

# Caught in Action: Time-Resolved Science at Lightsources

What can we accomplish today? What will be enabled in the next decade?  
Where is the “white space” of unsolved challenges?

## SLAC - Workshop – April 30 to May 2, 2025

The direct observation of how properties evolve is the holy grail for profound understanding of matter to gain full control for solving grand challenges.

The scope spans length scales from picometers to meters and time scales from attoseconds to days, encompassing a diverse range of phenomena, including electron transfer, molecular diffusion, structural reordering, material degradation in devices, atomic level redox reaction, or industrial catalytic conversion and many more.

Recent upgrades at lightsources have enabled novel groundbreaking research capabilities, such as pushing the limits of attosecond time regime at XFELs or achieving unprecedented real space resolution in the nanometer range at the 4<sup>th</sup> generation synchrotrons.

This workshop aims to explore the new opportunities enabled by these advancements while identifying existing gaps in time-resolved experimental methodologies.

The Stanford Synchrotron Radiation Lightsource (SSRL) and the Linac Coherent Light Source (LCLS) at SLAC are jointly organizing the workshop, with the goal of fostering best support for the user community engaged in cutting-edge time-resolved experiments.

### Co-Organizers

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### Topics will include

- Catalytic Reactions
- Photochemistry
- Quantum Materials
- Energy Storage and Conversion
- Information Technology
- Environmental Science
- Life Sciences
- Additive Manufacturing
- Engineering Materials Science
- Materials Discovery and Design
- Matter under Extreme Conditions
- Atomic, Molecular, and Optical Physics

10 sessions for presentations  
& 2 poster sessions



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