

Texas Materials Institute
The University of Texas at Austin



TMI Nanofabrication and Testing Facility Policies and Procedures

Created: February 2, 2007
Revised: August 11, 2017

Overview

It is the desire of TMI staff to provide the safest and most productive research environment possible in all TMI facilities. This document describes safety policies and laboratory procedures for use in the TMI cleanroom. All cleanroom users must read, understand and comply with these policies.

1. Statement Regarding User Responsibility

While this manual describes specific cleanroom rules and policies, no manual can be completely comprehensive. Facility users therefore are expected to exercise good judgment, courtesy to others and common sense while using the cleanroom. It is each user's responsibility to understand how their actions might affect the safety, health and research of others and to act accordingly.

2. Cleanroom Training

Only authorized personnel are permitted to enter the cleanroom.

In order to obtain cleanroom access, prospective users must enroll in and successfully complete the "Cleanroom Safety Training" class. This course covers cleanroom entry and exit procedures, billing information and emergency procedures and site-specific safety issues. Prospective users must have completed the following prerequisite safety courses, which are offered by the Office of Environmental Health and Safety:

- OH 101 – Hazard Communication Online Training
- OH 201 – Laboratory Safety Online Training
- OH 202 – Hazardous Waste Management Online Training

The users must contact Raluca Gearba at gearba@austin.utexas.edu in order to request cleanroom training.

3. Gaining Access to the TMI Cleanroom

As part of the Cleanroom Safety Class you will be requested to fill in the **"New TMI user form"**.

Once the form is returned to the TMI Staff, entry to the cleanroom will be granted. The user will also be given after hour access to the building which includes the loading dock and the West and East stair entrances. UT ID card with proximity is required to access the cleanroom. If a new ID card is obtained (due to loss or damage) please contact the TMI staff to regain access to the facility.

Visitors are not allowed in the cleanroom unless accompanied by TMI staff.

4. Proper Cleanroom Attire

Proper attire is required at all times in the W. M. Keck cleanroom. Such attire consists of the following items:

- Clean, liquid resistant street shoes (no sandals).
- Cleanroom shoe covers.
- Cleanroom coverall (i.e., bunnysuit).
- Hairnet.
- Latex or nitrile cleanroom gloves.
- Safety glasses (or goggles in certain cases).

Note: Additional protective equipment (i.e., gloves, face shield, acid smock) may be required depending upon the equipment and reagents being used.

5. Prohibited Items

Due to cleanliness and/or safety issues, the following items are not permitted in the cleanroom:

food	notebooks	cosmetics
drinks	pencils	cloth
paper products	styrofoam	powders
cardboard	foams	backpacks
tape	lotions	laptops

Notes:

1. This list is not all inclusive. Please ask a staff member prior to taking items into the cleanroom which may cause safety hazards or particulate contamination.
2. Cell phones are allowed, but they have to be thoroughly wiped with provided wipes prior to entering the cleanroom.

6. Cleanroom Entry and Exit Procedures

Proper entry and exit are essential to maintaining the cleanliness of the cleanroom. Please follow these procedures to avoid cleanroom contamination.

a. Cleanroom Entry:

1. Prior to entering the gowning room, thoroughly clean your shoes using the shoe cleaner and tacky mat at the entrance.
2. Once in the gowning room, thoroughly clean all items to be taken into the cleanroom using the provided isopropanol wipes, including sample containers, cell phones, etc.
3. For the first time use of the cleanroom, get a clean suit from the shelf, find an unoccupied hanger for yourself, and sign your name by the hanger number that you just took on the sign-up sheet. Be careful not to let your

- suit touch the dirty side of the floor. (Dirty and clean sides of the gowning room are demarcated by the green tape on the floor.)
4. Put on a hairnet.
 5. Put on shoe covers by sitting on the bench, putting the covers on and swinging your feet over the bench such that the covers never touch the dirty side of the floor.
 6. Put on your suit. Snap the closures at the ankles and neck. Be vigilant and do not allow the sleeves of your suit to touch the ground.
 7. Put on gloves and glasses.
 8. As you enter the cleanroom, check yourself in the mirror to make sure you are properly gowned. (Hair tucked in hairnet, fasteners closed, and street clothing not sticking out)

Notes:

- **Entry to the cleanroom is permitted only through the gowning room entrance. There are no exceptions to this rule.**
- Do not bring personal items such as sweaters, jackets, dangling jewelry, notebooks and backpacks into the gowning room.
- Facial hair must be covered using beard covers.

b. Cleanroom Exit:

1. Avoid crossing the yellow line with your suit on.
2. To avoid contaminating your suit with particles from the gowning room floor, remove your suit on the clean side of the room.
3. Hang your suit up for storage according to your hanger number.
4. Remove everything else (shoe covers last) on the dirty side of the room and dispose them in the trash container.

c. Gown Exchange:

Old gowns should be exchanged for clean ones when they become soiled or after fifteen uses (whichever comes first). Please leave old gowns in the plastic bin under the cleaning table and make sure to update your information on the sign-up sheet.

7. Behavior Guidelines

1. **Always clean up after yourself.**
2. Any debris on the floor or at a workstation is to be picked up and disposed of properly. Users are expected to assume responsibility for a neat, clean and safe work area.
3. Opening of alternate cleanroom doors is only permissible during an emergency evacuation. To talk to someone outside, use the provided phones.
4. **Do not operate any equipment that you are not trained for.**

5. Handling of any surface in the cleanroom requires wearing appropriate gloves. If you are handling quartzware for the furnaces you are required to wear heat resistant gloves when loading or unloading.
6. All materials that are not in use must be properly stored.
7. Do not leave hazardous equipment/materials unattended when in use.
8. Chemicals **MUST** be properly labeled and stored.
9. Cleanroom garments are not to be worn outside of the cleanroom except in case of emergency.
10. Do not use unfamiliar chemicals. Any chemicals brought inside the cleanroom must have preapproval with the TMI staff. Approval is for both the chemical and the process for using it. Request a 'Chemical authorization form from the TMI staff'.

8. Cleanroom Safety

Safety is the primary responsibility of all cleanroom users. The following rules apply to anyone entering the cleanroom:

- When in doubt, ask questions of TMI staff.
- Read and obey all warning signs.
- Always wear personal protective equipment (i.e., shoes, acid or solvent gloves, glasses, goggles, acid smocks, etc.) that is appropriate for what you are doing.
- Do not touch surfaces in the cleanroom without wearing gloves.
- Do not touch your face, eyes or mouth while wearing gloves.
- Do not wear gloves or gowns outside the cleanroom.
- Always clean up after yourself.

9. Equipment Use

The following guidelines apply to use of all equipment in the cleanroom:

- Do not use equipment for which you have not been trained by TMI staff.
- Use equipment only as directed by TMI staff.
- Do not change equipment parameters or gas flows unless instructed to do so by TMI staff.
- Do not attempt to fix or modify any equipment.
- Do not leave equipment unattended while in use.
- Notify TMI staff as soon as possible if a piece of equipment is broken.
- After use, leave equipment as you found it, or better.

10. Handling of Hazardous Materials

The following rules apply to anyone using hazardous materials in the cleanroom:

a. General Safety Rules:

- **Never work with any material prior to understanding health and safety risks associated with its use. Read the MSDS.**
- Never work with any material without appropriate personal protective equipment (i.e., the right gloves, eye protection, face protection, etc.).
- Never bring any flammable or toxic material into the cleanroom without prior TMI staff approval.
- Dispose of hazardous materials properly. Do not throw anything down the sink or in the trash.

b. Toxic or Flammable Gases:

Due to extreme hazards associated with the use of certain process gases, TMI staff assumes sole responsible for handling of gases in the cleanroom. Please obey the following rules regarding the use of gases:

- **Use equipment only as directed by TMI staff.**
- Do not attempt to change gas cylinders.
- Do not attempt to adjust gas regulators.
- Do not attempt to tighten gas fittings.
- Do not touch gas lines or shutoff valves.
- Should you suspect a gas leak, evacuate the area and inform TMI staff immediately as directed in the “Emergency Procedures” section of this manual.

c. Toxic or Flammable Liquids:

The following rules apply to anyone using hazardous liquids in the cleanroom:

- **Know the locations of eyewashes, safety showers, telephones, fire extinguishers and first aid equipment prior to working with hazardous liquids.**
- Wear additional solvent resistant gloves when working with solvents. Cleanroom gloves are not resistant to most solvents.
- Do not use volatile solvents outside of the fume hoods.
- Dispose of used solvent in the appropriate waste container. Be careful not to mix solvent waste with incompatible substances such as acids or oxidizers.
- Dispose of solvent contaminated wipes in one of the red flammables trashcans. Do not throw contaminated wipes in the trash or mix solvent contaminated wipes with incompatible solid waste.
- **Contact TMI staff prior to working with extremely hazardous materials such as hydrofluoric or other acids. Standard operating procedures are in place and proper training by a TMI staff member is required. Additional rules for handling, disposal and personal protective equipment will apply.**

Emergency Procedures for TMI

Non Life-Threatening Situations

Minor Chemical Spill, Leak or Release:

1. Alert anyone in the surrounding area.
2. Notify CNM staff immediately for assistance in cleanup.
3. After hours, on weekends or when TMI staff is unavailable, contact the Office of Environmental Health and Safety (OEHS) directly at 512-471-3511.

Minor Medical Incidents (not involving chemicals):

1. Assist the victim. First aid supplies are located in the gowning room.
2. Report the incident to TMI staff.

Minor Fire:

1. Use fire extinguisher or other means to extinguish the flames.
2. Report the incident to TMI staff.

Life-Threatening Situations

Major Chemical Spill or Exposure:

1. Alert anyone in the surrounding area.
2. If necessary, use eyewash or safety shower to decontaminate victim.
3. If necessary, evacuate the area.
4. Call UT police immediately using one of the emergency call boxes (or by dialing 911 on any telephone).
5. Notify TMI staff immediately.

Major Medical Incidents (not involving chemicals):

1. Call UT police immediately using one of the emergency call boxes (or by dialing 911 on any telephone).
2. If possible, assist the victim.
3. Notify TMI staff immediately.

Major Fire or Toxic Gas Leak:

1. Exit the cleanroom through the nearest emergency exit. Do not stop to retrieve personal items or to remove your gown.
2. Exit the building via one of the stairwells at the ends of the building. Do not attempt to use the elevator.

3. Once outside, regroup on the stairwell across the parking lot from the loading dock. Wait there until directed.

Note: In the event of inclement weather, building evacuees should regroup immediately inside the west entrance of Anna Hiss gym (i.e., the building across the parking lot from the loading dock).

Location Information

Address	FNT, 4.106 102 East 24 th Street
Lab Phone	512-232-3921 512-471-7056
PI	Arumugam Manthiram

Emergency Equipment in the Cleanroom



Emergency Contact Information

University Emergency Response		
UTPD	911	
EHS	512-471-3511	
TMI Staff		
Raluca Gearba	512-232-3695 (office) 631-618-5364 (cell)	FNT 4.116A
Andrei Dolocan	631-618-5015 (cell)	FNT 2.136
Mark Andrews	512-471-4089 (office)	FNT 4.100A
Hugo Celio	512-232-7002 (office)	FNT 2.136
Karalee Jarvis	512-232-1884 (office)	FNT B.132A