

Principal Investigator:

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Emergency Information:

Staff Member: 240-274-5646 / 301-565-4749

BBR (Gary Bors): 202-510-8577

All other emergencies: 911

Purpose:

All laboratories and facilities on the Broad Branch Rd. campus are controlled areas. Specific training must be completed and documented before working in this laboratory / facility.

This laboratory contains the following instrumentation/apparati to support hydrothermal experiments.

- 1) High pressure flow through apparatus
- 2) Cold Seal pressure reactors
- 3) Flexible Gold bag hydrothermal reactor
- 4) Head space gas chromatographs
- 5) High Temperature furnace.

The Lab is also equipped with a benchtop X-ray Fluorescence EDS spectrometer.

1. High Pressure Instrumentation and XRF***1.1 Cold Seal Pressure devices:***

Any personnel who use these devices must be trained in their safe use. This includes training on furnace operation, pressurization, sample loading ...etc.

Objective Hazards: High pressure, High Temperature

Rules:

- Never pressurize above 4000 Bars (Cold); 3500 Bars (hot)
- Do not modify any aspect of this apparatus
- Never Stand in front of pressure bombs.
- Use protective shields

1.2 High pressure Hydrothermal flow through apparatus:

Only trained personnel are allowed to operate this equipment

Objective Hazards: High pressures, High Temperatures

Rules:

- Do not modify any aspect of this apparatus
- Use protective shields

1.3 Flexible Gold Bag apparatus:

Only trained personnel are allowed to operate this equipment

Objective Hazards: High pressures, High Temperatures

Rules:

- Do not modify any aspect of this apparatus
- Use protective shields

1.4 X-Ray Fluorescence EDS spectrometer

Only trained personnel are allowed to operate this equipment

Objective Hazards: X-radiation, 50 Watt end-window X-ray tube.

Rules:

- Do not modify any aspect of this apparatus
- Follow X-ray warming-up procedures

2. Compressed Gasses, storage, and disposal

Appropriate regulators are required for compressed gasses.

2.1 Storage of new Tanks

All compressed tanks must be stored in the storage area. Unused tanks must have end-caps securely fastened. Do not store H₂ in close proximity to O₂. Do not use carbon monoxide.

2.2 Securing in-use Tanks

All in-use tanks must be securely attached to fixed bodies, e.g. bench top.

2.3 Return of empty or long-term non-use tanks:

Empty tanks are to be labeled "EMPTY" and returned to the loading dock storage area for pickup. Specialty gasses from suppliers other than Roberts or Airgas will require special arrangements for pickup.

3. General Laboratory Safety Features:

3.1 Eye-ware-protection

Required for during operation of any instrumentation in this laboratory

3.2 Protective clothing

Recommended for:

Lab coats when using Cold Seal high pressure devices due to potential spraying of pressurizing fluid.

Thermal protective gloves when handling potentially hot reactor components on all apparatus.

3.3. Sample storage and labeling

All samples must be labeled in such a way as to be immediately identifiable. The use notebook numbers or other schemes is not sufficient information. Unlabeled vials constitute a serious offense and can lead to loss of laboratory privileges.

4. Off-hours Operation

4.1 Any Experiments

In order to perform any high pressure experiments after hours requires that a second person must be identified who is 1) in the building during such work 2) made clearly aware of the scope of the proposed work and the potential danger, and 3) is willing to check in at a frequency not less than once an hour to ensure safety.

4.2 Instruments

The use of instruments after hours is not restricted. The repair of instruments after hours is subject to the same restrictions as after-hours chemical processing.

5.0 General Lab Safety Features and Policies

Keep laboratory doors locked when laboratory is unattended and during off hours. Doors may be left open only when you are actively using the facility.

Authorized Users can store chemicals in the Hydrothermal Lab only after approval by the designated Lab-managing scientist.

Long-term storage of samples is prohibited.

SDS sheets are located on the computer desk.

A fire extinguisher is located behind the door.

Laboratory User

I agree that I have thoroughly read and understood this laboratory safety document. I have access to this safety information at all times when I am working. I have been trained to be able to identify the hazards to which I may be exposed and to follow the work practices and procedures discussed in this document. I certify that I will conduct my research work safely and that I will be responsible for following stated safety policies.

User Name (Print)

User Signature

Date

Principal Investigator

I certify that the information presented in this safety document is accurate and complete. I agree to comply with all safety procedures and to fully train and supervise all researchers under my direction.

PI Signature

Date