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 and are capable of analyzing 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 generating high-quality data in a short period of time. It is particularly useful for examining the angular range from 2theta = 0 to 90 degrees.

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. The low-temperature options help improve the signal-to-noise ratio, allowing smaller crystals to be used for data collection.

The low-temperature options immensely improve the flexibility of a diffractometer. When a crystal is cooled, its thermal vibrations are reduced, which can make possible analyses of compounds whose crystallinity deteriorates at ambient temperature.