

Pioneering new methods for exploring macromolecular dynamics with x-rays

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Because both RNA and DNA carry large negative charge, interaction with oppositely charged partners is required for function. Despite the important roles of these partners, little is known about how they structure, or interact with nucleic acids. My group has applied x-ray scattering based methods to highlight the role of partners, ranging from ions through proteins, in important biological processes. I will discuss recent time-resolved, contrast variation experiments (Chen et al., PNAS, **114** (2), pp. 334-339 (2017)) that follow the changing structures of nucleic acids within protein nucleic acid complexes. In addition, I describe a mixing injector that enables time-resolved experiments at XFELS (Calvey et al., Structural Dynamics, **3**, 2016).