Stanford

Sumana Raj

Associate Scientist, SLAC National Accelerator Laboratory

Bio

BIO

Sumana Raj is a Research Associate with the Chemical Sciences Department of the Linac Coherent Light Source (LCLS) at SLAC national accelerator laboratory. She has worked at SLAC since 2020, first as a Stanford University Postdoctoral Scholar with the Solution Phase Chemistry group of the PULSE Institute. Her current work focuses on ultrafast pump-probe X-ray solution scattering of solution phase chemicals, as well as X-ray spectroscopy of these systems. Her graduate work included optical and X-ray nonlinear optic techniques.

CURRENT ROLE AT STANFORD

Research Associate at SLAC national accelerator laboratory.

EDUCATION AND CERTIFICATIONS

- PhD, University of California, Berkeley , Chemistry (2019)
- BA, Cornell University , Chemistry (2013)

Publications

PUBLICATIONS

- **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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- **Time-Resolved X-ray Emission Spectroscopy and Resonant Inelastic X-ray Scattering Spectroscopy of Laser Irradiated Carbon.** *The journal of physical chemistry. B*
  Riffe, E. J., Bernal, F., Kamal, C., Mizuno, H., Lindsey, R. K., Hamel, S., Raj, S. L., Hull, C. J., Kwon, S., Park, S. H., Cooper, J. K., Yang, F., Liu, et al
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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*
  Reinhard, M. E., Sidhu, B. K., Lozada, I. B., Powers-Riggs, N., Ortiz, R. J., Lim, H., Nickel, R., Lierop, J. v., Alonso-Mori, R., Chollet, M., Gee, L. B., Kramer, P. L., Kroll, et al
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- **The Liquid Jet Endstation for Hard X-ray Scattering and Spectroscopy at the Linac Coherent Light Source.** *Molecules (Basel, Switzerland)*
  Antolini, C., Sosa Alfaro, V., Reinhard, M., Chatterjee, G., Ribson, R., Sokaras, D., Gee, L., Sato, T., Kramer, P. L., Raj, S. L., Hayes, B., Schleissner, P., Garcia-Esparza, et al
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- **Characterization of Deformational Isomerization Potential and Interconversion Dynamics with Ultrafast X-ray Solution Scattering.** *Journal of the American Chemical Society*
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- **Site-specific electronic structure of covalently linked bimetallic dyads from nitrogen K-edge x-ray absorption spectroscopy.** *The Journal of chemical physics*
  Ryland, E. S., Liu, X., Kumar, G., Raj, S. L., Xie, Z. L., Mengele, A. K., Fauth, S. S., Siewerth, K., Dietzek-Ivanšić, B., Rau, S., Mulfort, K. L., Li, X., Cordones, et al
  2024; 160 (8)

- **Optically Induced Anisotropy in Time-Resolved Scattering: Imaging Molecular-Scale Structure and Dynamics in Disordered Media with Experiment and Theory.** *Physical review letters*
  Montoya-Castillo, A., Chen, M. S., Raj, S. L., Jung, K. A., Kjaer, K. S., Morawietz, T., Gaffney, K. J., van Driel, T. B., Markland, T. E.
  2022; 129 (5): 056001

- **Angstrom-Resolved Interfacial Structure in Buried Organic-Inorganic Junctions** *PHYSICAL REVIEW LETTERS*
  Schwartz, C. P., Raj, S. L., Jamnuch, S., Hull, C. J., Miotti, P., Lam, R. K., Nordlund, D., Uzundal, C. B., Das Pemmaraju, C., Mincigrucci, R., Foglia, L., Simoncig, A., Coreno, et al
  2021; 127 (9)

- **The liquid state of carbon** *CHEMICAL PHYSICS LETTERS*
  Hull, C. J., Raj, S. L., Saykally, R. J.
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- **Free Electron Laser Measurement of Liquid Carbon Reflectivity in the Extreme Ultraviolet** *PHOTONICS*
  Raj, S. L., Devlin, S. W., Mincigrucci, R., Schwartz, C. P., Principi, E., Bencivenga, F., Foglia, L., Gessini, A., Simoncig, A., Kurdi, G., Masciovecchio, C., Saykally, R. J.
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- **Early time dynamics of laser-ablated silicon using ultrafast grazing incidence X-ray scattering** *CHEMICAL PHYSICS LETTERS*
  Hull, C., Raj, S., Lam, R., Katayama, T., Pascal, T., Drisdell, W. S., Saykally, R., Schwartz, C. P.
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- **Two-photon absorption of soft X-ray free electron laser radiation by graphite near the carbon K-absorption edge** *CHEMICAL PHYSICS LETTERS*
  Lam, R. K., Raj, S. L., Pascal, T. A., Pemmaraju, C. D., Foglia, L., Simoncig, A., Fabris, N., Miotti, P., Hull, C. J., Rizzuto, A. M., Smith, J. W., Mincigrucci, R., Masciovecchio, et al
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- **Soft X-Ray Second Harmonic Generation as an Interfacial Probe** *PHYSICAL REVIEW LETTERS*
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