Progress Towards Automatic MX Beamlines at the ESRF.

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At the European Synchrotron Radiation Facility (ESRF, http://www.esrf.fr) the 7 end-stations dedicated to Macromolecular Crystallography (MX) welcome over 2000 academic visitors per year with experimental sessions lasting anything from 4 hours to 2 days. Such a high turnover demands that the beam-lines are highly reliable and user-friendly. For these reasons, the MX Group at the ESRF has developed a policy of standardising hardware and software in both optics and experimental hutches of the beam-lines. Such standardisation, and the fact that MX 'experiments' are essentially repetitive in nature, lends itself to automation of both the beam-lines and data collection process itself. Progress towards the full automation of the MX beam-lines will be described including: the standard equipment installed on the ESRF MX beam-lines, the potential 'hands off' alignment and provision of the X-ray beam, the SC3 robotic sample changer [1], the use of the DNA (automateD collectioN of datA, [2]) software in crystal characterisation. Also described will be a prototype of a Data Collection Pipeline (DCP, [3]) implemented on the beam-lines that allows the fully automatic screening, characterisation and ranking of a series of crystals contained in the SC3. Finally, some ideas as to how remote access to the ESRF MX beam-lines can be implemented will also be discussed.

[1] Cipriani *et al*., (2006). *Acta Cryst.*, **D62**, 1251-1259.
[2] Beteva *et al*., (2006). *Acta Cryst.*, **D62**, 1162-1169.
[3] Leslie *et al.*, (2002). *Acta Cryst.*, **D58**, 1924-1928.