

Stanford



Roberto Alonso-Mori

Lead Scientist, SLAC National Accelerator Laboratory

Bio

BIO

I'm currently a Lead Scientist within the LCLS Chemical Sciences Department at SLAC and the Group Lead of the Biochemistry and Condensed Phase Chemistry Group composed of >10 scientists, RA's and students. This group is responsible for experiments on ultrafast photochemical dynamics in condensed phase performed at multiple LCLS instruments. The aforementioned department and group's mission is to perform research and support and ensure the success of such experiments at LCLS by operating, maintaining and upgrading its instrumentation. This also involves supporting (including planning and performing) forefront experiments in ultrafast X-ray science using LCLS.

I joined SLAC in 2009 after obtaining my bachelor degree in Physics from the University of Oviedo in Spain followed by a Master of Science in Physics by the University of Grenoble in France and a PhD in Earth Science from the University of Camerino in Italy, both through research performed at the ESRF (European Synchrotron Radiation Facility) in Grenoble, France. I started my SLAC career as a Research Associate working at both SSRL and LCLS light sources and later held different positions at LCLS until my current role as a Lead Scientist and Group Lead.

CURRENT ROLE AT STANFORD

Lead Scientist and Group Lead of the Biochemistry and Condensed Phase Chemistry Group within the Chemical Sciences Department at LCLS (SLAC National Accelerator Laboratory)

LINKS

- Google Scholar Link To Publications: https://scholar.google.com/citations?hl=en&user=Ut8gtycAAAAJ&view_op=list_works&pagesize=100

Professional

PROFESSIONAL INTERESTS

I'm interested in the use of X-ray spectroscopy techniques for the study of the electronic structure in material science, chemical and biological systems. In particular on the development and application of time-resolved based techniques to a variety of projects in different areas of science including :

- the study of electronic and structural dynamics of geochemical systems at high P/T condition at the MEC instrument of LCLS

- the study of ultrafast photochemical dynamics in condensed phase chemical systems. Transition metal complexes have interesting applications in photocatalysis and solar energy conversion. Time-resolved X-ray methods present intriguing opportunities to investigate the photochemical mechanisms at play in such reactions. By

combining Hard X-ray scattering measurements with sensitivity to the structural evolution of photoexcited transition metal complexes to X-ray absorption and emission spectroscopy we can gain complementary information about electronic structure changes during photochemical dynamics.

- the use of time resolved hard X-ray diffraction and spectroscopy at XFELs to study the electronic and geometric structure of biological systems like the catalytically sun induced photosynthetic system PSII, and other metalloproteins.

- the development of advanced X-ray emission and absorption spectroscopy instrumentation and optics at synchrotron radiation and X-ray free electron laser sources.

Publications

PUBLICATIONS

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- **Operando Study of Thermal Oxidation of Monolayer MoS₂.** *Advanced science (Weinheim, Baden-Wurtemberg, Germany)*
Park, S., Garcia-Esparza, A. T., Abroshan, H., Abraham, B., Vinson, J., Gallo, A., Nordlund, D., Park, J., Kim, T. R., Vallez, L., Alonso-Mori, R., Sokaras, D., Zheng, et al
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 - **Short-lived metal-centered excited state initiates iron-methionine photodissociation in ferrous cytochrome c.** *Nature communications*
Reinhard, M. E., Mara, M. W., Kroll, T., Lim, H., Hadt, R. G., Alonso-Mori, R., Chollet, M., Glownia, J. M., Nelson, S., Sokaras, D., Kunnus, K., Driel, T. B., Hartssock, et al
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- **Photoreversible interconversion of a phytochrome photosensory module in the crystalline state.** *Proceedings of the National Academy of Sciences of the United States of America*
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- **Antivitamins B12 in a Microdrop: The Excited-State Structure of a Precious Sample Using Transient Polarized X-ray Absorption Near-Edge Structure.** *The journal of physical chemistry letters*
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- **The Macromolecular Femtosecond Crystallography Instrument at the Linac Coherent Light Source.** *Journal of synchrotron radiation*
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