Description of the Facility

Mission
The mission of the CUNY X-ray Facility is to perform single-crystal analyses for the structure determination of molecules, which make up a crystal. This technique is called single-crystal X-ray crystallography. It is the ultimate method for definitive determination of molecular structures at the atomic level for both organic and inorganic compounds. Its uses range from simple identification of compounds to various exotic configuration and conformational studies.

Instruments

Bruker-Nonius KappaCCD System
Instrument: Bruker-Nonius KappaCCD, equipped with a CCD detector and a liquid-nitrogen low-temperature device.

Capabilities: The KappaCCD, acquired in 2001, embodies the state-of-the-art technologies for rapid, precise, and accurate data collection. It is particularly useful for collecting data from inorganic compounds containing heavy atoms, such as technetium and rhenium, to minimize absorption-correction errors.

Enraf-Nonius CAD4
Nonius CAD4 serial diffractometer, equipped with a scintillation detector and a liquid-nitrogen low-temperature device.

Capabilities: A serial diffractometer collects one diffraction spot at a time. This CAD4 is an excellent instrument for research requiring high-quality data from small crystals, as the low-temperature option allows for better resolution and more accurate data collection.

Instrument: Nonius CAD4 serial diffractometer, equipped with a scintillation detector, liquid-nitrogen low-temperature device, and a long 2theta-detector arm.

Capabilities: The long 2theta-detector arm allows better resolution of diffraction spots for crystals with long unit-cell dimensions. With this configuration, the signal-to-noise ratio is higher than for data from a sealed tube, and thus smaller crystals may be used to collect data.

The low-temperature options immensely improve the flexibility of a diffractometer. When a crystal is cooled to low temperatures, it can illustrate, display, and apply the principles of crystallography. A CAD4 diffractometer requires little maintenance.

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