

Blowing Hot and Cold and its effect on some crystals

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The benefits of collecting single crystal diffraction data at low temperatures are well known and the use of low temperature devices is now very well established and widespread for small molecule crystallography; in many cases to usefully collect data at a single temperature. The combination of easily controllable devices with a wide temperature range and the use of area detectors allowing rapid data collection makes variable temperature studies and thus exploration of the structural changes that occur with changes in temperature much more accessible.

At the higher end of the temperature scale, and as part of a wider project, we are investigating the effect of temperature on selected porous coordination networks and hydrogen-bonded arrays. These networks, which can be considered metal-organic zeolite analogues, form channels, pores and cavities which may include guest organic molecules. By heating the crystal and collecting data *in situ* we can monitor the structural changes that occur with increased temperature, in particular due to desorption of these guest molecules.

At the lower temperature range we have been investigating structural changes at the metal centre of some transition metal complexes.

Examples from studies carried out in the temperature range 35-500K using an open flow HeliX helium cryostat and a Cryostream plus will be presented.

Keywords: low and high temperature devices, metal-organic compounds, porous materials