

A Research Platform of Dynamic Crystallography for Studying Operating Mechanisms of Biological Macromolecules

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Abstract

Our ability and capacity to utilize, manipulate, and control living systems on earth depend on our mechanistic understanding of how biological macromolecules operate. Such knowledge has direct impact on important societal issues such as food supply, renewable energy production, human health, and clean environment. An increasing number of static structures of biomolecules are being unveiled to a great clarity at the atomic resolution by protein crystallography, thanks to the wide applications of synchrotrons around the world. However, studying the dynamic behaviors of the biological machinery at high resolution is still a challenging task, which severely hinders our comprehension of life. We propose a research platform for dynamic crystallography in conjunction with the upgrade of the Advanced Photon Source that aims at serving the structural biology community in pursuit of direct observations of structural dynamics by X-ray crystallography. This transformative capacity will enable us to address a broad range of scientific questions that concern the operating mechanisms of macromolecular structures.

Principal Developers

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