

# **XFEL advancements and applications to structural biology**

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## **Abstract**

With their unprecedented high peak brilliance and short pulses, X-ray free electron lasers (XFELs) have shown the promise of providing new opportunities in structural biology research based on the “diffract-before-destroy” concept. In this talk, I will discuss the landscape of XFEL developments and applications to structural biology including new source developments such as LCLS-II, special 2-pulse/2-color pulse modes for studying radiation damage and independent phasing, new beamline development (Macromolecular Femtosecond Crystallography (MFX) at LCLS), sample delivery and data analysis (post-refinement), pump-and-probe time resolved experiments and consortium efforts on single particle imaging. Examples will be drawn to show how these new developments are and will be enabling structural studies of challenging targets with limited sample quantities.