Shipping Instructions for Remote Access Experiments at HPCAT

By HPCAT Staff, July 13, 2020

The Limited Operations phase of Argonne's return to work plan allows for non-COVID related sample material to be shipped to the APS for measurement. Currently, HPCAT is accepting diamond anvil cells that have been properly loaded, shipped, and scheduled to be measured on the 16-IDB and 16-BMD beamlines. In order to assure the highest probability for success in these measurements, several key procedures must be followed during scheduling, cell preparation, and shipping.

Scheduling

DACs must arrive at HPCAT at least two business days before the beginning of the scheduled beamtime. This will allow the relevant staff members to come to the lab to prepare sample holders and pressure control devices before the beamline scientist brings the DACs to the beamline end station. Please coordinate with your local contact well ahead of your experiment.

During Limited Operations, the APS allows samples categorized as low hazard level, as well as some materials that have been categorized as medium hazard level. If your material has been classified as medium hazard level on previous ESAFs, it is recommended that you submit an ESAF several weeks ahead in order to confirm that the sample will be allowed to run.

Cell Preparation

- If at all possible, prepare multiple samples for each measurement.
- If the HPCAT membrane canisters will be used to change pressure during measurements, please make sure that washers do not protrude more than 0.01" outside the diameter of the cell.
- Use a scribe to make any necessary alignment marks on the DAC, ink marks will likely be removed by the cleaning that the DAC will receive before use at the beamline. Nail polish will not be removed by the ethanol wash, so it can be used for small alignment marks.
- Documentation must be included with each DAC. It should include any needed orientation requirements, cell pressure at time of shipping, sample material and any other information that will be necessary for staff. If you have microscopic images of the sample load, these can be very helpful to the beamline staff during alignment.
- Beryllium gaskets can be used in cells shipped to the APS, but NO beryllium work can be done onsite. This means that all cells must arrive at the APS with secondary windows covering the diamonds, and with all side holes sealed (typically with Kapton tape) to prevent beryllium dust from escaping in the event of a shattered diamond.

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Shipping and handling

- DACs must be cleaned and disinfected before being packaged for shipping. HPCAT staff will clean the DACs with 70/30 ethanol/water solution when they are unpacked and again when the DACs are repackaged for return. This will remove ink alignment markings, please use other means to mark the cell or discuss other reference methods with your local contact.
- Packing materials must be assembled in a way that makes them simple to re-use for the return shipment.
- Please avoid over packaging (i.e. stuffing boxes with polystyrene filler, loose tissue or paper, etc.) and only ship the items necessary for the current experiment.
- DACs for remote experiments must be addressed to:

  Curtis Kenney-Benson
  9700 S. Cass Ave., Bldg. 434E
  Lemont, IL 60439
  Ph: 630-252-0495 Cell: 815-514-4278
- Return shipping address must be included (if possible, request your shipping facility to include a return label).

Liability Statement

The staff of HPCAT will handle DACs sent for remote measurements with the utmost care, but it is not possible to remove all potential for accidents. HPCAT does not accept liability for damage to DACs or the diamond anvils mounted in them that occurs during shipping, handling, or experiments.

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