

Microsymposium

MS52.O02

Remote Access to Diamond Light Source – Adding Flexibility to MX Experiments

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Diamond Light Source (DLS) provides a suite of world-leading beamlines for macromolecular crystallography (MX) experiments which are used by scientists from all over the world. Key to their success is an integrated approach to automating the hardware and software environments such that it is only necessary to enter the beamline hutch to change large batches of samples for the robotic sample changers. Alongside investing in automation, all beamlines are also equipped with Pilatus 6M-F detectors (25 – 100 Hz) resulting in fast data collections and high turnover of samples. Rapid downstream processing of the resulting data has been developed since this is essential to drive experimental decisions. The feedback from these pipelines needs to be made readily available to users in a timely manner and a number of tools are available for both local and remote visualization of results. Remote access to these facilities was a design requirement from the outset. Several tools have been integrated and developed to streamline the process of remote access yet give the same software environment remotely as would be experienced if the experimenter was present at the beamline. The advent of remote access for cryogenically frozen samples has led to the implementation of new shift patterns for the user programme, enabling frequent short shifts for the many groups who use DLS. Remote access to MX beamlines is also a prerequisite of many industrial clients of DLS. For the future we are moving forward with the development of remote access for in-situ data collection from crystallization plates following on from the success of this method for screening and collecting data by users at the beamlines. The implementation and impact of remote access at DLS will be presented here.

Keywords: Remote Access, Macromolecular Crystallography, Beamline