

Statement of Work:

A cleanroom environment for processing and metrology is required for precision and reproducibility in Microfabrication. Rules and regulations have been devised to ensure safety, high yield, and reliable operation for Users and the facility. This facility is not currently operating as a cost center.

I. Equipment Use

- Equipment training is conducted by the Cleanroom Manager. Other CAMD staff may be authorized to train users on equipment according to the guidelines presented in the Equipment Use Policy.
- Log-In and Log-Out for each piece of equipment booked at the time of machine use. The single Log-in computer is located in the cleanroom lobby.
- Log-Out immediately after machine use.
- All equipment malfunctions must be immediately reported to the Cleanroom Staff.
- Users are issued a log-in ID, password, and project code for use of the Booking and Log-In systems after all training aspects are completed.
- Users are allowed to Book and Login equipment which he/she has been trained and authorized.
- All equipment Bookings should be made minimum 24 hours in advance. Cancel reservations immediately if you discover you will no longer need equipment.
- If you are not working you may not be inside the Cleanroom.
- Users can request training for "Special Training" and "Limited" equipment depending on need. Refer to the Equipment Use Policy for more details. Access updates will be made once the Cleanroom Manager has granted approval.

II. Chemical Use

- Proper Personal Protective Equipment (PPE) corresponding to the chemical(s) being used are required. Refer to the glove list located inside the gowning area and the chemical's MSDS for appropriate PPE. At minimum, safety glasses must be worn in the vicinity of a chemical hood.
- Prepare all hazardous materials for proper disposal, as discussed and demonstrated in training. Chemical or hazardous materials are never poured down drains nor disposed in garbage cans.
- All chemical manipulations, including lid removal, must be contained under a hood. Liquid resist use is restricted to areas under a chemical hood or within range of spinner ventilation.
- Chemicals needed for use inside the CAMD facility that are not listed on the CAMD chemicals list must be approved by the Safety Director, Dr. Lorraine Day, before bringing inside the Experimental Hall and Cleanroom. The chemical must correspond to an existing project with an active project reference number (PRN).
- Special acid training and authorization is required for use of acids inside the cleanroom.
- No powdered substances are allowed inside the cleanroom. The hood located behind the cleanroom may conditionally be available for mixing or measuring of powdered substances. Check with the Cleanroom Staff for details.
- Each group of users is allowed to store one set of chemicals under the main processing hood. Multiple bottles of the same chemicals in each group are not allowed.
- Resists priced above \$250/qt are not provided by CAMD. Chemicals such as: solvents, developers, etchants, acids etc. may be used by External Users with out any pending charges.
- Chemicals in use must be covered with glass lids and clearly marked with (1) Chemical Name, (2) User Name, and (3) Date.
- Chemical processes should not be left under the hoods for longer than 48 hours. Special circumstances may be considered for longer processing times. Contact the Cleanroom Staff for information; otherwise, items are considered abandoned and discarded after two days.
- Wash lab ware, replace them on the shelves, and completely clean work areas immediately after use.

III. MISCELLANEOUS

- Each User must use his/her own access card to enter the Cleanroom. Users are not allowed inside the Cleanroom using another person's access privileges.
- A visitor may be allowed inside the Cleanroom only when accompanied by a CAMD staff member who has Cleanroom access. The staff member must instruct the visitor on protocol and continuously accompany the visitor while inside the cleanroom.
- Bring only items relevant to research when you come to the Lab and remove the items when completed. There is little space for storage for CAMD staff Users and no space allocated for External Users.
- The cleanroom is available for use between 7am-10pm weekdays. Users without After-Hours access must exit the cleanroom before 10pm workdays. All machines, except heaters and PG, will be automatically logged out at 9:45 pm for those Users without Cleanroom After-Hours (CR-AH) access.
- The Two Person Rule is active at all times. It is the Users responsibility to ensure there is a willing and available second person when working inside the Cleanroom after 5pm weekdays and all times during After-Hours. See the website for more details on the Two Person Rule and the CR-AH Policy.
- Talk radios are provided to persons outside of personal communication range in order to comply with the Two Person Rule.
- Overnight jobs may be left on the ovens, hot plates, and PG. However, the job must be removed before 9am the following morning. If the following morning is a weekend or staff holiday, the job may NOT be left overnight if the User does not have CR-AH access.
- With authorization from the Cleanroom Manager or Microfabrication Director, the cleanroom may be accessed After-Hours, which are from 10pm – 7am on weekdays and all hours on weekends and LSU Staff Holidays. See the website for the (CR-AH) request form and CR-AH Policy.
- During After-hours, inform control room personnel of each entrance and departure to the cleanroom.
- Cleanroom training lapses after 6 months without cleanroom use. Full retraining is required for access after this time.

IV. SANCTIONING

- Users who violate a Cleanroom rule or regulation as communicated in this document, cleanroom training, or machine operation procedures will be ticketed.
 - Three tickets result in a minimum one month suspension. Retraining is required for re-entry into the cleanroom.
 - Subsequent offenses may produce more extreme consequences, at the discretion of the Cleanroom Manager, the Microfabrication Director, or the CAMD Director.
 - Specific offenses which are subject to an automatic one-month suspension include the following:
 - Improper or unauthorized use of acids
 - Unauthorized chemicals inside the cleanroom
 - Unauthorized equipment use
 - Unauthorized cleanroom entry or facilitation of unauthorized personnel into cleanroom
 - Equipment login/logout for other Users
 - Violation of a protocol in the Two-Person Rule
 - Unauthorized equipment training

EQUIPMENT ACCESS

Refer to Equipment Use Policy for more details on classification and access.

EQUIPMENT LIST

- **General Use**
 - Branson Plasma Asher
 - CP Horizontal Flow Oven
 - Hot Plate Station
 - Light/Heavy Duty Spinners
 - M326 Mechanical Convection Oven
 - M206 Mechanical Convection Oven
 - Mann 3600 Pattern Generator
 - Nikon OPTIPHOT-88 Optical Microscope
 - Oriel UV Exposure Station
 - Tencor Alpha Step 500 Surface Profiler
 - 6' Polypropylene Hoods
 - 4' Stainless Steel Hood
- **Special Training**
 - Denton Sputterer
 - Flycutter
 - Hitachi UV-VUS Spectrophotometer
 - Nikon MM-22U Measuroscope
 - Quintel UL7000-OBS Aligner and DUV Exposure Station
 - Suss Analytic Probe
 - Tencor P-2 Long Scan Profiler
 - VT5042 Vacuum Oven
 - ZYGO Mark IVXP Interferometer
- **Limited**
 - Digital Instruments SPM/Nano Indenter
 - EDAX Energy-Dispersive X-Ray Analyzer
 - Engis Lapping Machine
 - Hitachi S-4500II Field Emission SEM
 - Oxford (100) RIE/ECR
 - Oxford (300) Ion Mill
 - Oxford (400) Plasma Lab Sputterer
 - Temescal E-Beam Evaporator
 - WYKO NT3300 Optical Profiler

**LSU/CAMD
CLEANROOM USERS POLICY**

prepared: 9/00 (s.malveaux)
revised: 11/04 (Goettert, Malveaux, Morris)

Statement of Acceptance:

I will adhere to the guidelines provided in this document as an authorized user of the CAMD Cleanroom and understand that failure to comply with any of the regulations can lead to suspension and/or expulsion from the CAMD Cleanroom.

Name (print)

Department/Supervisor

Signature

Date

Franz-Josef Hormes
CAMD Director

Jost Goettert
CAMD Microfabrication Director

Tracy Morris
CAMD Cleanroom Manager

Date

Date

Date