

X29 Operating Procedure

Loading and centering crystals

1. In CrystaLogic window, click on **Load** and goniostat will move to the position for loading a frozen crystal.
2. After mounting a crystal, click on **Unload** and proceed to **click-to-center**.
3. Move the red dot to the crystal and click, the dot will turn green. Then move the green dot to the crosshair and click, the crystal will move to the crosshair.
4. Repeat step 3 at Omega=90°, 180° ... until the crystal is centered. Home Omega when done.

Changing wavelength and performing fluorescence scan

1. On X29-h, start CBASS by typing **cbass &**.
2. In Beamline window, click on **Select Waves** and select the element in the popup window, then dismiss the window.
3. In Beamline window, click on **Scan Monochromator**. A new window will pop up to show the scan result.
4. After the scan is done, click on **Plot Spectrum** and the original scan will be normalized to I_0 .
5. In Beamline window, click **Analyze Spectrum**. A new window will pop up to show the Chooch plot with another window showing the energy and wavelength for the inflection and the peak (maximum) of the scan.
6. If you choose to collect data at the peak, click on **Move to Maximum** in the second popup window in Step 5 and move monochromator to the peak wavelength.

Data collection and processing

1. In CBASS Collect window set frame name and number, starting omega angle, oscillation angle and the exposure time, click on **Collect Data**.
2. On x29-a or x29-b computers, type **HKL2000** and select **Q315** to start data processing.

Checking beam center and aligning beam stop (for beamline staff only)

1. Switch on #3 attenuator (0.1) in the X29_user_info window, remove detector cover and beam stop, then in CBASS Collect window set the data collection time to **0.5 s** and click on **Collect Data**.
2. Display the data frame in HKL2000 and measure the beam center.
3. Put the beam stop back on, take a **1 s** exposure to see if the beam stop is in place.
4. If beam stop is misaligned, adjust the beam stop in the CrystaLogic window until no direct beam reaches the detector.
5. Switch off the attenuator and take a 5 s exposure to see a beam stop shadow, fine-tune beam stop in the CrystaLogic program.