 117 (6): 067601-?
- **Mechanism for Broadband White-Light Emission from Two-Dimensional (110) Hybrid Perovskites** *JOURNAL OF PHYSICAL CHEMISTRY LETTERS*  
Hu, T., Smith, M. D., Dohner, E. R., Sher, M., Wu, X., Tuan Trinh, M., Fisher, A., Corbett, J., Zhu, X., Karunadasa, H. I., Lindenberg, A. M.  
2016; 7 (12): 2258-2263
- **Time- and Temperature-Independent Local Carrier Mobility and Effects of Regioregularity in Polymer-Fullerene Organic Semiconductors** *ADVANCED ELECTRONIC MATERIALS*  
Sher, M., Bartelt, J. A., Burke, T. M., Salleo, A., McGehee, M. D., Lindenberg, A. M.  
2016; 2 (3)
- **A Bismuth-Halide Double Perovskite with Long Carrier Recombination Lifetime for Photovoltaic Applications.** *Journal of the American Chemical Society*  
Slavney, A. H., Hu, T., Lindenberg, A. M., Karunadasa, H. I.  
2016; 138 (7): 2138-2141
- **Transient terahertz photoconductivity measurements of minority-carrier lifetime in tin sulfide thin films: Advanced metrology for an early stage photovoltaic material** *JOURNAL OF APPLIED PHYSICS*  
Jaramillo, R., Sher, M., Ofori-Okai, B. K., Steinmann, V., Yang, C., Hartman, K., Nelson, K. A., Lindenberg, A. M., Gordon, R. G., Buonassisi, T.  
2016; 119 (3)
- **The origin of incipient ferroelectricity in lead telluride.** *Nature communications*  
Jiang, M. P., Trigo, M., Savic, I., Fahy, S., Murray, É. D., Bray, C., Clark, J., Henighan, T., Kozina, M., Chollet, M., Glowina, J. M., Hoffmann, M. C., Zhu, et al  
2016; 7: 12291-?
- **Ultrafast Terahertz Gating of the Polarization and Giant Nonlinear Optical Response in BiFeO<sub>3</sub> Thin Films** *ADVANCED MATERIALS*  
Chen, F., Goodfellow, J., Liu, S., Grinberg, I., Hoffmann, M. C., Damodaran, A. R., Zhu, Y., Zalden, P., Zhang, X., Takeuchi, I., Rappe, A. M., Martin, L. W., Wen, et al  
2015; 27 (41): 6371-?
- **Dynamic Structural Response and Deformations of Monolayer MoS<sub>2</sub> Visualized by Femtosecond Electron Diffraction** *NANO LETTERS*  
Mannebach, E. M., Li, R., Duerloo, K., Nyby, C., Zalden, P., Vecchione, T., Ernst, F., Reid, A. H., Chase, T., Shen, X., Weathersby, S., Hast, C., Hettel, et al  
2015; 15 (10): 6889-6895
- **How Supercooled Liquid Phase-Change Materials Crystallize: Snapshots after Femtosecond Optical Excitation** *CHEMISTRY OF MATERIALS*  
Zalden, P., von Hoegen, A., Landreman, P., Wuttig, M., Lindenberg, A. M.

2015; 27 (16): 5641-5646

- **THz-Pulse-Induced Selective Catalytic CO Oxidation on Ru.** *Physical review letters*  
Larue, J. L., Katayama, T., Lindenberg, A., Fisher, A. S., Öström, H., Nilsson, A., Ogasawara, H.  
2015; 115 (3): 036103-?
- **THz-Pulse-Induced Selective Catalytic CO Oxidation on Ru** *PHYSICAL REVIEW LETTERS*  
Larue, J. L., Katayama, T., Lindenberg, A., Fisher, A. S., Ostrom, H., Nilsson, A., Ogasawara, H.  
2015; 115 (3)
- **Mega-electron-volt ultrafast electron diffraction at SLAC National Accelerator Laboratory** *REVIEW OF SCIENTIFIC INSTRUMENTS*  
WEATHERSBY, S. P., Brown, G., Centurion, M., CHASE, T. F., Coffee, R., Corbett, J., Eichner, J. P., Frisch, J. C., Fry, A. R., Guehr, M., Hartmann, N., Hast, C., HETTEL, et al  
2015; 86 (7)
- **Visualization of nanocrystal breathing modes at extreme strains** *NATURE COMMUNICATIONS*  
Szilagy, E., Wittenberg, J. S., Miller, T. A., Lutker, K., Quirin, F., Lemke, H., Zhu, D., Chollet, M., Robinson, J., Wen, H., Sokolowski-Tinten, K., Lindenberg, A. M.  
2015; 6
- **Color Switching with Enhanced Optical Contrast in Ultrathin Phase-Change Materials and Semiconductors Induced by Femtosecond Laser Pulses** *ACS PHOTONICS*  
Schlich, F. F., Zalden, P., Lindenberg, A. M., Spolenak, R.  
2015; 2 (2): 178-182
- **Ultrafast Terahertz Gating of the Polarization and Giant Nonlinear Optical Response in BiFeO<sub>3</sub> Thin Films.** *Advanced materials (Deerfield Beach, Fla.)*  
Chen, F., Goodfellow, J., Liu, S., Grinberg, I., Hoffmann, M. C., Damodaran, A. R., Zhu, Y., Zalden, P., Zhang, X., Takeuchi, I., Rappe, A. M., Martin, L. W., Wen, et al  
2015; 27 (41): 6371-75
- **Ultrafast electronic and structural response of monolayer MoS<sub>2</sub> under intense photoexcitation conditions.** *ACS nano*  
Mannebach, E. M., Duerloo, K. N., Pellouchoud, L. A., Sher, M., Nah, S., Kuo, Y., Yu, Y., Marshall, A. F., Cao, L., Reed, E. J., Lindenberg, A. M.  
2014; 8 (10): 10734-10742
- **Room-temperature stabilization of nanoscale superionic Ag<sub>2</sub>Se** *NANOTECHNOLOGY*  
Hu, T., Wittenberg, J. S., Lindenberg, A. M.  
2014; 25 (41)
- **Room-temperature stabilization of nanoscale superionic Ag<sub>2</sub>Se.** *Nanotechnology*  
Hu, T., Wittenberg, J. S., Lindenberg, A. M.  
2014; 25 (41): 415705-?
- **Ultrafast Electronic and Structural Response of Monolayer MoS<sub>2</sub> under Intense Photoexcitation Conditions** *ACS NANO*  
Mannebach, E. M., Duerloo, K. N., Pellouchoud, L. A., Sher, M., Nah, S., Kuo, Y., Yu, Y., Marshall, A. F., Cao, L., Reed, E. J., Lindenberg, A. M.  
2014; 8 (10): 10734-10742
- **Reversible Optical Switching of Infrared Antenna Resonances with Ultrathin Phase-Change Layers Using Femtosecond Laser Pulses** *ACS PHOTONICS*  
Michel, A. U., Zalden, P., Chigrin, D. N., Wuttig, M., Lindenberg, A. M., Taubner, T.  
2014; 1 (9): 833-839
- **Ultrafast polarization response of an optically trapped single ferroelectric nanowire.** *Nano letters*  
Nah, S., Kuo, Y., Chen, F., Park, J., Sinclair, R., Lindenberg, A. M.  
2014; 14 (8): 4322-4327
- **Picosecond carrier recombination dynamics in chalcogen-hyperdoped silicon** *APPLIED PHYSICS LETTERS*  
Sher, M., Simmons, C. B., Krich, J. J., Akey, A. J., Winkler, M. T., Recht, D., Buonassisi, T., Aziz, M. J., Lindenberg, A. M.  
2014; 105 (5)
- **Below gap optical absorption in GaAs driven by intense, single-cycle coherent transition radiation** *OPTICS EXPRESS*  
Goodfellow, J., Fuchs, M., Daranciang, D., Ghimire, S., Chen, F., Loos, H., Reis, D. A., Fisher, A. S., Lindenberg, A. M.  
2014; 22 (14): 17423-17429

- **Ultrafast terahertz-induced response of GeSbTe phase-change materials** *APPLIED PHYSICS LETTERS*  
Shu, M. J., Zalden, P., Chen, F., Weems, B., Chatzakis, I., Xiong, F., Jeyasingh, R., Hoffmann, M. C., Pop, E., Wong, H. P., Wuttig, M., Lindenberg, A. M.  
2014; 104 (25)
- **Measurement of transient atomic displacements in thin films with picosecond and femtometer resolution** *STRUCTURAL DYNAMICS-US*  
Kozina, M., Hu, T., Wittenberg, J. S., Szilagy, E., Trigo, M., Miller, T. A., Uher, C., Damodaran, A., Martin, L., Mehta, A., Corbett, J., Safranek, J., Reis, et al  
2014; 1 (3)
- **Real-time visualization of nanocrystal solid-solid transformation pathways.** *Nano letters*  
Wittenberg, J. S., Miller, T. A., Szilagy, E., Lutker, K., Quirin, F., Lu, W., Lemke, H., Zhu, D., Chollet, M., Robinson, J., Wen, H., Sokolowski-Tinten, K., Alivisatos, et al  
2014; 14 (4): 1995-1999
- **Fourier-transform inelastic X-ray scattering from time- and momentum-dependent phonon-phonon correlations** *NATURE PHYSICS*  
Trigo, M., Fuchs, M., Chen, J., Jiang, M. P., Cammarata, M., Fahy, S., Fritz, D. M., Gaffney, K., Ghimire, S., Higginbotham, A., Johnson, S. L., Kozina, M. E., Larsson, et al  
2013; 9 (12): 790-794
- **High-pressure Raman spectroscopy of phase change materials** *APPLIED PHYSICS LETTERS*  
Hsieh, W., Zalden, P., Wuttig, M., Lindenberg, A. M., Mao, W. L.  
2013; 103 (19)
- **Ultrafast sub-threshold photo-induced response in crystalline and amorphous GeSbTe thin films** *APPLIED PHYSICS LETTERS*  
Shu, M. J., Chatzakis, I., Kuo, Y., Zalden, P., Lindenberg, A. M.  
2013; 102 (20)
- **Intense terahertz pulses from SLAC electron beams using coherent transition radiation.** *Review of scientific instruments*  
Wu, Z., Fisher, A. S., Goodfellow, J., Fuchs, M., Daranciang, D., Hogan, M., Loos, H., Lindenberg, A.  
2013; 84 (2): 022701-?
- **Intense terahertz pulses from SLAC electron beams using coherent transition radiation** *REVIEW OF SCIENTIFIC INSTRUMENTS*  
Wu, Z., Fisher, A. S., Goodfellow, J., Fuchs, M., Daranciang, D., Hogan, M., Loos, H., Lindenberg, A.  
2013; 84 (2)
- **The mechanism of ultrafast structural switching in superionic copper (I) sulphide nanocrystals** *NATURE COMMUNICATIONS*  
Miller, T. A., Wittenberg, J. S., Wen, H., Connor, S., Cui, Y., Lindenberg, A. M.  
2013; 4
- **Ultrafast laser-induced melting and ablation studied by time-resolved diffuse X-ray scattering** *18th International Conference on Ultrafast Phenomena*  
Nicoul, M., QUIRIN, F., Lindenberg, A. M., Barty, A., Fritz, D. M., Zhu, D., Lemke, H., Chollet, M., Reis, D. A., Chen, J., Ghimire, S., Trigo, M., Fuchs, et al  
E D P SCIENCES.2013
- **Photon-Counting Detectors for Pump-Probe Science** *60th IEEE Nuclear Science Symposium (NSS) / Medical Imaging Conference (MIC) / 20th International Workshop on Room-Temperature Semiconductor X-ray and Gamma-ray Detectors*  
Kenney, C. J., Dragone, A. B., Segal, J. D., Hasi, J., Mehta, A., Reis, D. A., Markovic, B., Caraguilo, P., Carini, G., Herrmann, S. C., Lindenberg, A. M., Haller, G.  
IEEE.2013
- **Fourier-transform inelastic X-ray scattering from time and momentum dependent phonon-phonon correlations** *Nat. Phys.*  
Trigo, M., Fuchs, M., Chen, J., Jiang, M., P., Cammarata, M., Fahy, S., Lindenberg, A. M.  
2013
- **High-pressure Raman spectroscopy of phase change materials** *Appl. Phys. Lett.*  
Hsieh, W., Zalden, P., Wuttig, M., Lindenberg, A. M., Mao, W., L.  
2013; 103: 191108
- **Ultrafast Photovoltaic Response in Ferroelectric Nanolayers** *PHYSICAL REVIEW LETTERS*  
Daranciang, D., Highland, M. J., Wen, H., Young, S. M., Brandt, N. C., Hwang, H. Y., Vattilana, M., Nicoul, M., Quirin, F., Goodfellow, J., Qi, T., Grinberg, I., Fritz, et al  
2012; 108 (8)

- **Optical Probes of Ultrafast Electron Dynamics in Photoexcited Ferroelectrics** *Conference on Lasers and Electro-Optics (CLEO)*  
Goodfellow, J., Daranciang, D., Lindenberg, A.  
IEEE.2012
- **Ultrafast x-ray spectroscopic and scattering studies of nanoscale superionic phase transitions** *Conference on Lasers and Electro-Optics (CLEO)*  
Miller, T. A., Wittenberg, J., Wen, H., Lindenberg, A. M.  
IEEE.2012
- **Ultrafast Optical and X-ray Probes of Nanoscale Solid-Liquid Phase Transformations** *Conference on Lasers and Electro-Optics (CLEO)*  
Wittenberg, J., Miller, T. A., Wen, H., Lindenberg, A. M.  
IEEE.2012
- **Observations of laser induced magnetization dynamics in Co/Pd multilayers with coherent x-ray scattering** *APPLIED PHYSICS LETTERS*  
Wu, B., Zhu, D., Acremann, Y., Miller, T. A., Lindenberg, A. M., Hellwig, O., Stoeck, J., Scherz, A.  
2011; 99 (25)
- **Single-cycle terahertz pulses with > 0.2 V/angstrom field amplitudes via coherent transition radiation** *APPLIED PHYSICS LETTERS*  
Daranciang, D., Goodfellow, J., Fuchs, M., Wen, H., Ghimire, S., Reis, D. A., Loos, H., Fisher, A. S., Lindenberg, A. M.  
2011; 99 (14)
- **Observation of Transient Structural-Transformation Dynamics in a Cu<sub>2</sub>S Nanorod** *SCIENCE*  
Zheng, H., Rivest, J. B., Miller, T. A., Sadtler, B., Lindenberg, A., Toney, M. F., Wang, L., Kisielowski, C., Alivisatos, A. P.  
2011; 333 (6039): 206-209
- **Generation of > 100 mu J, Broadband THz Transients with > 10 MV/cm Fields via Coherent Transition Radiation at the Linac Coherent Light Source** *Conference on Lasers and Electro-Optics (CLEO)*  
Daranciang, D., Goodfellow, J., Ghimire, S., Loos, H., Reis, D., Fisher, A. S., Lindenberg, A. M.  
IEEE.2011
- **High-speed all-optical terahertz polarization switching by a transient plasma phase modulator** *APPLIED PHYSICS LETTERS*  
Wen, H., Daranciang, D., Lindenberg, A. M.  
2010; 96 (16)
- **Ultrafast Conversions of Hydrogen-Bonded Structures in Liquid Water Observed via Femtosecond Soft X-Ray Spectroscopy**  
Huse, N., Wen, H., Cho, H., Kim, T., Schoenlein, R. W., Lindenberg, A., M.  
2010
- **High-intensity THz interactions with materials: New aspects and applications** *International Symposium on High Power Laser Ablation 2010*  
Daranciang, D., Wen, H., Lindenberg, A. M.  
AMER INST PHYSICS.2010: 17-25
- **Light-Induced Modulation of Ferroelectric Polarization Probed Using Time-Resolved X-Ray Scattering**  
Daranciang, D., Wen, H., Highland, M., Perkins, B., Brandt, N., Nelson, K., Lindenberg, A. M.  
2010
- **Ultrafast conversions between hydrogen bonded structures in liquid water observed by femtosecond x-ray spectroscopy** *JOURNAL OF CHEMICAL PHYSICS*  
Wen, H., Huse, N., Schoenlein, R. W., Lindenberg, A. M.  
2009; 131 (23)
- **Coherent Terahertz Polarization Control through Manipulation of Electron Trajectories** *PHYSICAL REVIEW LETTERS*  
Wen, H., Lindenberg, A. M.  
2009; 103 (2)
- **Probing the hydrogen-bond network of water via time-resolved soft X-ray spectroscopy** *PHYSICAL CHEMISTRY CHEMICAL PHYSICS*  
Huse, N., Wen, H., Nordlund, D., Szilagyi, E., Daranciang, D., Miller, T. A., Nilsson, A., Schoenlein, R. W., Lindenberg, A. M.  
2009; 11 (20): 3951-3957
- **Ultrafast Electron Cascades Driven by Intense Femtosecond THz Pulses** *16th International Conference on Ultrafast Phenomena*  
Wen, H., Wiczor, M., Lindenberg, A.

SPRINGER-VERLAG BERLIN.2009: 654–656

- **Coherent Control of the Polarization of Ultrafast Terahertz Pulses** *Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference (CLEO/QELS 2009)*  
Wen, H., Lindenberg, A.  
IEEE.2009: 640–641
- **Ultrafast electron cascades in semiconductors driven by intense femtosecond terahertz pulses** *PHYSICAL REVIEW B*  
Wen, H., Wiczler, M., Lindenberg, A. M.  
2008; 78 (12)
- **X-ray diffuse scattering measurements of nucleation dynamics at femtosecond resolution** *PHYSICAL REVIEW LETTERS*  
Lindenberg, A. M., Engemann, S., Gaffney, K. J., Sokolowski-Tinten, K., Larsson, J., Hillyard, P. B., Reis, D. A., Fritz, D. M., ARTHUR, J., Akre, R. A., George, M. J., Deb, A., Bucksbaum, et al  
2008; 100 (13)
- **Formation of secondary electron cascades in single-crystalline plasma-deposited diamond upon exposure to femtosecond x-ray pulses** *JOURNAL OF APPLIED PHYSICS*  
Gabrysich, M., Marklund, E., Hajdu, J., Twitchen, D. J., Rudati, J., Lindenberg, A. M., Caleman, C., Falcone, R. W., Tschentscher, T., Moffat, K., Bucksbaum, P. H., Als-Nielsen, J., Nelson, et al  
2008; 103 (6)
- **Femtosecond x-ray diffuse scattering measurements of semiconductor ablation dynamics** *Conference on High-Power Laser Ablation VII*  
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