

Poster Presentations

[MS41-P04] Educational aspects of CCP4
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Since its foundation in 1978 the Collaborative Computational Project No. 4 (CCP4) has had the aims of the production and maintenance of a suite of software for macromolecular crystallography [1], and the support of education in the same field. The most high profile of this support is the CCP4 Study Weekend [2] which gives a unique mix of introductory and cutting edge lectures on subjects of interest to the MX community. Recent meetings have covered Data Processing and Molecular Replacements, with the 2014 Study Weekend focussing on methods complimentary to MX. Most of the talks from the meetings are included in open access issues of the Acta D journal. The project also supports the development of young crystallographers through the sponsorship and organisation of workshops. In the UK there is the sponsorship of the BCA-CCP4 summer school [3], and internationally a series of workshops covering the complete structural solution process. Examples of these are the APS workshop [4] at the APS near Chicago, now in its 6th year, and the Okinawa workshop [5]. These follow the simple arrangement of morning lectures followed by afternoon tutorials and problem solving. Students are encouraged to bring their own data and ask advice from the experts and developers teaching at the workshops. The EMBL Hamburg and BESSY have produced a set of tutorials on common structure solution routes including molecular replacement, and experimental phasing [6]. Importantly these include the images [7]. Several of the tutorials have been rewritten, and extended, to use the popular imosfm/ipmosfm data processing program together with the other programs in the CCP4 suite [8]. These take the user through scaling, phasing and model refinement while introducing the programs in the CCP4 suite. They act as a useful companion to the original BESSY tutorial, and together are a useful resource for students. Each tutorial takes about 1 hour to complete, contains background

information on the procedure being undertaken and a comprehensive list of references. The tutorials will be further extended and updated.

[1] M. D. Winn *et al.* *Acta. Cryst.* **D67**, 235-242 (2011)

[2] http://www.cse.scitech.ac.uk/events/CCP4_2014

[3] <http://biology.st-andrews.ac.uk/pxsummer/>

[4] <http://www.ccp4.ac.uk/schools/APS-2013>

[5] <http://www.ccp4.ac.uk/schools/OIST-2013>

[6] A. Faust *et al.* *J. Appl. Cryst.* (2010). 43, 1230-1237

[7] http://www.embl-hamburg.de/Xray_Tutorial/

[8] http://www.ccp4.ac.uk/Xray_Tutorial/