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Chemical Crystallography at the Australian Synchrotron MX Beamlines: an update

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The recent deployment of a Dectris 16M Eiger detector on MX2 has changed the 'standard' data collection protocol for CX work to a new shutterless 360° oscillation yielding 3600 frames in 36 seconds. This step change in sample and data throughput has led to challenges in user workflow and highlights that the biggest dead time during beamtime arises during manual sample handling with the need to search and secure the endstation (robotic mounting does allow sample changes to occur in less than 40 seconds).
The dynamic range of the Eiger is substantially greater than a CCD detector, however 'overloaded' pixels can occur. These 'overflows' are not immediately obvious in the frames, but can have a significant effect during count rate correction of the Eiger output. New tools are being developed to better quantify data quality prior to structure solution. Other software tools are being developed to aid in data processing.
Future upgrades are underway to further improve MX1 with goniometer modifications and a Dectris 9M Eiger detector scheduled for early 2019. Given the dramatic increase in experimental throughput, what additional opportunities can be embraced by the Australian Synchrotron's chemical crystallographic community? A review of current developments and discussion of future directions will be presented.

Primary author(s) : WILLIAMSON, Rachel (Australian Synchrotron)

Co-author(s) : AISHIMA, Jun (Australian Synchrotron); ARAGAO, David (Australian Synchrotron); ERIKSSON, Daniel (Australian Synchrotron); PANJIKAR, Santosh (Australian Synchrotron); PRICE, Jason; RIBOLDI--TUNNICLIFFE, Alan (Australian Synchrotron); CARADOC-DAVIES, Tom (Australian Synchrotron.)

Presenter(s) : WILLIAMSON, Rachel (Australian Synchrotron)

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