Stanford

Amy Cordones-Hahn

Lead 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/solution-phase-chemistry-group-pulse

INSTITUTE AFFILIATIONS

- Principal Investigator, Stanford PULSE Institute

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

- **Selective CO₂ Reduction by Bis(bipyridine)cobalt(II) Catalysts: The Role of Pendant Pyridine as a Proton Acceptor** *ACS CATALYSIS*
  Xie, Z., Hu, W., Gupta, N., Kohler, L., Niklas, J., Poluektov, O. G., Woods, T. J., Zapol, P., Cordones, A. A., Glusac, K. D., Mulfort, K. L.
  2026
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2026

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- **Revealing Parallel Inter- and Intra-ligand Charge Transfer Dynamics in [Ru(L)2(dppz)]2+ Molecular Lightswitch with N K-edge X-ray Absorption Spectroscopy.** *Angewandte Chemie (International ed. in English)*

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- **Photolytic activation of Ni(II)X2L explains how Ni-mediated cross coupling begins.** *Nature communications*

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- **Excited State Covalency, Dynamics, and Photochemistry of Square Planar Ni-Thiolate Complexes Revealed by Ultrafast X-ray Absorption.** *Journal of the American Chemical Society*

  Lim, H., Yang, X., Larsen, C. B., Ledbetter, K., Zoric, M. R., Raj, S. L., Kumar, G., Powers-Riggs, N., Hoffmann, M. C., Chollet, M., Gee, L. B., van Driel, T. B., Alonso-Mori, et al

  2025

- **Multiconfigurational Electronic Structure of Nickel Cross-Coupling Catalysts Revealed by X-ray Absorption Spectroscopy.** *The journal of physical chemistry letters*

  Nelson, K. J., Kazmierczak, N. P., Cagan, D. A., Follmer, A. H., Scott, T. R., Raj, S. L., Garratt, D., Powers-Riggs, N., Gaffney, K. J., Hadt, R. G., Cordones, A. A.

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- **Metal-Ligand Covalency in the Valence Excited States of Metal Dithiolenes Revealed by S 1s3p Resonant Inelastic X-ray Scattering.** *Journal of the American Chemical Society*

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- **Time-Resolved X-ray Emission Spectroscopy and Synthetic High-Spin Model Complexes Resolve Ambiguities in Excited-State Assignments of Transition-Metal Chromophores: A Case Study of Fe-Amido Complexes.** *Journal of the American Chemical Society*

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- **Observation of a Picosecond Light-Induced Spin Transition in Polymeric Nanorods.** *ACS nano*

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  Ledbetter, K., Larsen, C. B., Lim, H., Zoric, M. R., Koroidov, S., Pemmaraju, C. D., Gaffney, K. J., Cordones, A. A.
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2020

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- **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*
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- **Author Correction: Generation and characterization of ultrathin free-flowing liquid sheets.** *Nature communications*
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