

Stanford



Ming-Fu Lin (###)

Staff Scientist, SLAC National Accelerator Laboratory

Bio

CURRENT ROLE AT STANFORD

I am interested in ultrafast sciences (using X-ray, electron diffraction and transient absorption spectroscopy to study ultrafast dynamics of molecules in gas, liquid and materials).

EDUCATION AND CERTIFICATIONS

- PhD, University of California at Berkeley , Physical Chemistry
- MS, National Taiwan University , Chemistry
- BS, National Taiwan Normal University , Chemistry

PROJECTS

- Fresnel Zone plate development for single shot X-ray spectrum - LCLS, SLAC National Accelerator Laboratory (8/1/2019 - present)
- Slit-jet sample delivery for UED - LCLS, SLAC National Accelerator Laboratory (August 1, 2022 - present)
- Pyrolysis source for TMO - LCLS, SLAC National Accelerator Laboratory (February 1, 2023 - present)
- New sample delivery for DREAM endstation - LCLS, SLAC National Accelerator Laboratory (January 1, 2023 - present)

LINKS

- linkedin: <https://www.linkedin.com/in/mingfulinslac/>

Professional

WORK EXPERIENCE

- Staff Scientist - LCLS, SLAC National Accelerator Laboratory (10/1/2021 - present)
- Associate Staff Scientist - LCLS, SLAC National Accelerator Laboratory (7/16/2018 - 9/30/2021)
- Experimental Research Assoicate - SLAC National Accelerator Laboratory (3/15/2016 - 7/15/2018)
- Postdoc Researcher - University of Illinois at Urbana Champaign (9/20/2013 - 3/1/2016)
- Research Assistant - Institute of Atomic and Molecular Science, Academia Sinica (10/1/2003 - 12/20/2007)

Publications

PUBLICATIONS

- **Large Exchange Coupling Between Localized Spins and Topological Bands in Magnetic Topological Insulator MnBi₂Te₄.** *Advanced materials (Deerfield Beach, Fla.)*, Padmanabhan, H., Stoica, V. A., Kim, P. K., Poore, M., Yang, T., Shen, X., Reid, A. H., Lin, M., Park, S., Yang, J., Hugo Wang, H., Koocher, N. Z., Puggioni, et al

2022: e2202841

● **The DREAM Endstation at the Linac Coherent Light Source *APPLIED SCIENCES-BASEL***

Walter, P., Holmes, M., Obaid, R., Amores, L., Cheng, X., Cryan, J. P., Glownia, J. M., Li, X., Lin, M., Ng, M., Robinson, J., Shivaram, N., Yin, et al
2022; 12 (20)

● **The time-resolved atomic, molecular and optical science instrument at the Linac Coherent Light Source. *Journal of synchrotron radiation***

Walter, P., Osipov, T., Lin, M. F., Cryan, J., Driver, T., Kamalov, A., Marinelli, A., Robinson, J., Seaberg, M. H., Wolf, T. J., Aldrich, J., Brown, N., Champenois, et al
2022; 29 (Pt 4): 957-968

● **Multichannel photodissociation dynamics in CS2 studied by ultrafast electron diffraction. *Physical chemistry chemical physics : PCCP***

Razmus, W. O., Acheson, K., Bucksbaum, P., Centurion, M., Champenois, E., Gabalski, I., Hoffman, M. C., Howard, A., Lin, M., Liu, Y., Nunes, P., Saha, S., Shen, et al
2022

● **Enhanced charge density wave coherence in a light-quenched, high-temperature superconductor. *Science (New York, N.Y.)***

Wandel, S., Boschini, F., da Silva Neto, E. H., Shen, L., Na, M. X., Zohar, S., Wang, Y., Welch, S. B., Seaberg, M. H., Koralek, J. D., Dakovski, G. L., Hettel, W., Lin, et al
2022; 376 (6595): 860-864

● **Attosecond coherent electron motion in Auger-Meitner decay. *Science (New York, N.Y.)***

Li, S., Driver, T., Rosenberger, P., Champenois, E. G., Duris, J., Al-Haddad, A., Averbukh, V., Barnard, J. C., Berrah, N., Bostedt, C., Bucksbaum, P. H., Coffee, R. N., DiMauro, et al
1800: eabj2096

● **The X-ray Focusing System at the Time-Resolved AMO Instrument *Synchrotron Radiation News***

Seaberg, M., et al
2022; 35 (2): 20-28

● **Aggregation of solutes in bosonic versus fermionic quantum fluids. *Science advances***

Feinberg, A. J., Verma, D., O'Connell-Lopez, S. M., Erukala, S., Tanyag, R. M., Pang, W., Saladrigas, C. A., Toulson, B. W., Borgwardt, M., Shivaram, N., Lin, M. F., Al Haddad, A., Jäger, et al
2021; 7 (50): eabk2247

● **Carrier-Specific Hot Phonon Bottleneck in CH₃NH₃PbI₃ Revealed by Femtosecond XUV Absorption. *Journal of the American Chemical Society***

Verkamp, M., Leveillee, J., Sharma, A., Lin, M. F., Schleife, A., Vura-Weis, J.
2021; 143 (48): 20176-20182

● **Imaging the short-lived hydroxyl-hydronium pair in ionized liquid water. *Science (New York, N.Y.)***

Lin, M., Singh, N., Liang, S., Mo, M., Nunes, J. P., Ledbetter, K., Yang, J., Kozina, M., Weathersby, S., Shen, X., Cordones, A. A., Wolf, T. J., Pemmaraju, et al
2021; 374 (6563): 92-95

● **Spontaneous fluctuations in a magnetic Fe/Gd skyrmion lattice *PHYSICAL REVIEW RESEARCH***

Seaberg, M. H., Holladay, B., Montoya, S. A., Zheng, X. Y., Lee, J. T., Reid, A. H., Koralek, J. D., Shen, L., Esposito, Coslovich, G., Walter, P., Zohar, S., Thampy, Lin, et al
2021; 3 (3)

● **Direct observation of ultrafast hydrogen bond strengthening in liquid water. *Nature***

Yang, J., Dettori, R., Nunes, J. P., List, N. H., Biasin, E., Centurion, M., Chen, Z., Cordones, A. A., Deponte, D. P., Heinz, T. F., Kozina, M. E., Ledbetter, K., Lin, et al
2021; 596 (7873): 531-535

● **Probing the interplay between lattice dynamics and short-range magnetic correlations in CuGeO₃ with femtosecond RIXS *NPJ QUANTUM MATERIALS***

Paris, E., Nicholson, C. W., Johnston, S., Tseng, Y., Rumo, M., Coslovich, G., Zohar, S., Lin, M. F., Strocov, V. N., Saint-Martin, R., Revcolevschi, A., Kemper, A., Schlotter, et al
2021; 6 (1)

● **Dynamic lattice distortions driven by surface trapping in semiconductor nanocrystals. *Nature communications***

Guzelturk, B., Cotts, B. L., Jasrasaria, D., Philbin, J. P., Hanifi, D. A., Koscher, B. A., Balan, A. D., Curling, E., Zajac, M., Park, S., Yazdani, N., Nyby, C., Kamysbayev, et al

2021; 12 (1): 1860

● **Electron-ion coincidence measurements of molecular dynamics with intense X-ray pulses.** *Scientific reports*

Li, X., Inhester, L., Osipov, T., Boll, R., Coffee, R., Cryan, J., Gatton, A., Gorkhover, T., Hartman, G., Ilchen, M., Knie, A., Lin, M., Minitti, et al
2021; 11 (1): 505

● **Conformer-specific photochemistry imaged in real space and time.** *Science (New York, N.Y.)*

Champenois, E. G., Sanchez, D. M., Yang, J., Figueira Nunes, J. P., Attar, A., Centurion, M., Forbes, R., Gühr, M., Hegazy, K., Ji, F., Saha, S. K., Liu, Y., Lin, et al
2021; 374 (6564): 178-182

● **Carrier-specific dynamics in 2H-MoTe2 observed by femtosecond soft x-ray absorption spectroscopy using an x-ray free-electron laser.** *Structural dynamics (Melville, N.Y.)*

Britz, A., Attar, A. R., Zhang, X., Chang, H., Nyby, C., Krishnamoorthy, A., Park, S. H., Kwon, S., Kim, M., Nordlund, D., Sainio, S., Heinz, T. F., Leone, et al
2021; 8 (1): 014501

● **Structure retrieval in liquid-phase electron scattering.** *Physical chemistry chemical physics : PCCP*

Yang, J., Nunes, J. P., Ledbetter, K., Biasin, E., Centurion, M., Chen, Z., Cordones, A. A., Crissman, C., Deponte, D. P., Glenzer, S. H., Lin, M., Mo, M., Rankine, et al
2020

● **Photodissociation of aqueous I3- observed with liquid-phase ultrafast mega-electronvolt electron diffraction** *Structural Dynamics*

Ledbetter, K., et al
2020; 21: 10

● **Simultaneous Observation of Carrier-Specific Redistribution and Coherent Lattice Dynamics in 2H-MoTe2 with Femtosecond Core-Level Spectroscopy.** *ACS nano*

Attar, A. R., Chang, H., Britz, A., Zhang, X., Lin, M., Krishnamoorthy, A., Linker, T., Fritz, D., Neumark, D. M., Kalia, R. K., Nakano, A., Ajayan, P., Vashishta, et al
2020

● **Tunable isolated attosecond X-ray pulses with gigawatt peak power from a free-electron laser** *NATURE PHOTONICS*

Duris, J., Li, S., Driver, T., Champenois, E. G., MacArthur, J. P., Lutman, A. A., Zhang, Z., Rosenberger, P., Aldrich, J. W., Coffee, R., Coslovich, G., Decker, F., Glownia, et al
2020; 14 (1): 30-+

● **Optical Control of Non-Equilibrium Phonon Dynamics.** *Nano letters*

Krishnamoorthy, A., Lin, M., Zhang, X., Weninger, C., Ma, R., Britz, A., Tiwary, C. S., Kochat, V., Apte, A., Yang, J., Park, S., Li, R., Shen, et al
2019

● **Phonon-Suppressed Auger Scattering of Charge Carriers in Defective Two-Dimensional Transition Metal Dichalcogenides.** *Nano letters*

Li, L. n., Lin, M. F., Zhang, X. n., Britz, A. n., Krishnamoorthy, A. n., Ma, R. n., Kalia, R. K., Nakano, A. n., Vashishta, P. n., Ajayan, P. n., Hoffmann, M. C., Fritz, D. M., Bergmann, et al
2019

● **Tabletop Femtosecond M-edge X-ray Absorption Near-Edge Structure of FeTPPCI: Metalloporphyrin Photophysics from the Perspective of the Metal** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*

Ryland, E. S., Lin, M., Verkamp, M. A., Zhang, K., Benke, K., Carlson, M., Vura-Weis, J.
2018; 140 (13): 4691–96

● **LCLS in-photon out: fluorescence measurement of neon using soft x-rays** *JOURNAL OF PHYSICS B-ATOMIC MOLECULAR AND OPTICAL PHYSICS*

Obaid, R., Buth, C., Dakovski, G. L., Beerwerth, R., Holmes, M., Aldrich, J., Lin, M., Minitti, M., Osipov, T., Schlotter, W., Cederbaum, L. S., Fritzsche, S., Berrah, et al
2018; 51 (3)

● **Carrier-Specific Femtosecond XUV Transient Absorption of PbI2 Reveals Ultrafast Nonradiative Recombination** *JOURNAL OF PHYSICAL CHEMISTRY C*

Lin, M., Verkamp, M. A., Leveillee, J., Ryland, E. S., Benke, K., Zhang, K., Weninger, C., Shen, X., Li, R., Fritz, D., Bergmann, U., Wang, X., Schleife, et al
2017; 121 (50): 27886–93

● **Ultrafast non-radiative dynamics of atomically thin MoSe2** *NATURE COMMUNICATIONS*

Lin, M., Kochat, V., Krishnamoorthy, A., Bassman, L., Weninger, C., Zheng, Q., Zhang, X., Apte, A., Tiwary, C., Shen, X., Li, R., Kalia, R., Ajayan, et al

2017; 8: 1745

- **A novel method for resonant inelastic soft X-ray scattering via photoelectron spectroscopy detection** *JOURNAL OF SYNCHROTRON RADIATION*
Dakovski, G. L., Lin, M., Damiani, D. S., Schlotter, W. F., Turner, J. J., Nordlund, D., Ogasawara, H.
2017; 24: 1180–86
- **Impact of spatial chirp on high-harmonic extreme ultraviolet absorption spectroscopy of thin films** *JOURNAL OF THE OPTICAL SOCIETY OF AMERICA B-OPTICAL PHYSICS*
Lin, M., Verkamp, M. A., Ryland, E. S., Zhang, K., Vura-Weis, J.
2016; 33 (9): 1986–92
- **Shrinking the Synchrotron: Tabletop Extreme Ultraviolet Absorption of Transition-Metal Complexes** *JOURNAL OF PHYSICAL CHEMISTRY LETTERS*
Zhang, K., Lin, M., Ryland, E. S., Verkamp, M. A., Benke, K., de Groot, F. F., Girolami, G. S., Vura-Weis, J.
2016; 7 (17): 3383–87
- **Sub-nanosecond time-resolved ambient-pressure X-ray photoelectron spectroscopy setup for pulsed and constant wave X-ray light sources** *REVIEW OF SCIENTIFIC INSTRUMENTS*
Shavorskiy, A., Neppl, S., Slaughter, D. S., Cryan, J. P., Siefermann, K. R., Weise, F., Lin, M., Bacellar, C., Ziemkiewicz, M. P., Zegkinoglou, I., Fraund, M. W., Khurmi, C., Hertlein, et al
2014; 85 (9): 093102
- **Atomic-Scale Perspective of Ultrafast Charge Transfer at a Dye-Semiconductor Interface** *JOURNAL OF PHYSICAL CHEMISTRY LETTERS*
Siefermann, K. R., Pemmaraju, C. D., Neppl, S., Shavorskiy, A., Cordones, A. A., Vura-Weis, J., Slaughter, D. S., Sturm, F. P., Weise, F., Bluhm, H., Strader, M. L., Cho, H., Lin, et al
2014; 5 (15): 2753–2759
- **Ionization and dissociation dynamics of vinyl bromide probed by femtosecond extreme ultraviolet transient absorption spectroscopy** *JOURNAL OF CHEMICAL PHYSICS*
Lin, M., Neumark, D. M., Gessner, O., Leone, S. R.
2014; 140 (6): 064311
- **Strong-field induced XUV transmission and multiplet splitting in 4d(-1)6p core-excited Xe studied by femtosecond XUV transient absorption spectroscopy** *JOURNAL OF CHEMICAL PHYSICS*
Lin, M., Pfeiffer, A. N., Neumark, D. M., Leone, S. R., Gessner, O.
2012; 137 (24): 244305
- **Photostability of amino acids: photodissociation dynamics of phenylalanine chromophores** *PHYSICAL CHEMISTRY CHEMICAL PHYSICS*
Tseng, C., Lin, M., Yang, Y., Ho, Y., Ni, C., Chang, J.
2010; 12 (19): 4989–95
- **Photodissociation dynamics of small aromatic molecules studied by multimass ion imaging** *JOURNAL OF PHYSICAL CHEMISTRY B*
Ni, C., Tseng, C., Lin, M., Dyakov, Y. A.
2007; 111 (44): 12631–42
- **Photodissociation dynamics of phenol** *JOURNAL OF PHYSICAL CHEMISTRY A*
Tseng, C., Lee, Y. T., Lin, M., Ni, C., Liu, S., Lee, Y., Xu, Z. F., Lin, M. C.
2007; 111 (38): 9463–70
- **Photodissociation of S atom containing amino acid chromophores** *JOURNAL OF CHEMICAL PHYSICS*
Lin, M., Dyakov, Y. A., Lee, Y. T., Lin, S. H., Mebel, A. M., Ni, C.
2007; 127 (6): 064308
- **Photostability of amino acids: Internal conversion versus dissociation** *JOURNAL OF CHEMICAL PHYSICS*
Lin, M., Tzeng, C., Dyakov, Y. A., Ni, C.
2007; 126 (24): 241104
- **Photodissociation dynamics of nitrobenzene and o-nitrotoluene** *JOURNAL OF CHEMICAL PHYSICS*
Lin, M., Lee, Y. T., Ni, C., Xu, S., Lin, M. C.
2007; 126 (6): 064310
- **Photodissociation dynamics of pyrimidine** *JOURNAL OF CHEMICAL PHYSICS*

Lin, M. F., Dyakov, Y. A., Tseng, C. M., Mebel, A. M., Lin, S. H., Lee, Y. T., Ni, C. K.
2006; 124 (8): 084303

● **Photodissociation and photoisomerization of #-fluorotoluene and 4-fluorotoluene in a molecular beam** *The Journal of Chemical Physics*

Huang, C., Jiang, J., Dyakov, Y., Lin, M., Tseng, C., Lin, S., Lee, Y., Ni, C.
2006; 125: 133305

● **Photodissociation dynamics of indole in a molecular beam** *JOURNAL OF CHEMICAL PHYSICS*

Lin, M. F., Tseng, C. M., Lee, Y. T., Ni, C. K.
2005; 123 (12): 124303

● **Photodissociation dynamics of pyridine** *JOURNAL OF CHEMICAL PHYSICS*

Lin, M. F., Dyakov, Y. A., Tseng, C. M., Mebel, A. M., Lin, S. H., Lee, Y. T., Ni, C. K.
2005; 123 (5): 054309

● **Photodissociation dynamics of C₆H_xF_{6-x} (x=1-4) at 193 nm** *JOURNAL OF PHYSICAL CHEMISTRY B*

Lin, M. F., Dyakov, Y. A., Lin, S. H., Lee, Y. T., Ni, C. K.
2005; 109 (17): 8344–49

● **Carbon-carbon bond cleavage in the photoionization of ethanol and 1-propanol clusters** *JOURNAL OF CHEMICAL PHYSICS*

Tsai, S. T., Jiang, J. C., Lin, M. F., Lee, Y. T., Ni, C. K.
2004; 120 (19): 8979–84

● **H and CH₃ eliminations in the photodissociation of chlorotoluene** *JOURNAL OF CHEMICAL PHYSICS*

Lin, M. F., Huang, C. L., Kislov, V. V., Mebel, A. M., Lee, Y. T., Ni, C. K.
2003; 119 (15): 7701–4

● **Photodissociation dynamics of azulene** *JOURNAL OF CHEMICAL PHYSICS*

Lin, M. F., Huang, C. L., Lee, Y. T., Ni, C. K.
2003; 119 (4): 2032–36