



17th BCA/CCG Intensive Teaching School

Trevelyan College, Durham, 6th-14th April 2019

The 17th BCA/CCG Intensive Teaching School in X-ray Structure Analysis was held at Trevelyan College, Durham from the 6th April - 14th April 2019. The school had an international feel with just over a third of the 80 students being based outside the United Kingdom, from a total 15 different countries: UK, Argentina, Australia, Austria, Chile, Croatia, Finland, Germany, Ireland, Malaysia, Malta, Poland, Singapore, Spain and Switzerland. The atmosphere throughout the school was very friendly and supportive, which was noted positively in feedback from a number of the students and staff alike, with the variety of nationalities, different academic backgrounds and range of crystallographic experience creating an interesting environment both for learning and meeting new people.

The school has both a national and international reputation for providing a good basis in crystallography which meant that we were once again heavily oversubscribed. The format of the biennial course has evolved as a result of feedback from students and staff and currently consists of a mixture of lectures and tutorials designed to help students improve their understanding of the lecture material. The course, as the name suggests, is intensive with a full timetable across the 7 days providing the students with the opportunity to gain a good theoretical understanding of various aspects of crystallography from a single crystal perspective. Following an introductory lecture shortly after arrival the lecturers, Professor Simon Parson, Dr Lukas Palatinus, Dr Andrew Bond, Dr Helena Shepherd, Dr Richard Cooper and Dr Mark Senn, guided the students through the following topics over the course of the week; Math, Symmetry, Data collection, Fourier/Patterson, Charge Flipping, Superspace, Direct Methods, Parameterisation, Least Squares, Refinement, Derivation of Results and Twinning. The tutorials are organised such that each of the participants is assigned to a tutorial group for the week that consists of 8 tutees and a tutor, who work together throughout the week to tackle a series of problems relating to the recent lecture material. This year we welcomed four new tutors: Dr Christine Beavers, Dr Laszlo Fabian, Dr Claire Hobday and Dr Hamish Yeung, as well as welcoming back Dr Iain Oswald, Dr Andrew Cairns, Dr Nick Funnell, Dr Amber Thompson, Dr Claire Wilson and Dr Hazel Sparkes. As usual the lectures and tutorials were held in the Sir James Knott Hall which enables us to switch easily between formal lectures and tutorial work with minimal disruption. The accommodation and meals were provided in Collingwood College which is less than a 5 minute walk away but provided a pleasant chance for some fresh air and brief exercise during the day.

As is traditional at the school, apart from the Math's lecture on the first day, the evening activities are designed to be more relaxed and provide an opportunity for the students to mix with each other through a combination of educational and fun activities. On the Sunday evening, a successful bar quiz, organised by Professor Richard Cooper, resulted in a tight result with three of the teams being within one point of each other at the end. The Monday evening session provided an introduction to Databases (Dr Pete Wood) while the use of Synchrotron and Neutron facilities (Dr Christine Beavers and Dr Mark Senn) were highlighted on Tuesday. This year's student presentations, on the Friday evening, were organised by Dr Nick Funnell and Dr Claire Hobday. Each of the tutor groups put together a short (~5 minute) presentation on a crystallographic topic drawn from a hat earlier in the week in a style that was also chosen at random e.g. Local Structure in the style of the Bake Off, or the Bravais Lattice in the style of Bear Grylls. All of the groups put together creative and amusing presentations on their respective topics which created an enjoyable evening with much hilarity. As with previous years the educational and entertainment value of each presentation was assessed by our elite panel of judges, the lecturers, who were very impressed by all of the entries.

The conference dinner on the Saturday evening provided the chance to thank all of the people who had contributed to the success of this year's school, the local staff, organisers, lecturers, tutors and students. The hard work and positive attitude from the staff and students alike all helped to create a very friendly school. After this year's school Professor Simon Parsons has stepped down as scientific director, we would like to thank him very much for his contribution over the last 10 years. His enthusiasm and drive have helped maintain the high standards of the course while keeping up to date with current developments. We are delighted that Simon is staying on the lecturing staff for the next school and very pleased that Professor Richard Cooper has taken over as the scientific director and wish him every success.

Following on from the school an optional hands-on Olex2 workshop was held on the Sunday, run by Dr Michael Bodensteiner and Dr Oleg Dolomanov. This was well received by the ~40 registered participants who had the opportunity to use Olex2 to apply structure solution and refinement concepts that they had learnt on the course to both test structures and their own data.

I would like to finish by saying thank you to all of the sponsors for this year's school which were Diamond, IUCr, ECA, CCG, IG, Oxford Cryosystems, Bruker, Rigaku Oxford Diffraction, Cambrex and the NCS. Without the financial support from these organisations we would not have been able to help as many students attend the school or run it so successfully and we are very grateful for their continued support.

ECA support

The funds kindly provided by the ECA (€1000, ~£841) were used to help the following PhD students with contributions towards their attendance:

Lynn Marie Barbara, University of Malta, Malta, lynn.barbara.13@um.edu.mt, £700

Luka Fotovic, University of Zagreb, Croatia, lfotovic@chem.pmf.hr, £525

Finally, we would very much like to thank the ECA for their continued support of the school through the provision of financial support which assists with the running of the course.

Professor Judith A. K. Howard, CBE, FRS and Dr Hazel A. Sparkes (Local Organisers)