

H LAB SAFETY PROCEDURES  
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Complete these on line training through the UIUC Division of Research Safety before working in either 209 E Talbot or 220 D Talbot:

<https://www.drs.illinois.edu/>

Select Training in the Top Menu and complete:

- Laboratory Safety/Laboratory Safety
- Laboratory Safety/Risk Assessment for Research Procedure
- Chemical Safety/Chemical Safety: An Introduction
- Chemical Safety/Chemical Spills
- Chemical Safety/Compressed Gases and Cryogenics
- Electrical Safety/Electrical Safety: Fundamentals
- Electrical Safety/Electrical Safety: Risk Assessment
- Electrical Safety/Electrical Safety: Recommended Practices
- Radiation Safety/Radioactive Materials Safety Training

209 E Talbot specific procedures

This laboratory contains a NETZSCH Simultaneous Thermal Analyzer (STA), a Zeiss microscope, and cabinets with stored samples. The STA is a very delicate piece of equipment and all users should thoroughly read the operational and instructional manuals prior to use. The STA has two furnaces, a water vapor furnace that allows samples to be exposed to high temperature steam and a SiC furnace. The STA is also connect to a water vapor generator. The Zeiss microscope has three contrast modes, bright field, dark field, and differential interference contrast. The microscope has a CCD camera that can capture images; this camera is connected to the STA computer.

- Only mild solvents (methanol) allowed in the lab. No acids or other chemicals allowed.
- Ensure argon compressed gas cylinder is always secure. Replacement of this gas cylinder should follow these procedures:
  1. Remove regulator.
  2. Place cap on the bottle valve.
  3. Remove bottle from wall mount and secure bottle to cart and remove.
  4. Secure new bottle in wall mount.
  5. Remove cap and attach regulator.
  6. Place cap nearby—do not remove cap from room 209 E.
- Follow operational procedures for the STA; these will vary according to the data acquired and are specified in the manuals for the STA.
- Always check to see if the STA is performing a run before using. If the STA is acquiring data do not interfere.
- Always ensure cover and furnace gases are flowing prior to STA temperature ramps.
- Make sure the valve at the top of the furnace is closed before performing pump/purges of the furnace. Otherwise water might be pulled into the furnace and onto the microbalance.
- Be aware that the DSC carriers are made of Pt and may react with samples. This can result in irreversible damage to the DSC carrier. Because of this, always in an alumina crucible unless given specific permission by Prof. Heuser.
- Always leave STA and computer power on. Only turn off if maintenance is to be performed.

- The STA has a dry mechanical pump that does not require oil replacement.
- Always turn off the microscope and replace cover when not in use.
- Always be careful not to raise the microscope lens too high and bump into samples or glass slides.
- Avoid dropping samples onto the microscope lens.
- Cabinets store samples with low levels of radioactivity, below the exempt limit. Request permission from Prof. Heuser before removing these samples.
- Confirm the door is locked when leaving.

#### 220 D Talbot specific procedures

This laboratory contains a recirculate loop autoclave, a magnetron sputtering deposition tool, two hydrogen gas loading manifolds (Sieverts apparatuses), a getter furnace, and a fume hood. A sink, drain, several bench tops, and cabinets are contained in this laboratory as well. Solvents and other chemicals are stored in this laboratory. The Standard Operating Procedures for both the magnetron sputtering facility and the autoclave should be read prior to use.