

NIMS Nanofabrication Unit User's Guide

Established

March 〇〇, 2023

Nanofabrication Unit

Materials Processing and Characterization Platform

Research Network and Facility Services Division

National Institute for Materials Science

1. Introduction

This guide summarizes the rules and regulations for the use of the clean rooms as well as the regular laboratories owned by Nanofabrication Unit, Materials Fabrication and Analysis Platform, Research Network and Facility Services Division, National Institute for Materials Science (hereinafter referred to as “NIMS Nanofabrication Unit”). Each user shall abide by the contents of this guide and shall endeavor to keep the facilities safe and clean.

2. Use of the Facilities

- 1) Open hours are 9:00 to 17:00 during the weekdays and user shall finish experiments and leave the labs within the said time. However, this shall not apply if there is a permission from the facility management personnel.
- 2) User shall not enter the facilities on Saturdays, Sundays, holidays, summer / winter vacations and during planned blackouts as well as other days set by the facility management personnel.
- 3) User shall avoid close contact and refrain from unnecessary conversations with the others.
- 4) User shall not use the facilities when feeling ill.

3. Application for the Entry to the Facilities (User Registration)

One who wishes to enter the clean rooms or the regular laboratories of NIMS Nanofabrication Unit shall conduct user registration through the “Registration & Reservation (R2) System of NIMS Nanofabrication Facility (<https://www.nanofab.jp/system/index.php>)” and his/her entry to the said facilities shall not be permitted until the approval thereof.

Moreover, completion of user registration merely permits the user to enter the said facilities and it shall not be the permission to use the equipment thereof. Refer to the section “7. How to Apply for the Usage of the Equipment” in this user’s guide for further procedure.

4. Safety and Health Education

User shall take due safety and health education based on the laws and regulations at the institute one belongs to (company, university, research institute, etc.) in order to use the facilities of NIMS Nanofabrication Unit.

5. Use of the Facilities by Students

Student shall conduct their user registration with a permission of his/her supervisor. If the student wishes to physically conduct the research experiments, he/she is required to be enrolled in “Personal Accident Insurance for Students Pursuing Education and Research”. Moreover, being enrolled in “Liability Insurance coupled with ‘Gakkensai’” along with the said insurance is highly recommended.

6. Personal Belongings Restrictions at the Facilities

- 1) Bringing food or beverage into the facilities is strictly prohibited.
- 2) Bringing the dust-generating substances such as powder samples, regular papers, pencils, sharp pencils and erasers into the clean rooms is strictly prohibited; Stationaries are limited to clean papers and ball-point pens in principle.
- 3) User shall obtain a permission from the facility management personnel when he/she wishes to bring the substances which fall under the next items. Moreover, the name, the affiliation and the contact information of the user shall be explicitly written on such substances:
 - ① Experimental gadgets, chemicals (including photo resists and developers) and other equipment/consumables
 - ② Other poisonous or deleterious substances
- 4) User shall take his/her belongings away from the facilities every time. However, this shall not apply if there is a permission from the facility management personnel.
- 5) If user needs to leave the samples and other gadgets in the clean rooms due to ongoing experiments, the place to do so shall be limited to the designated storage. The longest storage period is up to the last day of each fiscal year (March 31st). The items kept beyond the designated period shall be disposed of by the judgment of the facility management personnel.
- 6) Use of the storage mediums such as USB memories shall be limited to the ones which are provided by NIMS and have been scanned for virus.
- 7) Storage mediums such as USB memories, except for those mentioned in the previous article, which are brought from outside NIMS shall not be connected to NIMS' information terminals.
- 8) In principle, import/export of the experimental data (CAD file, measurement data, etc.) shall be done by uploading/downloading through the information terminals of the facility which are connected to the internet.

- 9) User shall not save his/her data on the computers in the clean rooms or the regular laboratories. NIMS Nanofabrication Unit shall not be responsible for any events or incidents thereof.
- 10) Personal belongings such as samples, laboratory notebooks, electronic data shall be managed by the user him-/herself and NIMS Nanofabrication Unit shall not be responsible for any loss or damage thereof.

7. Entrance / Exit Rules for the Clean Rooms

- 1) One who wishes to use the clean rooms need to have an “entrance badge”. The internal user shall apply for an access right via Security CMS (for Room 102, Materials Reliability Laboratories, Sengen site / Electronic lock / for 7:00-20:00 on weekdays). ARIM/NOF user shall receive a designated entrance badge at the administrative office of NIMS Nanofabrication Unit. The maximum duration of the rental of the entrance badge is until the end of each fiscal year (March 31st) and the user shall return it on the last day to visit the facility during the fiscal year. It is unnecessary to return the entrance badge if the user is to continue the use of the facility during the following fiscal year. Nevertheless, he/she shall obtain a subject ID and make a usage application for the following fiscal year by March 31st of the year. The entrance badge shall not be lent to the companion (observer <user registration is necessary for the companions as well>); He/she shall stay with the user at all times.
- 2) User shall carry out an “Entrance” process on the access control system located near the entrance of the clean rooms. If the entrance badge of the user is not registered, he/she shall contact the facility staff. Entering the clean rooms without the said process is strictly prohibited.
- 3) User may temporarily store his/her belonging in the locker room while working in the clean rooms. However, NIMS Nanofabrication Unit shall not be responsible for any loss or damage thereof.

Sengen CR: Belongings shall be stored in the locker (equipped with a key and a USB memory), securely locked and the key shall be managed by the user. User shall pay due attention not to take the key back home; User shall compensate for the key if he/she loses it.

Namiki CR: Belongings shall be temporarily stored either in the multi-purpose locker (no key) or in the locker equipped with key.

- 4) User shall wear the gloves and the surgical mask during the entire time from entering

to leaving the locker room and they shall be disposed of into a trash can located in the locker room.

- 5) User shall wear the clean garments (hood, overall and boots) properly by looking at the mirror in the locker room and be sure that the collar of the hood, any part of one's clothes or hair does not come out. If there are no garments in suitable size in the sterilization locker, user shall take them from the designated storage and return them into the sterilization locker when done with one's experiments.
- 6) User may prepare his/her own clean garments. However, hood, overall and boots (knee-high ones only) shall be class 100 compatible and the color is limited to white.
- 7) User shall bring a pair of safety glasses from the designated place when entering the clean rooms. They shall be sterilized by the user with the sanitizer and the wipes before use and shall be returned to the designated place when done with the use. Wearing them at all times, even if user does not treat chemicals, is strongly recommended unless they would disturb his/her work.
- 8) Inside the air shower, user shall rotate him/herself to remove the dust from the garments while the air blows and enter the clean rooms when the air stops completely. Use of the air shower shall be limited to one person at a time; Bringing another person along is prohibited. One door shall be closed completely when opening another door in order to avoid inflow of dust.
- 9) User shall carry out an "Exit" process on the access control system located near the entrance of the clean rooms. User shall plan the experiments well so that he/she is able to leave the labs by 17:00. Nevertheless, if user needs to use the facility beyond this time range for an inevitable reason (such as lodging is required for him/her since the visit is from a far place and the work needs to be done by the very day due to the limit of the stay), he/she shall send the following content via email by 16:00 of the very day. (Verbal request will not be accepted.) However, NIMS Nanofabrication Unit may not be able to meet the request if there is no facility staff to cover the overtime shift.

■ E-mail address: nanofab-all@ml.nims.go.jp

■ Content of the Email:

- User Name
- Subject ID
- Sengen or Namiki?
- Equipment Name
- Desired Reservation Time (17:00 - ○○:○○)

- Reason for the Overtime Use (Limited to inevitable reasons)

8. How to Apply for the Usage of the Equipment

1) User shall obtain a subject ID on the designated application system if he/she wishes to use the facilities and the equipment.

- Advanced Research Infrastructure of Materials and Nanotechnology (ARIM Application System)

https://www.nims-open-facility.jp/system_arim/index.php

- NIMS Open Facility (NOF Application System)

<https://www.nims-open-facility.jp/system/index.php>

- NIMS Employees (NIMS Workflow System)

※Applications shall be made by those who are eligible to spend the internal budget.

<https://home.nims.go.jp/intra/network-service/admin-office/jm7cqc0000001bv-att/jm7cqc0000001fi.pdf>

User shall as well make an application (or shall be registered as a participant of the application) on Registration & Reservation (R2) System of NIMS Nanofabrication Facility (<https://www.nanofab.jp/system/index.php>) in order to use the facilities and the equipment.

- 2) Internal user shall be done with signing and submitting the “Confirmation Letter regarding the Applicability of the Specific Categories for Compliance with Article 25 (1) and (2) of the Foreign Exchange and Foreign Trade Act” to the Internal Controls Office. If user (regardless of ARIM, NOF or internal) is a non-resident of Japan, his/her parameter sheet must have been certified before using the facilities and NIMS Nanofabrication Unit does not accept exceptions.
- 3) Permission to use the equipment is limited to the ones which user has been trained and issued with the license.
- 4) User shall not attempt any operation which is not written on the manual stipulated by NIMS Nanofabrication Group.
- 5) Cancellation and change of reservations shall be made by 2 days in advance and such events shall not be accepted after the said time. However, this shall not apply if there is a permission from the facility management personnel.
- 6) In order to avoid depriving the others of an opportunity to use the equipment, user shall make reservations when they are truly needed and shall not do so on the premise of cancellation.
- 7) Use of chemicals is prohibited unless the user is trained and permitted by the facility management personnel.

9. Separating the Trashes

User shall separate trashes in accordance with the labels on the trash cans and shall consult with the facility staff if he/she may not be able to distinct by oneself.

Type of Trashes: Combustible, Metal, Glass,
Combustible w/ Photo Resist, Metal with Photo Resist

10. Emergency Procedures

- 1) The alarm goes off and the emergency lamps blink in red in times of gas leakage and/or low oxygen concentration. In such case, user shall ensure his/her own security, let the others in the facility know of it and evacuate immediately.
- 2) If there is an earthquake during experiments, user shall calmly act under the instruction of the facility staff in order to avoid secondary disaster.
- 3) If there is a fire during experiments, user shall contact the facility staff immediately, let the others in the facility know of it and evacuate instantly.
- 4) If there is a power outage during experiments, user shall wait for its restoration under the instruction of the facility staff. If the instrument goes down due to the power outage, user shall not try to restore it by him/herself and wait for the facility staff to restore it as well.
- 5) In times of any other emergency and of machine troubles, user shall report/contact /consult with the facility management personnel or the facility staff immediately. If the facility staff is not around, user shall call them from the telephone located at each facility.