The Zürich School of Crystallography

Bring Your Own Crystals

University of Zürich

June 13 - 26, 2011

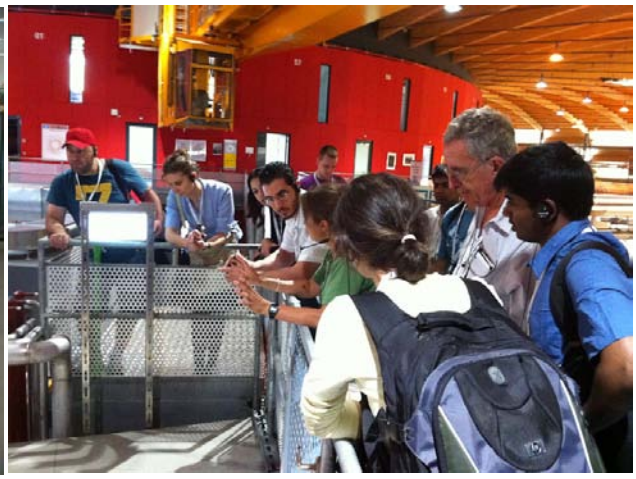
The fourth Zürich School of Crystallography was held once again within the Institute of Organic Chemistry at the University of Zürich (UZH) and continued in the tradition of the previous Schools: teaching the essential theory and practical aspects of small-molecule single-crystal X-ray crystallography to 21 enthusiastic participants from around the globe. The School ran very smoothly, was once again highly successful, and at the end of each day it was difficult to extract the participants from the practical classroom, because they were so engrossed in their new structures. Selected from a total of 50 applicants, the 21 participants this year comprised 3 MSc and 11 PhD students, 1 postdoc, 2 young academics, 2 more senior academics and 1 researcher. They came from Belgium, Brazil, Croatia, France, Germany, Italy, India, Nigeria, Poland, the Slovak Republic, Switzerland, Thailand, Turkey and Venezuela; 8 women and 13 men, all of them under 43. The 10 tutors were from the Universities of Basel, Bern, Geneva, Zürich, the EPFL Lausanne, the ETH Zürich and the Institute of Physics, Prague.

The central goal of the School is to equip each participant with enough knowledge of the theory and practice of X-ray diffraction and single-crystal small-molecule structure determination so that they can competently determine their own structures when they return to their home laboratory. The participants were all highly motivated and worked very hard throughout the School. The daily schedule contained lecture blocks and practical work in the morning and afternoon sessions. The practical work included hands-on experience in groups

of two at one of the five diffractometers available. The participants worked on two example structures, which showed different degrees of difficulty, and then on the structure of a compound they had provided. On the final day of the School, each participant gave a ten minute presentation on their own structure. Those desiring credit points sat a two-hour written exam and all candidates passed. Coffee and lunch breaks benefited from the pleasant environment of the university campus. Each day concluded with a half-hour review of the day's work – an opportunity for the participants to air their feelings about how the School was progressing. Even in the evenings, many lively discussions were held over dinner. Social events included a mixer, barbeque and a half-day excursion to the Swiss Light Source and SINQ neutron spallation facility of the Paul Scherrer Institute.

It was clear at the final banquet that many new friendships had been established and that the people, although exhausted, did not really want the experience to finish. At the end of the banquet, each participant receives a certificate and a copy of "Crystal Structure Refinement, A Crystallographer's Guide to SHELXL" by Peter Müller, kindly donated by the IUCr and OUP. We are already planning for the next School, which will be held in June, 2013.

Tony Linden, Hans-Beat Bürgi, School Directors



The Zürich School of Crystallography 2011 – Report from a participant

Having started my PhD at the École Polytechnique Fédérale de Lausanne on the topic of organometallic chemistry in November 2010, my advisor recommended that I visit the Zürich School of Crystallography. I had already grown quite a few crystals and all I got to know about the structure determination of each of my compounds was a colorful picture, which was presented to me by our crystallography service. So I sent in an application.

When I obtained a positive answer from the School Directors, including the awarding of a CUSO stipend, which covered the costs of the School, I felt very glad and excited. After having read the detailed course program, I was sure that I would learn a lot and that the course would be quite challenging and demanding.

On the first day, I realized that I was right with my expectations: The whole day was covered by lectures about the basics that we would need for our practical work which began already the next day. We determined the structures of two example molecules and then solved the structure of the crystalline compound we brought ourselves. During these practical sessions, one tutor was responsible for two students. This was extremely helpful for me as I had never worked with this software before. The tutors also answered questions on the lectures, were

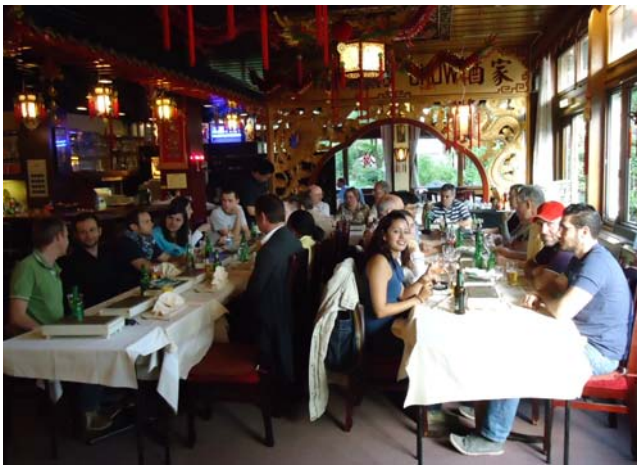
always open for discussions and supported the participants in their learning process in a very engaged way. After having solved and refined the structure, we learned how to validate it, had an instruction on the use of crystallographic databases, were shown how to publish the structure and presented our results in front of the tutors and the other participants.

One afternoon was reserved for an excursion to the Paul Scherrer Institute where we visited the synchrotron and neutron acceleration facilities. This trip was very interesting and I was impressed by the hugeness of the hall with all the machines and facilities dedicated for high end research.

Although practical work and lectures covered most of the time, there was still room for getting to know each other during the coffee breaks and the common meals. It was nice that the participants and the tutors interacted without any reservation – the atmosphere was exceptionally friendly. Also the barbecue and the dinner at a Chinese restaurant were really awesome and I found many new friends from all over the world.

I had a wonderful time in Zürich and learned a lot! Now that I am back in my lab, I have already been able to solve some structures on my own and feel confident about what I am doing.

Gregor Kiefer, EPFL, Lausanne, Switzerland



Sponsors:

University of Zurich[UZH] Institute of Organic Chemistry

Swiss Crystallographic Society

Cambridge Crystallographic Data Centre

HELVETICA CHIMICA ACTA

Swiss Chemical Society

scnat Chemistry Platform of the Swiss Academy of Sciences

OXFORD UNIVERSITY PRESS

European Crystallographic Association

BRUKER

Agilent Technologies

CUSO Conférence Universitaire de Suisse Occidentale

Rigaku

X-ray Diffraction Services, CSEM, Neuchatel