Oral presentation

Leveraging the Cambridge Structural Database for contextualised learning

Ilaria Gimondi, Yinka Olatunji-Ojo, Andrew Peel, Suzanna Ward

Cambridge Crystallographic Data Centre

igimondi@ccdc.cam.ac.uk

The Cambridge Structural Database (CSD) [1], the crystallographic database for organic and metal-organic molecules, now contains over 1.25 million crystal structures. This wealth of data makes it an invaluable resource both in research and in education. In particular, educators and learners can use structures from the CSD and the associated CSD software to learn and teach crystallography and chemistry, and to approach STEM subjects. The use of crystallographic data in teaching and learning can help students put in context what they learnt and see the concepts they study in action.

In this talk we will present resources and activities from the Cambridge Crystallographic Data Centre (CCDC), the curators of the CSD, to promote the use of crystallographic data in education and outreach settings.

Starting with educational resources, we will present the CSD Teaching Subset [2], a free collection of over 850 structures from the CSD selected with educators from the community to be of particular interest in the teaching of crystallography and chemistry. We will also share case studies and examples of resources that demonstrate the use of crystal structures for teaching, such as the teaching modules and educational videos, including the playlist on symmetry elements. We will also briefly demonstrate some of the features in Mercury, the CCDC's visualisation software, that educators would find useful for teaching. Relevant publications will also be highlighted.

Crystal structures are also a very fascinating subject to ignite interest in STEM in young learners and audiences of non-experts. In these regards, we will show examples of the activities presented at the Cambridge Festival as well outreach resources and games available on our website. As part of these, we will highlight resources from the community created with the support of the CCDC Engagement Grants.

[1] Groom, C. R., Bruno, I. J., Lightfoot, M. P., Ward, S. C. (2016). Acta Cryst. B72, 171-179. DOI: 10.1107/S2052520616003954.
[2] Battle, G. M., Allen, F. H., Ferrence, G. M. (2010). J. Chem. Ed. 87(8), 809-812. DOI: 10.1021/ed100256k.