

# Facility Access for Service Centers

## Electron Paramagnetic Resonance (EPR) Facility

In the initial phase of reopening, access to facility lab spaces are restricted to only the facility manager (Paul Oyala) and GLA (Dirk Schild). The facility manager will run all samples, as many as possible within a 24 hour turnaround period (for CW-EPR at 77 K or room temperature only) during weekdays between 9 AM and 6 PM.

- A station for contact-free sample drop off will be set up just outside of Crellin B264, where clearly labeled frozen EPR samples can be left in a LN2 storage dewar with 6 separate sample containers.
- Samples should be labeled with a 1 inch section of lab tape wrapped tightly around the sample and stuck to itself, with sample identity written in permanent marker.
- Any caps or rubber septa must be removed after freezing, before putting the sample in the LN2 dewar (even airtight caps often let in LN2 when submerged, creating a potential explosive device when the sample is removed and warmed even slightly).
- Use of J. Young tubes (or other gas-tight fittings) with this new system is generally discouraged, but if absolutely necessary for experimental reasons, a tall LN2 dewar will be provided at the drop-off station which has a tested hold time of ~ 12 hours - make sure that the valve itself is never submerged in LN2.
- Notice of sample drop-off and all relevant sample details should be emailed to the facility manager, as well as desired experiments.
- Data files will be emailed back to the user once experiments have been completed.
- Time sensitive samples (e.g. room temperature reaction monitoring) or other specialized experiments that will not fit within the sample drop off system will require consultation with the facility manager for a set time during which the user can access the CW EPR lab space after sanitation of all work surfaces.

## Glass Shop

To access the glass shop, researchers should enter through the North facing entrance of the Church building and use the foot operated automatic doors. Researcher can use the NW stairwell or the elevator to reach the sub basement. Anyone dropping off or picking up work will do so at a designated location in the sub basement hallway. An attempt to resolve any conflict via email or telephone will always be made prior to in person meetings. Access into the glass shop itself will be limited to Nathan Hart, a supervisor, anyone delivering oxygen and hydrogen tanks and resolving any potential matters that could not be solved over email or

phone. In any instance where a researcher needs to be in the glass shop, social distancing will be maintained to the best of the staff's abilities the entire time. Contact via email or phone will be made with researchers who had open orders at the time of closure, at which time, this procedure of picking up and dropping off work will be explained.

### **Liquid Nuclear Magnetic Resonance (NMR) Facility**

Initial access will be contactless where researchers drop off their NMR samples already loaded in capped sample tubes at a receiving station just inside the front door of Crellin Hall. Either David Vander Velde or one of the laboratory GLA's will pick them up from there, take them down to the lab, disinfect the samples, and load the majority of them into one of five automated instruments equipped with autosampler robots. A small fraction of the samples are likely to require manual spectrometer operation. After completion of experiments, lab personnel will return the sample tubes to the dropoff location for researchers to reclaim. Researchers are already accustomed to retrieving their raw data and opening it on their own computers using the site licensed MestReNova software. Additionally, lab personnel will be using some enhanced remote access software tools. As the instrument completes each new analysis, the researcher will be emailed a PDF plot of the results. Staff will also use a web browser based interface to the facility's two Bruker spectrometers to allow remote addition, editing, or deletion of experiments for samples already in the sample changer.

Technical details are outlined in an nmrusers listserv message sent June 5. Contact Dr. Vander Velde if you didn't receive this message.

### **Machine Shop**

It is recommended that researchers use the four-door north entrance to Church Building for both the Instrument Shop and the Glass Shop. This will allow them to use the 'elbow touch pad' on the post at the entrance. The elevator can be used (also with elbow touch capability) to get to the sub-basement. Egress should be via the north Church stairwell to maintain social distancing protocols. At the first floor landing, 'push bars' can be used to exit the building.

### **Mass Spectrometry**

Researchers who need access equipment are to use the existing instrument online calendar to reserve a time between 10 a.m. and 5 p.m. This is to allow time for inspection of the lab and general cleaning each day. The individuals with reserved time are to arrive at their scheduled time to avoid potential crowding in the laboratory or hallway. Up to four people may use the instrumentation by reserving calendar time. Those individuals who are dropping off samples for analysis are to leave paperwork and samples in a bin on the table by the lab entrance.

## **Solid State Nuclear Magnetic Resonance (NMR) Facility**

Because of the nature of solid state NMR experiments that often require long signal averaging, users need to spend minimal amount of time to setup experiments and leave the facility room, and come back later to collect samples and do appropriate clean-ups. The shift among users in the facility room will be tightly controlled by the manager to allow only one user access at a time. All check-in/out process should be recorded on a logbook on the front entrance door.

### **A. Individual access for trained users:**

1. Any trained users can access the facility space and operate spectrometers to collect NMR data upon receiving email approval from the manager (email: [sonjong@cheme.caltech.edu](mailto:sonjong@cheme.caltech.edu)). The approval e-mail should include the schedule (date, time, expected duration of use) and requirements that users need to abide by during the operation. Users are required to agree to follow the safety procedure before stepping in to the facility.

2. Movement by a user in the facility room is limited to around the spectrometer computer desk, magnet for sample loading, sample packing bench, spectrometer console if necessary, and data transfer computer station.

3. Upon completion of data acquisition, the user is responsible to transfer data immediately to user's own computer network for further processing at user's own research lab space or at home. Extending the stay in the facility room for the purpose of data processing is not recommended/strongly discouraged.

4. Any new user or even the trained users are welcomed and strongly recommended to receive solid state NMR service simply by submitting samples to the facility manager during this time of restriction. A small labor fee will be added to the spectrometer user charge for this operation. Remote teleconferencing can be done for specific experimental guidelines. A sample drop-off box will be available by the facility entrance door. For any questions or suggestions, feel free to email the manager.

### **B. New user training (Not allowed until further notice)**

For those who want to get trained for spectrometer operations, the following steps will be used.

1. User training will be performed by the facility manager only one new user at a time.  
2. Prior to in person training, the new user is requested to complete review of instruction materials which will be delivered via email, and need to sign the agreement form.

3. Face-to-face instruction will take place in the facility room and around NMR spectrometers. During this training, both trainer and trainee are required to obey the Corona Virus guidelines : wearing all required PPE and maintain the 6-feet distance all the time.

After the training, the manager will demonstrate to the trainee cleaning and disinfecting practices and leaving the facility room after sanitization.

