

Crystal freezing tutorial available

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Over the last few years, freezing of protein crystals has evolved from a technique utilized only by the more sophisticated experimenters who often developed their own specialized procedures to a methodology desired by nearly all crystallographers conducting synchrotron experiments. When carried out properly, the method leads to data of improved quality as high resolution diffraction spots are usually stronger and scaling errors become reduced. Recently, freezing methods have also been successfully applied to virus crystals.

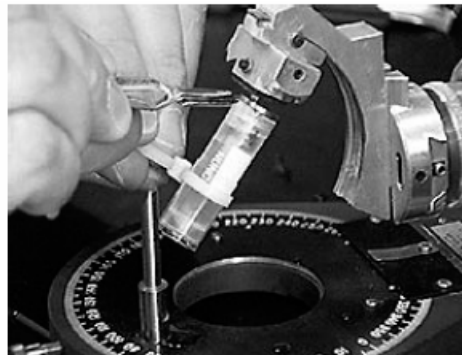
In our continuing efforts to streamline the process of collecting crystallographic data at CHESS, much effort has been focused on the three components which go into our recipe for carrying off the optimal crystallographic experiment: high flux x-ray source and optics, efficient CCD detectors, and frozen crystals. At CHESS, the first two components are hopefully provided to the user (RF cavities do sometimes fail!); however, the third component, the freezing of crystals

is a responsibility that falls into the hands of the synchrotron user.

Within our user community, we have witnessed a wide discrepancy in the knowledge and skills regarding crystal freezing.

In many cases, poor user awareness of crystal freezing methods has precluded the collection of the complete diffraction data which could have been realized using our facilities. To remedy this problem, experimenters often need to conduct and perfect their freezing methods in their home laboratories before traveling to CHESS.

To this effect, a comprehensive instructional video demonstrating the procedures and strategies involved in macromolecular crystal freezing has been developed for widespread distribution.



A scene from the Freezing tutorial video showing a crystal stored in a vial of liquid nitrogen being placed onto a large-arc goniometer.

The creators of this work are Richard Walter, Matt Slaybaugh, and Steven Ealick, all of the Section of Biochemistry, Molecular and Cell Biology at Cornell University. Those interested in more information or in obtaining the video should consult the MacCHESS home page of the World Wide Web (<http://www.chess.cornell.edu/MacCHESS/>) or contact Matt Slaybaugh at mcs3@cornell.edu.