



Robert W Schoenlein

Research Technical Manager, SLAC National Accelerator Laboratory

 Curriculum Vitae available Online

Bio

BIO

Dr. Schoenlein is the Deputy Director for Science at the SLAC Linac Coherent Light Source (LCLS), and is a P.I. in the Stanford PULSE Institute at SLAC. His research interests are in the application of ultrafast X ray spectroscopy and scattering techniques to investigate atomic and electronic structural dynamics in condensed matter including transition-metal complexes, molecular dynamics in solution, and electronic phase transitions in correlated electron systems. Prior to joining SLAC National Accelerator Laboratory in 2015, Dr. Schoenlein was a Senior Staff Scientist at LBNL with research programs in the Chemical Sciences and Materials Sciences Divisions. He also served as the Deputy Director for Science at the Advanced Light Source, and as scientific lead for the Next Generation Light Source Initiative at LBNL. Dr. Schoenlein received S.B., S.M., and Ph.D. degrees from the Massachusetts Institute of Technology, is a Fellow of the American Physical Society, and a recipient of the Adolph Lomb Medal from the Optical Society of America.

CURRENT ROLE AT STANFORD

Deputy Director for Science at the Linac Coherent Light Source

Principal Investigator in the Stanford PULSE Institute at SLAC

INSTITUTE AFFILIATIONS

- Member, Stanford PULSE Institute

HONORS AND AWARDS

- APS Fellow: "for seminal contributions to ultrafast science using lasers and synchrotron radiation", American Physical Society
- Klaus Halbach Award, Advanced Light Source, LBNL (1996)
- Klaus Halbach Award, Advanced Light Source, LBNL (2000)
- Adolph Lomb Medal, Honoring noteworthy contribution to optics before the age of 30, Optical Society of America (1994)
- Newport Research Award, Newport Corp. (1988)
- NCAA Postgraduate Scholarship, NCAA (1984-1985)
- Hertz Foundation Scholarship, Fannie and John Hertz Foundation (1980-1984)

EDUCATION AND CERTIFICATIONS

- Ph.D., Massachusetts Institute of Technology (1989)
- S.M., Massachusetts Institute of Technology (1987)
- S.B., Massachusetts Institute of Technology (1984)

LINKS

- Publication List (Google Scholar): <https://tinyurl.com/ry7k8my>
- Linac Coherent Light Source (LCLS): <https://lcls.slac.stanford.edu/>

Publications

PUBLICATIONS

- **Uncovering the 3d and 4d Electronic Interactions in Solvated Ru Complexes with 2p3d Resonant Inelastic X-ray Scattering.** *Inorganic chemistry*
Poulter, B. I., Biasin, E., Nowak, S. H., Kroll, T., Alonso-Mori, R., Schoenlein, R. W., Govind, N., Sokaras, D., Khalil, M.
2023
- **Revealing core-valence interactions in solution with femtosecond X-ray pump X-ray probe spectroscopy.** *Nature communications*
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- **Precise dd excitations and commensurate intersite Coulomb interactions in the dissimilar cuprates YBa₂Cu₃O_{7-y} and La_{2-x}Sr_xCuO₄** *PHYSICAL REVIEW B*
Huang, S., Wray, L., Shao, Y., Wu, C., Wang, S., Lee, J., Chen, Y., Schoenlein, R. W., Mou, C. Y., Chuang, Y., Lin, J.
2023; 107 (13)
- **Femtosecond X-ray Spectroscopy Directly Quantifies Transient Excited-State Mixed Valency.** *The journal of physical chemistry letters*
Liekhus-Schmaltz, C., Fox, Z. W., Andersen, A., Kjaer, K. S., Alonso-Mori, R., Biasin, E., Carlstad, J., Chollet, M., Gaynor, J. D., Glowonia, J. M., Hong, K., Kroll, T., Lee, et al
1800: 378-386
- **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., Miniti, et al
2021: 6676-6683
- **Ultrafast x-ray pump x-ray probe transient absorption spectroscopy: A computational study and proposed experiment probing core-valence electronic correlations in solvated complexes.** *The Journal of chemical physics*
Liekhus-Schmaltz, C. E., Ho, P. J., Weakly, R. B., Aquila, A., Schoenlein, R. W., Khalil, M., Govind, N.
2021; 154 (21): 214107
- **Using X-ray free-electron lasers for spectroscopy of molecular catalysts and metalloenzymes** *NATURE REVIEWS PHYSICS*
Bergmann, U., Kern, J., Schoenlein, R. W., Wernet, P., Yachandra, V. K., Yano, J.
2021
- **Revealing the bonding of solvated Ru complexes with valence-to-core resonant inelastic X-ray scattering** *CHEMICAL SCIENCE*
Biasin, E., Nascimento, D. R., Poulter, B. I., Abraham, B., Kunnus, K., Garcia-Esparza, A. T., Nowak, S. H., Kroll, T., Schoenlein, R. W., Alonso-Mori, R., Khalil, M., Govind, N., Sokaras, et al
2021; 12 (10): 3713-25
- **Author Correction: Direct observation of coherent femtosecond solvent reorganization coupled to intramolecular electron transfer.** *Nature chemistry*
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- **Direct observation of coherent femtosecond solvent reorganization coupled to intramolecular electron transfer.** *Nature chemistry*
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2021
- **Excited-State Charge Distribution of a Donor-#-Acceptor Zn Porphyrin Probed by N K-Edge Transient Absorption Spectroscopy.** *The journal of physical chemistry letters*

- Cordones, A. A., Pemmaraju, C. D., Lee, J. H., Zegkinoglou, I. n., Ragoussi, M. E., Himpfel, F. J., de la Torre, G. n., Schoenlein, R. W.
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- **Double core hole valence-to-core x-ray emission spectroscopy: A theoretical exploration using time-dependent density functional theory.** *The Journal of chemical physics*
Zhang, Y., Bergmann, U., Schoenlein, R., Khalil, M., Govind, N.
2019; 151 (14): 144114
 - **Using Ultrafast X-ray Spectroscopy To Address Questions in Ligand-Field Theory: The Excited State Spin and Structure of [Fe(dcpp)(2)] (2+) INORGANIC CHEMISTRY**
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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*
Ochmann, M., Hussain, A., von Ahnen, I., Cordones, A. A., Hong, K., Lee, J., Ma, R., Adamczyk, K., Kim, T., Schoenlein, R. W., Vendrell, O., Huse, N.
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 - **Transient metal-centered states mediate isomerization of a photochromic rutheniumsulfoxide complex** *NATURE COMMUNICATIONS*
Cordones, A. A., Lee, J., Hong, K., Cho, H., Garg, K., Boggio-Pasqua, M., Rack, J. J., Huse, N., Schoenlein, R. W., Kim, T.
2018; 9: 1989
 - **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
 - **Nonlinear Ultrafast Spin Scattering in the Skyrmion Phase of Cu2OSeO3** *PHYSICAL REVIEW LETTERS*
Langner, M. C., Roy, S., Huang, S. W., Koralek, J. D., Chuang, Y., Dakovski, G. L., Turner, J. J., Robinson, J. S., Coffee, R. N., Miniti, M. P., Seki, S., Tokura, Y., Schoenlein, et al
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 - **The Linac Coherent Light Source: Recent Developments and Future Plans** *APPLIED SCIENCES-BASEL*
Schoenlein, R. W., Boutet, S., Miniti, M. P., Dunne, A. M.
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 - **Picosecond sulfur K-edge X-ray absorption spectroscopy with applications to excited state proton transfer** *STRUCTURAL DYNAMICS*
Van Kuiken, B. E., Ross, M. R., Strader, M. L., Cordones, A. A., Cho, H., Lee, J., Schoenlein, R. W., Khalil, M.
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 - **Light-Induced Radical Formation and Isomerization of an Aromatic Thiol in Solution Followed by Time-Resolved X-ray Absorption Spectroscopy at the Sulfur K-Edge** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
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 - **Prominent role of oxygen in the multiferroicity of DyMnO3 and TbMnO3: A resonant soft x-ray scattering spectroscopy study** *PHYSICAL REVIEW B*
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 - **Electronic and Molecular Structure of the Transient Radical Photocatalyst Mn(CO)(5) and Its Parent Compound Mn-2(CO)(10)** *INORGANIC CHEMISTRY*
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 - **Time-Resolved X-ray Spectroscopy in the Water Window: Elucidating Transient Valence Charge Distributions in an Aqueous Fe(II) Complex** *JOURNAL OF PHYSICAL CHEMISTRY LETTERS*
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- **Electronic and nuclear contributions to time-resolved optical and X-ray absorption spectra of hematite and insights into photoelectrochemical performance** *Energy & Environmental Science*
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- **Tracking reaction dynamics in solution by pump-probe X-ray absorption spectroscopy and X-ray liquidography (solution scattering)** *CHEMICAL COMMUNICATIONS*
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- **Scattering bottleneck for spin dynamics in metallic helical antiferromagnetic dysprosium** *PHYSICAL REVIEW B*
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2015; 92 (18)
- **Selective interlayer ferromagnetic coupling between the Cu spins in YBa₂Cu₃O_{7-x} grown on top of La_{0.7}Ca_{0.3}MnO₃** *SCIENTIFIC REPORTS*
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2015; 5
- **Element-Specific Characterization of Transient Electronic Structure of Solvated Fe(II) Complexes with Time-Resolved Soft X-ray Absorption Spectroscopy** *ACCOUNTS OF CHEMICAL RESEARCH*
Hong, K., Cho, H., Schoenlein, R. W., Kim, T., Huse, N.
2015; 48 (11): 2957–66
- **Ultrafast x-ray and optical signatures of phase competition and separation underlying the photoinduced metallic phase in Pr_{1-x}CaxMnO₃** *PHYSICAL REVIEW B*
Langner, M. C., Zhou, S., Coslovich, G., Chuang, Y., Zhu, Y., ROBINSON, J. S., Schlotter, W. F., Turner, J. J., Minitti, M. P., Moore, R. G., Lee, W. S., Lu, D. H., Doering, et al
2015; 92 (15)
- **Sub-nanosecond time-resolved ambient-pressure X-ray photoelectron spectroscopy setup for pulsed and constant wave X-ray light sources** *REVIEW OF SCIENTIFIC INSTRUMENTS*
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2014; 85 (9): 093102
- **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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- **Coupled Skyrmion Sublattices in Cu₂OSeO₃** *PHYSICAL REVIEW LETTERS*
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2014; 112 (16): 167202
- **Glass-like recovery of antiferromagnetic spin ordering in a photo-excited manganite Pr_{0.7}Ca_{0.3}MnO₃** *SCIENTIFIC REPORTS*
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- **Ultrafast charge localization in a stripe-phase nickelate** *NATURE COMMUNICATIONS*
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- **Ultra-fast and ultra-intense x-ray sciences: first results from the Linac Coherent Light Source free-electron laser** *JOURNAL OF PHYSICS B-ATOMIC MOLECULAR AND OPTICAL PHYSICS*
Bostedt, C., Bozek, J. D., Bucksbaum, P. H., Coffee, R. N., Hastings, J. B., Huang, Z., Lee, R. W., Schorb, S., Corlett, J. N., Denes, P., Emma, P., Falcone, R. W., Schoenlein, et al
2013; 46 (16)
- **Simulating Ru L-3-Edge X-ray Absorption Spectroscopy with Time-Dependent Density Functional Theory: Model Complexes and Electron Localization in Mixed-Valence Metal Dimers** *JOURNAL OF PHYSICAL CHEMISTRY A*

- Van Kuiken, B. E., Valiev, M., Daifuku, S. L., Bannan, C., Strader, M. L., Cho, H., Huse, N., Schoenlein, R. W., Govind, N., Khalil, M.
2013; 117 (21): 4444–54
- **Real-Time Manifestation of Strongly Coupled Spin and Charge Order Parameters in Stripe-Ordered La_{1.75}Sr_{0.25}NiO₄ Nickelate Crystals Using Time-Resolved Resonant X-Ray Diffraction** *PHYSICAL REVIEW LETTERS*
Chuang, Y. D., Lee, W. S., Kung, Y. F., Sorini, A. P., Moritz, B., Moore, R. G., Patthey, L., Trigo, M., Lu, D. H., Kirchmann, P. S., Yi, M., Krupin, O., Langner, et al
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 - **Ultras Mid-infrared Spectroscopy of the Charge- and Spin-Ordered Nickelate La_{1.75}Sr_{0.25}NiO₄** *18th International Conference on Ultrafast Phenomena*
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 - **Elucidating Charge Delocalization in the High-Spin State of aqueous Fe-II Spin-Crossover Compounds via Time-Resolved Spectroscopy in the X-ray Water Window**
Huse, N., Van Kuiken, B. E., Cho, H., Strader, M. L., Kim, T., Khalil, M., Schoenlein, R. W., Chergui, M., Taylor, A., Cundiff, S., DeVivieRiedle, R., Yamagouchi, K.
E D P SCIENCES.2013
 - **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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 - **Tracking Charge Localization via Transient Electron-Phonon Coupling in a Stripe-ordered Nickelate**
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IEEE.2013
 - **Ultrafast Mid-infrared Spectroscopy of the Charge- and Spin-ordered Nickelates** *Conference on Ultrafast Phenomena and Nanophotonics XVII*
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 - **Observation of Coherent Helimagnons and Gilbert Damping in an Itinerant Magnet** *PHYSICAL REVIEW LETTERS*
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 - **Probing the Electronic Structure of a Photoexcited Solar Cell Dye with Transient X-ray Absorption Spectroscopy** *JOURNAL OF PHYSICAL CHEMISTRY LETTERS*
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 - **Phase fluctuations and the absence of topological defects in a photo-excited charge-ordered nickelate** *NATURE COMMUNICATIONS*
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- **Femtosecond Soft X-ray Spectroscopy of Solvated Transition-Metal Complexes: Deciphering the Interplay of Electronic and Structural Dynamics** *JOURNAL OF PHYSICAL CHEMISTRY LETTERS*
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- **Photo-Induced Spin-State Conversion in Solvated Transition Metal Complexes Probed via Time-Resolved Soft X-ray Spectroscopy** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
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- **Probing the hydrogen-bond network of water via time-resolved soft X-ray spectroscopy** *PHYSICAL CHEMISTRY CHEMICAL PHYSICS*
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Rini, M., Tobey, R., Dean, N., Wall, S., Ehrke, H., Zhu, Y., Tomioka, Y., Tokura, Y., Schoenlein, R. W., Cavalleri, A., Tanaka, K., Ogawa, T., Hashimoto, et al
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- **Optical switching in VO₂ films by below-gap excitation** *APPLIED PHYSICS LETTERS*
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- **A high-average power femtosecond laser for synchrotron light source applications**
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SPIE-INT SOC OPTICAL ENGINEERING.2007
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