

Stanford



Amy Cordones-Hahn

Staff Scientist, SLAC National Accelerator Laboratory

Bio

BIO

I am a staff scientist in the Stanford PULSE Institute at SLAC National Accelerator Laboratory, where I work in the Solution Phase Chemistry Group. I am interested in understanding the excited state processes that drive photochemical reactions of transition metal complexes relevant for solar energy conversion and catalysis. My research takes advantage of the atomic specificity of ultrafast x-ray methods at the Linac Coherent Light Source (LCLS), coupled with complementary ultrafast optical spectroscopy methods, to resolve the dynamics and reaction mechanisms of transition metal complexes acting as photosensitizers and photocatalysts.

Research website: <https://ultrafast.stanford.edu/spc-solution-phase-chemistry>

EDUCATION AND CERTIFICATIONS

- PhD, University of California Berkeley , Chemistry (2012)
- B.A./M.S., Brandeis University , Chemistry (2007)

LINKS

- Research Group Website: <https://ultrafast.stanford.edu/spc-solution-phase-chemistry>

Professional

PROFESSIONAL AFFILIATIONS AND ACTIVITIES

- Principal Investigator, Stanford PULSE Institute (2015 - present)

Publications

PUBLICATIONS

- **Following Metal-to-Ligand Charge-Transfer Dynamics with Ligand and Spin Specificity Using Femtosecond Resonant Inelastic X-ray Scattering at the Nitrogen K-Edge.** *The journal of physical chemistry letters*
Jay, R. M., Eckert, S., Van Kuiken, B. E., Ochmann, M., Hantschmann, M., Cordones, A. A., Cho, H., Hong, K., Ma, R., Lee, J. H., Dakovski, G. L., Turner, J. J., Minitti, et al
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- **Direct observation of coherent femtosecond solvent reorganization coupled to intramolecular electron transfer.** *Nature chemistry*
Biasin, E., Fox, Z. W., Andersen, A., Ledbetter, K., Kjar, K. S., Alonso-Mori, R., Carlstad, J. M., Chollet, M., Gaynor, J. D., Glowonia, J. M., Hong, K., Kroll, T., Lee, et al
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- **Excited-State Charge Distribution of a Donor- π -Acceptor Zn Porphyrin Probed by N K-Edge Transient Absorption Spectroscopy.** *The journal of physical chemistry letters*

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2020
- **Photophysics of graphene quantum dot assemblies with axially coordinated cobaloxime catalysts.** *The Journal of chemical physics*
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Kunnus, K., Li, L., Titus, C., Lee, S., Reinhard, M. E., Koroidov, S., Kjaer, K. S., Hong, K., Ledbetter, K., Doriese, W. B., O'Neil, G. C., Swetz, D. S., Ullom, et al
2020; 11 (17): 4360–73
- **Liquid-phase mega-electron-volt ultrafast electron diffraction** *STRUCTURAL DYNAMICS-US*
Nunes, J. F., Ledbetter, K., Lin, M., Kozina, M., DePonte, D. P., Biasin, E., Centurion, M., Crissman, C. J., Dunning, M., Guillet, S., Jobe, K., Liu, Y., Mo, et al
2020; 7 (2): 024301
- **Excited state charge distribution and bond expansion of ferrous complexes observed with femtosecond valence-to-core x-ray emission spectroscopy.** *The Journal of chemical physics*
Ledbetter, K. n., Reinhard, M. E., Kunnus, K. n., Gallo, A. n., Britz, A. n., Biasin, E. n., Glowonia, J. M., Nelson, S. n., Van Driel, T. B., Weninger, C. n., Zederkof, D. B., Haldrup, K. n., Cordones, et al
2020; 152 (7): 074203
- **Chemical control of competing electron transfer pathways in iron tetracyano-polypyridyl photosensitizers.** *Chemical science*
Kunnus, K., Li, L., Titus, C. J., Lee, S. J., Reinhard, M. E., Koroidov, S., Kjaer, K. S., Hong, K., Ledbetter, K., Doriese, W. B., O'Neil, G. C., Swetz, D. S., Ullom, et al
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- **Author Correction: Generation and characterization of ultrathin free-flowing liquid sheets.** *Nature communications*
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- **Hot Branching Dynamics in a Light-Harvesting Iron Carbene Complex Revealed by Ultrafast X-ray Emission Spectroscopy.** *Angewandte Chemie (International ed. in English)*
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- **Probing the Electron Accepting Orbitals of Ni-Centered Hydrogen Evolution Catalysts with Noninnocent Ligands by Ni L-Edge and S K-Edge X-ray Absorption** *INORGANIC CHEMISTRY*
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2018; 57 (21): 13167–75
- **Author Correction: Generation and characterization of ultrathin free-flowing liquid sheets.** *Nature communications*
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- **UV-Photochemistry of the Disulfide Bond: Evolution of Early Photoproducts from Picosecond X-ray Absorption Spectroscopy at the Sulfur K-Edge** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
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- **Transient metal-centered states mediate isomerization of a photochromic rutheniumsulfoxide complex** *NATURE COMMUNICATIONS*
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- **Comprehensive Experimental and Computational Spectroscopic Study of Hexacyanoferrate Complexes in Water: From Infrared to X-ray Wavelengths** *JOURNAL OF PHYSICAL CHEMISTRY B*
Ross, M., Andersen, A., Fox, Z. W., Zhang, Y., Hong, K., Lee, J., Cordones, A., March, A., Doumy, G., Southworth, S. H., Marcus, M. A., Schoenlein, R. W., Mukamel, et al
2018; 122 (19): 5075–86
- **Generation and characterization of ultrathin free-flowing liquid sheets** *NATURE COMMUNICATIONS*
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- **Solvent control of charge transfer excited state relaxation pathways in [Fe(2,2'-bipyridine)(CN)(4)](2-)** *PHYSICAL CHEMISTRY CHEMICAL PHYSICS*
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- **Picosecond sulfur K-edge X-ray absorption spectroscopy with applications to excited state proton transfer** *STRUCTURAL DYNAMICS*
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- **Soft X-ray spectroscopy studies of adsorption and reaction of CO in the presence of H₂ over 6 nm MnO nanoparticles supported on mesoporous Co₃O₄** *SURFACE SCIENCE*
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- **Atomic-Scale Perspective of Ultrafast Charge Transfer at a Dye-Semiconductor Interface** *JOURNAL OF PHYSICAL CHEMISTRY LETTERS*
Siefertmann, K. R., Pemmaraju, C. D., Nepl, 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
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- **Linking On-State Memory and Distributed Kinetics in Single Nanocrystal Blinking** *JOURNAL OF PHYSICAL CHEMISTRY B*
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2013; 117 (16): 4241–48
- **Effect of Thermal Annealing in Ammonia on the Properties of InGaN Nanowires with Different Indium Concentrations** *JOURNAL OF PHYSICAL CHEMISTRY C*
Hahn, C., Cordones, A. A., Andrews, S. C., Gao, H., Fu, A., Leone, S. R., Yang, P.
2013; 117 (7): 3627-3634
- **Time-Resolved X-Ray Photoelectron Spectroscopy Techniques For Real-Time Studies Of Interfacial Charge Transfer Dynamics** *22nd International Conference on the Application of Accelerators in Research and Industry (CAARI)*

Shavorskiy, A., Cordones, A., Vura-Weis, J., Siefertmann, K., Slaughter, D., Sturm, F., Weise, F., Bluhm, H., Strader, M., Cho, H., Lin, M., Bacellar, C., Khurmi, et al

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- **Probing the Interaction of Single Nanocrystals with Inorganic Capping Ligands: Time-Resolved Fluorescence from CdSe-CdS Quantum Dots Capped with Chalcogenidometalates** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
Cordones, A. A., Scheele, M., Alivisatos, A., Leone, S. R.
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- **CdSe/ZnS quantum dot intermittency in N,N'-diphenyl-N,N'-bis(3-methylphenyl)-(1,1'-biphenyl)-4,4'-diamine (TPD)** *CHEMICAL PHYSICS LETTERS*
Bixby, T. J., Cordones, A. A., Leone, S. R.
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Cordones, A. A., Bixby, T. J., Leone, S. R.
2011; 11 (8): 3366–69
- **Evidence for Multiple Trapping Mechanisms in Single CdSe/ZnS Quantum Dots from Fluorescence Intermittency Measurements over a Wide Range of Excitation Intensities** *JOURNAL OF PHYSICAL CHEMISTRY C*
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