

Making best use of beam time

Detector design is a compromise between speed of acquisition, detection area, linearity of response and signal to noise ratio.

Incorporating all these factors in one device means a modular detector design with parallel read out, 100% duty cycle, optimized Point Spread Function and high dynamic range.

Photonic Science's new Very High Resolution X-Ray VHR system combines all those features into a flexible design, and hence introduces a new way of acquiring dynamic diffraction patterns.

Because it allows simultaneous exposure/read out cycles, the camera delivers better sensitivity than other CCD systems when short duty cycles are required, as other systems are limited by dead read out time periods.

The camera provides > 100 times antiblooming suppression, thus avoiding bleeding artefacts that currently affect other CCD systems when high intensity peaks are neighbouring very low intensity ones.

The camera also eliminates the need for an external mechanical shutter, which means that it does not suffer from the frame shift smear that currently corrupts data quality of traditionally designed cameras during fast acquisition sequences.

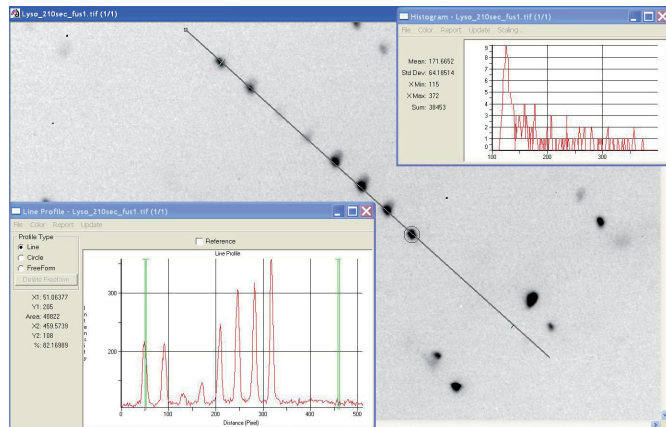
The camera delivers genuine 16-bit dynamic range data without the need of binning, thus solving the current dilemma between dynamic range and resolution.

Optimizing the Point Spread Function starts with a small pixel size, with custom phosphor deposition across its entire sensitive area. This makes the camera performance comparable to that of larger CCD cameras with poorer resolution set at a larger distance from the sample.

Low noise operation at 10MHz with multiplexed data output allows both fast and traditional long exposures for weakly diffracting proteins, small molecules, powders, organic and inorganic materials.

Integration within any existing diffraction set up can be achieved as simply as one would replace a mechanical shutter: providing a simple Low Voltage TTL pulse for setting exposure time or with a comprehensive Software Development Kit and Application Programmer's Interface (Linux and Windows platforms).

The fibre optic digital interface allows long distance data transmission on the longest synchrotron beamline for the most demanding experiments.



Lysozyme crystal