Poster Presentations

[MS1-P03] Developing a set of complementary methods for time-resolved structural studies.

Arwen R. Pearson[a], Anna Polyakova[a], Briony A. Yorke[a], Diana C.F. Monteiro[a], James A. Gowdy[a], Stuart L. Warriner[a], Emanuele Paci[a], Mike E. Webb[a], Godfrey S. Beddard[b], Robin L. Owen[c],

[a)] *Astbury Centre for Structural Molecular Biology, University of Leeds, Leeds, LS2 9JT,*
[b)] *School of Chemistry, University of Leeds, Leeds, LS2 9JT,*
[c)] *Diamond Light Source Ltd, Harwell Oxford, OX11 0DE*
E-mail: a.r.pearson@leeds.ac.uk

In order to fully understand the mechanisms of biological processes, time-resolved methodologies that allow us to comprehend how function is linked to changes in molecular structure are required. Time-resolved X-ray crystallography provides a means of directly visualising structural rearrangements associated with function. Although time-resolved crystallography is a powerful tool, due to both instrument availability and stringent sample requirements it has not been widely applied to biomacromolecules. We are taking a combined, complementary approach to develop time-resolved structural biology on nano-second to millisecond time-scales.
As well as X-ray crystallography this includes SAXS, single crystal spectroscopy, and hydroxyl-radical footprinting and the synthesis of new photochemical tools for reaction initiation. We will present a summary of our recent work on enzymes and membrane transporters.

Keywords: time-resolved crystallography, biomacromolecular structures, methods development