Guide for Returning to MIT.nano Labs

Version 2
July 2020

Overarching Goals
Maintain safety of staff and users
Facilitate research
Serve the MIT community
Implement transmission-based precautions
Minimize occupancy
Optimize staff time
Prioritize resources

Learning Objectives
You will be...
1. prepared to develop new behaviors to reduce risk
2. more familiar with new signage and changes to how we use with the building
3. familiarized with new gowning and lab protocols
4. ready to schedule your first use of MIT.nano tools
What to expect when you return:

New behaviors and routines

- Continued good hygiene practices
- Face Coverings
- Physical Distancing
- Cleaning and Disinfection
- Gowning and Shared PPE Protocols

Think of these as measures taken to reduce risk

*RISK = HAZARD × EXPOSURE*

We use the hierarchy of hazard controls to minimize exposure and lower risk.
Most Effective
Relies less on individuals to be effective

Social isolation, remote work

Not applicable here.

Elimination

Substitution

Ventilation (filtration, air changes, etc.), physical barriers

Engineering Controls

Administrative Controls

Respirators, gloves, gowns, etc.

Personal Protective Equipment (PPE)

Least Effective
Relies more on individuals to be effective

Making an analogy to cleanroom hoods:

Face coverings...

1. Are NOT personal protective equipment.
2. DO protect those around us and the environment from respiratory droplets.

Wearing a face covering is required in all campus spaces, with limited exceptions.

Physical distancing mantras:

Maintain a minimum 6 feet of physical distancing, whenever possible.

Minimize close-proximity, transient interactions with others.
The cleanroom hood has an integrated face cover, but must be worn the correct way to be effective.

Plastic bags available for face covering storage while in the cleanroom (in your pocket).

### A combination approach to cleaning and disinfection

<table>
<thead>
<tr>
<th>MIT Custodial:</th>
<th>MIT.nano:</th>
<th>YOU:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Custodial staff have received enhanced training in cleaning and disinfecting touch points in public areas.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Cleaning of high-touch points and restrooms is done twice daily using a registered EPA List N disinfectant solution.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Supplementing with external cleaning staff to regularly clean and disinfect high-touch points in the gowning rooms in Buildings 39 and 12.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Used safety glasses will be disinfected on a weekly basis and put back into rotation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Provide disinfectants in the lab.</td>
<td></td>
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</tr>
</tbody>
</table>

#### Types of disinfectants you will find in MIT.nano for SARS-CoV-2:

- Quaternary ammonium solutions (Morning Mist, Shockwave) – disrupts lipid membranes
- 70% alcohol (isopropanol or ethanol) – disrupts lipid membranes
- Activated hydrogen peroxide solutions (PREempt) – oxidative damage

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**Disinfection signage will be posted in the lab**

- Spray bottles of 70% isopropanol will be distributed throughout the lab in strategic locations.
- Must remain wet for at least 1 minute to be effective against SARS-CoV-2.

**Please disinfect equipment before and after use.**

[https://covid19.mit.edu](https://covid19.mit.edu)
New protocols minimize shared gowning and PPE

Whenever possible, protocols have been modified to eliminate sharing of garments and PPE.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>USE</th>
<th>CLEANING/DISINFECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bunny suits &amp; frocks</td>
<td>Individual use (NO sharing)</td>
<td>- Laundered weekly</td>
</tr>
<tr>
<td>Safety Glasses</td>
<td>Bring your own</td>
<td>- User disinfects before/after use with 70% IPA</td>
</tr>
<tr>
<td></td>
<td>Individual use from stock supply (NO sharing)</td>
<td>- User keeps with bunny suit or puts in used bin</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Used safety glasses will be disinfected weekly</td>
</tr>
<tr>
<td>Face Shields</td>
<td>Shared</td>
<td>- User disinfects before/after use with 70% IPA</td>
</tr>
<tr>
<td>Chemical Apron and Arm Gauntlets</td>
<td>Shared</td>
<td>- None, not necessary</td>
</tr>
<tr>
<td>Nitrile Gloves</td>
<td>Individual use</td>
<td>- None, disposable</td>
</tr>
<tr>
<td>Nitrile/Neoprene Gloves</td>
<td>Individual use</td>
<td>- None, disposable</td>
</tr>
<tr>
<td>Trionic Gloves</td>
<td>Shared</td>
<td>- None, additional gloves are worn underneath</td>
</tr>
</tbody>
</table>

What to expect when you return:

Modified Space Use

- Elevators
- Restrooms
- Gathering/Public Spaces
- Occupancy Limits
- Eating and Drinking
- Fab-Specific Modifications
After you enter MIT buildings through a checkpoint, you should be able to move between buildings.

- **Building 12**: Connecting doors to 13 and 16 will be unlocked.
- **Building 39**: Connecting doors to 37 and 38 accessible by key and the 3rd floor remains unlocked.

**Elevators will be labeled with occupancy limits**

Quick Tip: If possible, take the stairs to minimize wait time and your time spent in close-proximity spaces.
Plan ahead to avoid gathering and eating in MIT.nano

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd Floor Kitchen (B39)</td>
<td>Closed</td>
</tr>
<tr>
<td>Adler Room (B39)</td>
<td>Closed</td>
</tr>
<tr>
<td>Conference Rooms (B12)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Level 3: Closed</td>
</tr>
<tr>
<td></td>
<td>Level 4: Closed</td>
</tr>
<tr>
<td></td>
<td>Level 5: Closed</td>
</tr>
<tr>
<td>Innovation Alcoves (B12)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Level B: Active EM reservations only</td>
</tr>
<tr>
<td></td>
<td>Level 3: Closed</td>
</tr>
<tr>
<td></td>
<td>Level 4: Closed</td>
</tr>
<tr>
<td>Seating areas (B12)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12-0168: Closed</td>
</tr>
<tr>
<td></td>
<td>Level 1: Closed</td>
</tr>
<tr>
<td></td>
<td>Level 3: Closed</td>
</tr>
<tr>
<td></td>
<td>Level 4: Closed</td>
</tr>
</tbody>
</table>

Quick Tip: Use the auto-fillers on water fountains, if available, or bring your own drinking water.

Dedicated handwashing stations and all-gender restrooms located in Buildings 39 and 12

One restroom on each level will be converted to a single occupancy hand-washing station. Doors will be propped open to reduce touch points.

One restroom on each level will be converted to a single occupancy all.gender restroom. Remember to knock before entering.

This will improve access to hand-washing sinks and throughput for enhanced hygiene practices.
Occupancy signs for limited space-constrained areas

Refer to occupancy maps posted on the MIT.nano User website for details about the spaces you access for research.

Boundary Conditions:
1. 6 ft physical distancing (MA, MIT)
2. 160 ft²/person (MIT)

Gowning Specifics: FAB.nano Building 39

- Back to laundered garments!
  - NO shared garments in all Building 39 labs.
  - Tyvek Frocks in EML will be stored on a larger rack in the old deposition (AJA) room. Gown as normal in the entry area, then enter the lab to get your frock.
- Vinyl Gloves moved to lab entry points. Gloves go on first to minimize touch contamination.
- One person per locker, sign up in advance, the locker is yours for the week.
  - Garments will be removed and lockers disinfected on Mondays.
  - Green tape across a locker door indicates the locker is cleaned and no one has opened it yet.
  - Move green tape to door and write your name for identification.
  - Plastic bags will be used for garment storage in the ebeamFP room.
- Safety Glasses:
  - Bring your own safety glasses.
  - If you use lab stocked safety glasses, store in your locker or hanger for the week.
  - Do not put used safety glasses back in the bins or cabinet with clean glasses.
  - Used safety glasses will be cleaned and returned to the rotation the following Monday.
- Plastic bags will be available for face covering storage while in the cleanroom (in your locker or pocket).
- Nitrile Gloves will be available in the normal “glove room” as PPE for the cleanroom, this is identical to Building 12 protocol.
<table>
<thead>
<tr>
<th>ICL</th>
<th>Max Occupancy</th>
<th>1 in each gowning room</th>
<th>½ lockers available</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRL</td>
<td>Max Occupancy</td>
<td>1 in each gowning room</td>
<td>All lockers available</td>
</tr>
<tr>
<td>EML</td>
<td>Max Occupancy</td>
<td>1 in gowning room</td>
<td>Additional garment rack is now located in 39-514</td>
</tr>
</tbody>
</table>

**Specifics: EBL Building 24**

- Users will wear face coverings and gloves in any part of the lab (not just the clean area).
- Users will store shoe covers and frocks in a plastic bag with their name.
- Bouffant caps and gloves will be disposed of in the usual, labeled waste containers.
- Users should wipe down and disinfect work stations before and after use with provided disinfectant (keyboards, mouse, etc)
Gowning Specifics: FAB.nano Building 12

ALWAYS maintain 6 feet physical distancing while queuing up in Building 12 gowning rooms.

PRE-GOWN

Hands-free access (in and out) after swiping your card
Max occupancy 2 in each gowning area

Most storage lockers will be closed-off.
Some will remain open for coats and backpacks and handles will be disinfected daily.

Vinyl gloves have been moved to the Pre-Gown entrance in order to minimize high touch-point contamination.

Bring your own safety glasses.
If you forget, safety glasses in the Pre-Gown rack will still be provided.
• Do not put used safety glasses back in this rack.
• Used safety glasses will be disinfected and returned to the rotation on the following Monday.

Plastic bags available for storing your face covering while you are in the cleanroom (keep in your pocket).

All users will wear a full bunnysuit (no frocks).

Garments will be pulled and laundered weekly.
• Shared boots and belts remain on the boot rack.
• Name badges will be moved to straps at the end of each rack.
• New name badges are located in Pre-Gown bins.

We’ll cover gowning next...

GOWNING

Hangers are spaced further apart and fixed into place.

Snap hood to the bunnysuit, tuck hood inside, and zip up bunnysuit to store your garments. This prevents contact with other users’ garments.

If you use lab stocked safety glasses, store on the hanger with your garment for the week.

Garments will be pulled and laundered weekly.
• Shared boots and belts remain on the boot rack.
• Name badges will be moved to straps at the end of each rack.
• New name badges are located in Pre-Gown bins.
Specifics: 5th Level Packaging Lab

ALWAYS maintain 6 feet physical distancing while working in the Packaging Lab.

Wearing a personal face covering is required at all times.

- One at a time in gowing. Please wait outside the door for your turn to go in.
- Bring your own safety glasses. If using the stocked supply, disinfect before use. Place in the Used Bin when finished.
- 70% Isopropanol disinfectant near the diesaw.

Reminders of what hasn’t changed:

The chemicals, gases, and hazards that we work with in the lab have not changed. Inside the lab, in many cases these hazards pose a higher risk to your health and safety than SARS-CoV-2.

As a result most of our lab policies remain the same.

Some highlights include:

- Continue proper chemical hygiene and hazardous waste management practices:
  - Only store compatible chemicals together
  - Minimize hazardous chemical use and use less hazardous alternatives, when possible
  - Always add acid to water
- Use proper Personal Protective Equipment (PPE)
  - All times: Safety Glasses
  - Solvents and photolithography: Nitrile Gloves
  - Corrosive hoods and wet benches: Aprons, Arm Gauntlets, Face Shields, and Corrosive Gloves (Trionic in 39, Nitrile-Neoprene in 12)
  - Note that Vinyl Gloves are not PPE
Reminders of what hasn’t changed:

The chemicals, gases, and hazards that we work with in the lab have not changed. Inside the lab, in many cases these hazards pose a higher risk to your health and safety than SARS-CoV-2.

As a result most of our lab policies remain the same.

Some highlights include:

- **Working Alone Policy**
  - Best practice is to always have a buddy nearby for safety and responding to emergencies
  - A buddy is REQUIRED for working on any corrosive hood or wet bench (acids, bases, oxidizers)
  - In Building 12 or 24 a buddy is not required for other work
  - Remote Buddy policy still applies in Building 39

- **Emergency Response:**
  - Police, fire, or medical emergency: Call 100 or 617-253-1212
  - Lab emergencies: In Building 39 call 617-253-1500 and ask for the MTL ERT
  - Lab emergencies: In Building 12 call 617-258-8674 for the MIT.nano ERT
  - Lab support phone: Call 617-253-0426 for delivery of chemicals and supplies, now including requests for precious metals.

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Prerequisites for accessing the lab:

**MIT Prerequisites**

- Check marks on COVID Pass.
- Acknowledgement Form
- EHS COVID-19 Lab Reorientation Training
- Medical Test
- Attestation Form – this needs to be filled out and submitted every day you come to campus
- All EHS core trainings completed (check Learning Center in Atlas).
- Remember that the hours in Core Facilities count toward your hours on campus.

**MIT.nano Prerequisites**

- All trainings prerequisites completed (check MUMMS).
- You must attend this training!
- Sign up for lab access on the MIT.nano Scheduler (more on this at the end).
  - Sign up to request a locker/hanger: reservations for 1-week duration.
  - Reserve your equipment in CORAL: plan your reservations to optimize time in the lab and minimize entries/exits.
  - In your planning, keep in mind that gowning rooms are the bottleneck for all labs.

[Daily COVID-19 Attestation](https://covidpass.mit.edu)
MIT.nano Scheduler - Register and Log-In:

1st time that week: Claim Weekly Locker
E.g. on your way to the lab (after covidpass)
Engage a locker. Use that locker number!

Use the lab as normal.
(if no locker engaged, you can’t engage your tools)

At home: nanotime.mit.edu
Indicate Time for a Lab Space

Repeat when you’re ready to come back to the lab.

Done for the week!
Keep locker engaged
Keep gowns in locker!

Reminder: Vendor cleans & disinfects lockers on Monday AM. Cleaned lockers are disengaged by staff.

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Accessing the lab:

<table>
<thead>
<tr>
<th>Building 39 ICL/TRL/EML</th>
<th>Building 24 EBL</th>
<th>Building 12 Fab.nano/Packaging</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mon-Fri: 9am-5pm</td>
<td>24/7 Access</td>
<td>Mon-Fri: 9am-5pm</td>
</tr>
<tr>
<td>24-hour access enabled June 29 for qualified users</td>
<td></td>
<td>24-hour access enabled June 29 for qualified users</td>
</tr>
</tbody>
</table>

Staff will be on a reduced schedule during the ramp-up.

- Fab Staff Hours: Mon-Fri, 9am-5pm
- EBL Staff Hours: Mark Mondol is available by phone 8am-11:59pm
- Fab Staff will work alternating weeks to minimize personnel in offices and labs
- Report ALL tool problems in CORAL (this notifies ALL staff including back-ups)
- Staff will provide remote support as much as possible

Accessing the lab: Staged approach to Training and New Users

1. Early Ramp-Up
   - Guide for Returning to MIT.nano Labs: Offering multiple sessions each week to train existing users on modified protocols.
   - Broad topic trainings: Classroom trainings will resume via Zoom.
     - Emergency Preparedness Training for new users
     - Wet Chemical Processing Training for wet bench users and 24-hr users.
   - 24/7 User Qualification interviews will resume in July via Zoom.

2. Mid Ramp-Up
   - Training on “Similar Tools”: Staff are working to enable “distanced training”.
     - Spin coaters and photolithography
     - New MLA-150
     - AMAT tools (similar interfaces)
     - Metrology equipment (Dektaks, Filmetrics, etc)
   - Reach out to the tool owners to discuss your “Similar Tool” training needs.

3. Late Ramp-Up
   - Training on “New Tools” (i.e. if you never used an etcher before).
     - We are investigating ways to safely enable training on equipment that requires close-proximity between staff and the users.
   - New Users to the Lab
     - This requires a combination of classroom training and hands-on training, as well as “New Tool” training.
     - New User Orientation will resume via zoom.
     - Quick Start will resume and will be modified from its current format.
Main takeaways

These new behaviors and modified lab protocols are precautionary measures taken to reduce risk

- Continued good hygiene practices
- Face Coverings
- Physical Distancing
- Cleaning and Disinfection
- Modified Lab Protocols

Personal responsibility will contribute to the overall well-being of the MIT.nano community

Thank you for keeping the MIT.nano community safe and healthy!