

Shared Space Protocol

Version 1.1

4/7/2022

MIT.nano Guidelines for Shared Laboratory Spaces

Purpose - The MIT.nano cleanroom and shared laboratory spaces serve the MIT community with a highly controlled environment for critical research. Proper utilization of workspace in the laboratory is an important factor in maintaining this clean environment and ensuring researchers have adequate space and resources to complete their work. Storage of samples, labware, chemicals, parts and tools in the appropriate location frees up tables, hoods and other workspaces for active research at equipment throughout the laboratory.

1. Scope

- A. For the purpose of this document, the “Cleanroom” shall include all bays, chases, fan-decks, wipe-down areas, gowning areas, and Equipment Support Plan Spaces on levels 1 through 4, and the north side of level 5 of the MIT.nano facility.
- B. The Cleanroom is divided into several different standards
 - Bays: Class-100 – No more than 100 particles equal to or greater than 0.5 micron per cubic foot of air.
 - Lab Spaces: ~Class-1000 – No more than 1000 particles equal to or greater than 0.5 micron per cubic foot of air.
 - Lab Spaces: ~Class-10,000 - No more than 10,000 particles equal to or greater than 0.5 micron per cubic foot of air.
 - Chase, Fan Deck, Wet Lab Spaces: Unclassified – Particle count not classified, this is support space for equipment and infrastructure. It also includes Wet Lab spaces on Level 5.
- C. Personnel:
 - Staff: Technical research staff who report directly to an Assistant Director of MIT.nano. Staff maintain, operate and train on equipment in the Cleanroom.
 - Qualified ESP Maintenance Person (QEMP): Someone who maintains equipment that is inside the Cleanroom as part of an Equipment Support Plan (ESP). These personnel are properly trained to maintain and operate their equipment, and they have completed MIT.nano Chase and Infrastructure Access Training.
 - Field Service: Technical personnel from an external vendor who service and maintain equipment in the Cleanroom. Field Service work with Staff for access to the Cleanroom and equipment infrastructure. All external personnel must comply with MIT’s campus access requirements (TimTicket, COVIDpass, etc.).
 - User: Any person performing work in the Cleanroom that have completed all Registration and Safety requirements.
 - Visitor: Any person entering the Cleanroom that is not sufficiently qualified. Visitors must be approved by Staff (email mitnano-ops@mit.edu) and must be escorted at all times. All external personnel must comply with MIT’s campus access requirements (TimTicket, COVIDpass, etc.).

2. General

- A. All Users and Visitors of the MIT.nano Cleanroom must adhere to the [Cleanroom Protocol](#) document.

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- B. Equipment and Spaces covered under various Equipment Support Plan (ESP) agreements may have additional protocols, guidance or restrictions that are detailed under the Memorandum of Understanding (MOU). Users of this equipment are expected to follow all lab protocols (including this document) as well as the protocols listed in the MOU.
- C. Space Restrictions
 - MIT.nano Users must observe all signage and floor tape limiting access to various areas of the Cleanroom.
 - For cleanliness and safety, Users may not enter the Chase areas from the Cleanroom except by specific paths defined by Green Tape.
 - MIT.nano Users should avoid walking in the defined “PPE Zones” near Corrosive Wet Benches unless wearing the appropriate personal protective equipment (PPE).
 - MIT.nano Staff, QEMP and Field Service may enter applicable Chase areas as needed for equipment repair, but should make every effort to minimize back-and-forth travel between the Chase and Class 100 Cleanroom.

3. Workspaces

- A. Cleanroom Tables and Workspaces: The tables, hoods, benches and other work surfaces in the cleanroom are for active and ongoing work only.
 - These may be used for sample preparation, for computation work, or for lab equipment and supplies.
 - Workspaces must be left clean and free of samples, fab wipes and papers when work is complete.
 - Tweezers, pens and clipboards must be returned to their appropriate storage when work is complete.
 - Samples, notes or other items left behind on these workspaces will be discarded without notice.
- B. Cleaving Samples and Sharps
 - Cleaving, scribing or intentional breaking of samples will only occur in the Cleaving Station located in U7.
 - The U7 Cleaving Station is located in return-air space, so any particulates that are generated from the process will not affect samples and research in the Class 100 Cleanroom Spaces.
 - All sharps generated from cleaving must be stored safely as a sample or disposed of in the appropriate Sharps Waste bins.
 - Safety blades that can be covered or retracted should be used whenever possible.
 - Other sharps, including razor blades must be stored in the appropriately labeled dishes when not in use.
- C. Chase Tables and Workspaces: The tables, workbenches and carts in the Chase areas are for active and ongoing maintenance work only.
 - For equipment or part repair.
 - For repair equipment, tools and supplies.
 - Workspaces must be left clean and free of parts and tools when work is complete.

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- Equipment and part repair must be done in the Chase; the only exception would be when it is not physically possible to move the work out of the Class 100 cleanroom space.

4. Samples and Storage

A. Sample Labeling

- Sample boxes and containers must be labeled with an active User Name and date for easy identification
- Samples and consumables must be clearly labeled to communicate their chemical contents and hazards. If abbreviations are used, a key should be provided to MIT.nano and be readily available in the shared space.
- A label printer is available, connected to PC's along the Metrology Wall on both the Upper and Lower Levels of the Cleanroom.
- Never write directly on sample with pens or markers for identification as this can contaminate devices and spread contamination in equipment.

B. Sample Storage

- Storage cubbies are available for in-lab storage of samples, notebooks, tweezers and other non-hazardous items. Visit [this link](#) to request a sample storage cubby.
- Available in different sizes for a monthly fee.
- Availability is on a first-come-first-serve basis.
- Storage cubbies are for active, in-process samples only. They are not for long-term storage.
- Chemicals, labware and other hazardous items are not allowed to be stored in the Sample Storage Cubbies.

C. Labware Storage

- A wide variety of shared labware is available for all users.
- In limited cases, personal labware may be approved by the Process Technology Committee (PTC). To send a request, email ptc@mtl.mit.edu
- Personal labware may only be stored in designated locations.
- Personal labware storage available for a monthly fee (in addition to requiring approval)

D. Chemical Storage

- MIT.nano provides a broad variety of commonly used lab chemicals for use in the shared wet chemical stations.
- Stocked lab chemicals are available for purchase for ESP areas. Pricing information is provided with the MOU documentation. Requests are made by emailing the Assistant Director of Operations, currently Kris Payer (kpayer@mit.edu).
- Personal chemicals may be approved by submitting a [Chemical Request Form](#).
- Personal chemicals may only be stored in designated locations and must have an up-to-date MIT.nano Personal Chemical Label. Contact the Assistant Director of Safety Systems and Programs, currently Whitney Hess (wrhess@mit.edu).
- Outdated chemicals will be removed after a reasonable effort to contact the owner.
- Unapproved or improperly stored chemicals will be removed immediately without notice.
- Specialty Etchants (chemicals that target a specific material such as Nickel or Chromium) will be provided by MIT.nano but require a [Chemical Request Form](#) to be submitted. This

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is to minimize purchasing and storing chemicals that are not immediately needed.

Specialty Etchants will be stored in the area where they will be used (U10 or U07 chemical storage).

E. Parts and Tool Storage

- Spare parts and tools for equipment maintenance must be stored in the appropriate location in the Cleanroom Chase, Subfab or Laboratory Support Spaces.
- Parts and tools should only enter Class 100 clean spaces when they are actively needed or being used.
- When work is complete for the day, all parts and tools should be cleaned up and returned to their appropriate storage location.
- When bringing in new parts or equipment, the packaging should be disposed of immediately and items should be wiped down as described in the [Equipment Wipe-Down Procedure](#).

5. Communications

A. Emergencies

- For Police, Fire, or Medical Emergencies, call MIT Police at 617-253-1212 or extension 100 on a campus phone.
- For Lab Emergencies, such as chemical spills, gas leaks, strong odors, critical utilities malfunction, or other lab-related emergencies, call the MIT.nano Emergency Response Team (ERT) at 617-258-8674 or extension 8-8674 on a campus phone.
- All injuries and medical emergencies must be reported to MIT.nano as soon as possible.
- All users are strongly encouraged to report minor incidents and near-misses to MIT.nano to facilitate root cause analysis and evaluation of procedures to prevent future incidents.

B. Requests

- Equipment Problems or Shutdowns are reported using CORAL. This directly notifies all staff that can help with a tool and also alerts the user community that there is a problem.
- Training Requests are made by email. Send an email to both the primary and backup staff members to request training.
- Chemical or Supply Requests are made by calling the Lab Support phone number. Someone on staff will have the phone during normal lab hours and will be able to provide help.
- Requests for Fabrication Services are made by emailing the Assistant Director of User Services with details. The request will be considered and assigned based upon Staff availability.
- Requests for Equipment Services are made by emailing the Assistant Director of Operations, currently Kris Payer (kpayer@mit.edu) with details. The request will be considered and assigned based upon Staff availability.
- Requests for Infrastructure Services are made by emailing the Assistant Director of Infrastructure with details. The request will be considered and assigned based upon Staff availability.
- Other Requests are made by emailing mitnano-feedback@mit.edu. The request will be routed to the appropriate person for consideration.