

General Facility Use

Researchers must be trained on each instrument that is used. This training is done with George Spiggle (gspiggle@engr.uky.edu, 257-8397).

Sign up is first come first serve. A calendar can be found at every instrument. Each user is required to sign his/her name, professor's name and phone number. Instructors wishing to use the facility for course instruction must schedule at least a week in advance. The director, under special circumstances, may assign priority to special projects, weighing the needs of student progress.

The log must be filled out for every station (especially the chemical cleaning hood) to have a record of users and chemical systems.

George Spiggle/Vijay Singh have the authority to immediately suspend privileges of any user who performs unsafe experiments and/or violates safety regulations. The door key code will be cancelled and unescorted entrance into facilities will be treated as trespassing and **campus police will be notified**. Access will be reinstated only after the majority of core professors vote to do so after agreeing on appropriate corrective actions such as a thorough safety report or 'fabrication community' service. This process will take several weeks and will interfere with student progress; thus following procedures is critical. Protest of suspension can be taken directly to Prof. Vijay Singh, who, as director, has final authority in all matters. **Professor Singh has a strong commitment to safety and will not take this matter lightly.**

Faculty member and others wishing to use the CMMED facilities are responsible for providing the special accessories needed for their experiments. For example, the CMMED will not provide process gases, deposition materials, substrates or non-standard cleaning chemicals.

The user must follow all University of Kentucky safety regulations and must provide MSDS paperwork for all chemicals and gases brought into the facility. Working alone with chemicals, furnaces and CVD equipment is forbidden. If a co-worker momentarily steps out of room then the door should remain open to allow prompt aid in event of mishap.

Users must use appropriate safety wear. If performing non-standard procedure you must provide your own safety wear. All gas cylinders must be securely fastened!! If researcher is bringing in a new cylinder, they must provide appropriate safety restraints and consult Mr. Spiggle.

The user is responsible for cleaning the equipment that he/she uses. If you are unsure of the operation of a piece of equipment, PLEASE ASK FOR HELP.

For further information or questions, please contact: George Spiggle, gspiggle@engr.uky.edu, 257-8397. A schedule of lab hours for all personnel is posted.

Dr. Vijay Singh, Director, CMMED, vsingh@ engr.uky.edu , 257-3243
Date: January 25, 2002

CMMED Wet Cleaning Bench Operating Procedure

January 2002

Failure to follow procedures can and will result in contamination that will ruin your experiment and ruin the experiments of everybody after you

Privileges to use the facility will be revoked if procedures are not followed precisely

Failure to follow correct safety procedures will result in loss of use privileges

All equipment use, including the cleaning bench, must be logged

The bench and glassware must be cleaned to original state after use

No Glassware nor chemicals shall be left on the bench after use, period

Prof. Vijay Singh, Director CMED
Mr. George Spiggle, primary lab coordinator
Procedure prepared by Prof. Bruce Hinds

Non-standard Procedures

To insure that the facility does not become contaminated, all non-standard procedures must be approved by Dr. Singh, Chen, Hinds or Mr. Spiggle

Standard procedures that require no special approval (aside from required training) are:

RCA1, RCA2, Piranha cleans. Organic/resist strip with Acetone. HF etch.
Oxidation, doping, diffusion, and H₂/D₂ passivation anneals.
Photolithography
E-beam evaporation of Al, Au, SiO₂, Al₂O₃.
Sputtering with commercially purchased target
Thermal evaporation of Al, Au, Cu.
Liftoff, metal etching

An experiment plan must be written for non-standard experiments.

This plan must be approved

Verbal confirmation with an advisor is not acceptable, experiment plan must be written and on file with Mr. Spiggle

(This may seem like an inconvenience, but if you are at all a good scientist/engineer you would write this down anyways. 1 page + MSDS's is sufficient in most cases)

Performing non-standard procedures without approval will result in suspension of privileges

Items that must be included in discussion are:

Materials used

Materials Safety Data Sheets (MSDS can be conveniently found at www.sigmaaldrich.com)

Safety hazards and precautions taken

Equipment to use

Contamination possibilities, minimization, and cleaning

Waste disposal

The next page is an example of a non-standard procedure request form.

Cleanroom Garment Policy

Cleanroom garments (suit, shoe covers, hairnet, and gloves) must be worn at all times while inside cleanroom area.

Suits will be available for shared use and disposed of by facility manager after useful lifetime.

Please reuse shoe covers that are stored at the bottom of the cabinet. Do not turn 'inside out' after use.

Please reuse your personal hairnet. Please write your name on the hairnet and reuse. For visitors or 1 time users, dispose of hairnet after use.

Always wear disposable gloves in the cleanroom facility to minimize contamination.

Waste Disposal

Use waste containers for specified waste only.

If performing a non-standard procedure, you must provide your waste containers and label contents and owner (name, phone number).

When planning non-standard experiments, (ie buying new chemicals) at the same time plan for waste disposal and safety equipment. Also contact George Spiggle anytime new chemicals are brought to facility. MSDS are required. Fill out non-standard experiment request form.

Typically non-standard waste will be stored in sealed containers in former fume-hood outside of cleanroom area as cluttered chemicals/waste pose a serious hazard.

Chemical Storage

Do not store the NH_4OH or Acetone within 3 feet of the HCl , H_2O_2 , or H_2SO_4 . In general acids (HCl , H_2SO_4) must be kept away from bases (NH_4OH) and oxidizers (H_2SO_4 , H_2O_2) away from flammables (acetone).

Contact George Spiggle anytime new chemicals are brought to facility. MSDS are required. Chemicals must be labeled with contact information (name/phone).