

## GI-MS46-P10 | EXPLORING NEW DATA COLLECTION PROTOCOLS WITH THE EIGER2 DETECTOR AND SMARCON ON THE VARIABLE AND MICROFOCUS BEAMLINE I04 AT DIAMOND LIGHT SOURCE

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The variable and microfocus beamline I04 at Diamond [1] has recently installed the first second generation Eiger2 X 16M detector. The combination with the SmarGon multi-axis goniometer, which is now in use routinely, and fast variable beam focus is enabling new scientific capability and easy optimisation of the experiment based on sample property. This can be addressed by applying improved data collection protocols. The hardware combination on the beamline has not only enabled significantly faster data collection, which is benefitting from the improved detector performance and specifications, but also very fast grid scans which is enabling automated data collection based on sample detection using X-ray centring. In addition, the multi-axis SmarGon goniometer is enabling an easy setup of multi-sweep, multi-orientation data collection protocols that are particularly useful for SAD experiments or stepped transmission data collections [2]. The beamline is now starting to explore non-standard experiments and developments (e.g. serial crystallography or drop on-demand experiments) with a new sample delivery experiments platform that allows fast positioning and scanning. Further work is ongoing with the aim of streamlining the experiments and user experience and an outlook will be given.

[1] <https://www.diamond.ac.uk/Instruments/Mx/I04.html>

[2] How best to use photons, Winter, G. *et al.*, *Acta Cryst.* (2019). **D75**, 242-261