SYDNEY NANO FOUNDRY

SNF HANDBOOK

INFORMATION FOR STAFF, STUDENTS AND USERS

Version 2.1, May 2026

Nelson Briones
Facility & Program Manager

Selvaraj Nagarajan
Departmental Safety Officer

Sydney Nano Foundry
Sydney Nanoscience Hub
The University of Sydney
NSW 2006 Australia
E snf.info@sydney.edu.au
www.sydney.edu.au

New users of the facility must read this booklet and sign the Sydney Nano Foundry Cleanroom Induction Checklist to indicate that they understand the information and will abide by the rules and procedures.

Table of Contents

1.0 INTRODUCTION

The Sydney Nano Foundry (SNF) is a national-scale research and prototyping facility operated by the University of Sydney and supported through the Australian National Fabrication Facility (ANFF) under the NCRIS program. SNF provides researchers, students, and industry partners with access to advanced micro- and nano-fabrication, packaging, characterisation, and prototyping capabilities that are not typically available within individual laboratories.

SNF operates as a shared, high-performance research infrastructure, providing world-class fabrication and characterisation tools, established and emerging processes, highly experienced technical staff, and a safe, professionally governed operating environment. Together, these capabilities enable users to translate ideas into working devices, prototypes, and experimental systems across areas including quantum technologies, photonics, microelectronics, materials science, biomedical devices, and advanced manufacturing.

1.1 How you work with SNF

The SNF supports two primary modes of engagement:

1. User-Access Mode
In this mode, SNF operates as a shared user facility. Users are trained and certified by SNF staff, authorised to operate specific tools and processes, and are responsible for performing their own fabrication, characterisation, and experimental work. SNF staff provide technical guidance, safety oversight, and process support.

2. Fee-for-Service (Contract Manufacturing) Mode
In this mode, SNF undertakes work on behalf of a project or client as a full-service or contract manufacturing activity. This includes fabrication performed by SNF staff, prototyping, packaging, specialist or high-risk processes, and commercial or confidential projects.

Regardless of engagement mode, all work at SNF is governed through SydneyFMS, which is the single system of record for user and client registration, project definition, materials and process approvals, risk and compliance, training and certification (where applicable), facility and equipment usage, and audit and traceability.

1.2 Our facilities

SNF operates across multiple specialised laboratory spaces, with the ISO 5 cleanroom in the Sydney Nanoscience Hub (SNH) as the core environment. Additional laboratories support advanced lithography and etching, thin-film deposition, device packaging and interconnects, microfluidics and fibre technologies, characterisation and metrology, and prototyping and integration. Together, these form a tightly integrated fabrication and prototyping ecosystem.

1.3 Safety, professionalism, and shared responsibility

Many of the processes and materials used in SNF are hazardous. Your safety, and the safety of those around you, depends on: Following approved procedures, Using the correct protective equipment, Working only within your approved training and project scope, Respecting staff instructions and facility controls. SNF is a shared environment. The quality of your work depends on the care taken by everyone else, and vice versa. Professional conduct, respect for others, and adherence to facility rules are essential.

1.4 Continuous improvement

SNF continually evolves — adding new tools, new processes, and new capabilities in response to the needs of the research and innovation community. We value user feedback and actively use it to improve how the facility operates and how we support your work. If you are unsure about anything, or need help navigating SNF systems, processes, or facilities, please contact SNF staff — we are here to help you succeed, safely and efficiently.

2.0 SAFETY

Safety is the highest priority at the SNF. The facility contains hazardous chemicals, high-voltage systems, vacuum equipment, cryogenic gases, and high-energy processes. Safe operation depends on personal responsibility, formal risk controls, and system-enforced governance.
All safety incidents, hazards, and breaches are managed through:

- RiskWare — the University's official incident and hazard reporting system
- SydneyFMS — which controls who may enter, train, book, and return to work

2.1 General Safety Responsibilities

Every person entering SNF facilities must:

- Follow all Safe Work Procedures (SWPs) and Risk Assessments (RAs)
- Use the required Personal Protective Equipment (PPE)
- Be fit for work — do not enter the facility if unwell, impaired, fatigued, or unsafe to work
- Stop work and seek help if something is unsafe or unclear
- Follow all instructions from SNF staff and emergency personnel
- SNF staff have authority to stop any activity they deem unsafe.

Please also refer to the University's Emergencies and Personal Safety page

2.2 Emergency Response

Medical Emergencies

- Call 000
- Call Security: 9351 3333
- Notify the nearest First Aid Officer
- Send someone to meet emergency services
- Fire or Building Alarm
- BEEP… BEEP — prepare to evacuate, make equipment safe
- WOOP… WOOP — evacuate immediately
- Do not use lifts
- Proceed to the designated assembly area
- Oxygen Deficiency or Critical Alarms
- Red strobe + siren = DO NOT ENTER
- Leave immediately via nearest exit
- Follow instructions of the Duty Officer

2.3 Personal Protective Equipment (PPE)

PPE is defined in each SWP and must be worn at all times where required. For General requirements please referring to the University's general guidelines.
General requirements include:

- Fully enclosed footwear
- Safety glasses in all laboratory areas
- Chemical goggles or face shields for wet chemistry
- Chemical aprons where specified
- Cleanroom garments where required
- Failure to use PPE is a safety breach and may result in loss of access.

2.4 High-Risk Processes and Buddy System

Some activities (e.g. HF, strong acids, hazardous wet chemistry, cryogenics) are classified as high-risk.
For high-risk processes:

- A trained buddy must be present and within sight
- The buddy must wear appropriate PPE
- Work must occur only during approved hours
- Certification must be current in SydneyFMS
- No high-risk work without: approval, a buddy, certification, and in-hours access.

2.5 Chemical Safety

All chemicals must:

- Have an approved SDS
- Be approved through SydneyFMS New Materials / New Process
- Be stored, transported, and disposed of per SWPs
- Chemical waste must only be disposed of in designated containers. Never pour hazardous chemicals down sinks or into bins.

2.6 First Aid for Chemical Exposure

Specialised first-aid kits are located near HF benches:

- Hexafluorine — for HF exposure
- Diphotérine — for other chemicals

First aiders must wear PPE before assisting.
Always call for medical help after chemical exposure.

2.7 Incident, Hazard, and Near-Miss Reporting

All incidents, hazards, and near-misses must be:

- Reported immediately to SNF staff
- Logged in RiskWare

Who logs it:

- University staff — must submit their own RiskWare report
- Students — supervisor must submit
- External users — SNF staff will submit

Failure to report is itself a safety breach.

2.8 Safety Enforcement and Return-to-Work

When an incident or safety breach occurs:

- SNF staff may immediately suspend access
- The incident is investigated in RiskWare
- SydneyFMS is used to restrict, suspend, or reinstate access
- Retraining, supervision, or new approvals may be required
- No person may return to work until safety clearance is given.

2.9 Health and Fitness for Work

Do not enter the facility if you:

- Are unwell
- Have symptoms of infectious disease
- Are impaired by medication, alcohol, or fatigue
- Are not physically or mentally safe to work

If in doubt — stay out and notify SNF staff.

2.10 Additional safety information

Additional safety information can be obtained from the University of Sydney's Safety Health & Wellbeing website. This includes information on chemical safety, electrical safety, hazardous waste, and manual handling.

3.0 OPERATIONS AND GENERAL RULES

The SNF is a shared, high-risk, high-value research facility. To protect users, staff, equipment, and research outcomes, all operations are governed through SydneyFMS, the single system of record for access, training, approvals, and bookings.
No person may work in SNF facilities unless they are authorised in SydneyFMS for the relevant project, space, tool, and time.

3.1 Conditions of Access

By entering or using any SNF facility you agree that:

- You hold a valid SydneyFMS user account
- You are working under an approved SydneyFMS project
- You have current certification for the tools and processes you are using
- You have an active booking in SydneyFMS for the space or equipment
- All materials, chemicals, and processes in use have been approved in SydneyFMS

Being physically inside the facility without meeting all of the above is a breach of access conditions, even if you hold a swipe card or are accompanied by another user.
Users and supervisors remain responsible for compliance with all applicable laws, including Defence Trade Controls and Autonomous Sanctions. If in doubt consult Defence Export Controls site.

3.2 Discipline and Enforcement

SNF is a professional, shared research environment. Breaches of safety, access, or operational rules are treated seriously.
The following are examples of major breaches:

- Being in any SNF laboratory or cleanroom without an active SydneyFMS booking
- Using a tool without current SydneyFMS certification
- Using materials or processes that have not been approved
- Allowing another person to enter or use the facility using your access
- Ignoring staff instructions or safety controls
- Operating equipment outside approved hours or conditions

SNF staff may immediately suspend access where safety, compliance, or facility integrity is at risk.
Reinstatement is at the discretion of SNF management following review.
Minor breaches may result in warnings, retraining, or temporary restrictions. Repeated or serious breaches may result in permanent loss of access.
Cleaning, recovery, or damage caused by misuse may be charged to the user or project at industry rates.

3.3 Data Security, Confidentiality and IP

SNF is a shared facility. Each user is responsible for the security and confidentiality of their own data.
Data stored on SNF equipment is not guaranteed to be retained or kept confidential. Users must remove their data at the end of each booking and must not store confidential data on SNF systems.
Where projects require special confidentiality arrangements, these must be agreed in advance and documented through formal agreements.
Normal rules regarding inventorship and authorship apply where SNF staff make intellectual contributions.

3.4 Access Control and Monitoring

Access and safety are enforced using multiple systems:

- University swipe access controls physical entry
- SydneyFMS controls who is authorised to be in the facility, what they may use, and when
- Local check-in systems record occupancy

CCTV is used for safety and compliance purposes onlyThese systems exist to protect users and the facility. They are not optional and must not be bypassed.

3.5 Environmental and Contamination Control

The SNF cleanroom is maintained as an ISO 5 (Class 100) environment. Strict control of garments, personal items, and user behaviour is required to maintain cleanliness, protect equipment, and ensure high-quality research outcomes.

All users must follow gowning, entry, and contamination-control rules at all times. Failure to do so may result in immediate loss of cleanroom access.

Users must comply with the gowning, garment handling, and contamination-control rules below.

3.5.1 Cleanroom Apparel Requirements

Full cleanroom garments must be worn in all cleanroom areas at all times. This includes:

- Full cleanroom suit / coveralls
- Hood
- Face mask
- Hair net
- Cleanroom gloves
- Cleanroom booties

Users must wear appropriate clothing under cleanroom garments (covered arms and legs where possible, minimal cosmetics, no perfumes or cologne).

3.5.2 Cleanroom Gowns – Individual Use

Each user is assigned a cleanroom gown for individual use on a weekly basis.

When selecting a gown:
Choose a gown that fits appropriately.
Write your name and the current date on a name tag.
Attach the tag to the gown hanger.

Use of gowns
The same gown may be used for up to one week.
After one week, the gown must be placed in the laundry box for cleaning in accordance with the laundry schedule.

Absence from the facility
If you will not be using the cleanroom for three or more consecutive days:
Place your gown in the laundry box.
Remove your name tag and store it in the designated tag box for reuse upon your return.
Gowns must not be stored outside the designated gowning area or taken off-site.

3.5.3 Cleanroom Booties – Shared Pool

Cleanroom booties are provided as a shared, common-use pool.
Booties are stored in size-labelled shoeboxes in the gowning area.
Select a pair that fits appropriately before entering the cleanroom.
Booties must be returned immediately to the correct size-labelled shoebox upon exiting the cleanroom.
Booties:

- Are not assigned to individuals
- Must not be retained between sessions
- Must not be tagged or stored as personal items

This shared-pool system ensures fair access, correct sizing availability, and consistent cleanliness for all users.

3.5.4 Garment Laundry Schedule

Cleanroom garments are laundered according to the following schedule:

- Collection: Wednesday afternoon
- Return: Thursday of the following week

Only garments placed in the designated laundry boxes will be collected.

3.5.5 Good Practice

To ensure fairness, cleanliness, and efficient operation:

- Hang gowns neatly on their assigned hangers.
- Return booties to the correct size-labelled shoebox after every use.
- Do not leave garments or boots on shared racks, benches, or floors.
- If any gown or booties are visibly contaminated, damaged, or require cleaning, place them in the laundry box and notify SNF staff.
- Failure to follow gowning and garment-handling rules may result in restricted access or disciplinary action, as contamination poses a risk to all users and to the facility.

3.5.6 Cleanroom Entry, Exit and Personal Items Control

To maintain the integrity of the cleanroom environment and prevent contamination, all users must follow the controlled entry and exit procedures below.

Entry and exit discipline

Enter and exit the cleanroom promptly and efficiently.
Only one door may be open at any time — do not open the cleanroom door if the pre-gown door is open.
Follow all signage and airflow controls at gowning and airlock points.

Pre-gowning and lockers

All outdoor clothing and personal belongings must be left in the lockers in the pre-gown area before entering the gowning zone.
Only approved cleanroom items may pass beyond the gowning area.

Approved items

The following items may be taken into the cleanroom only if cleaned prior to entry:

- Mobile phones
- Laptops and tablets
- Sample carriers

Any other items, including tools or equipment, require prior approval before being brought into the cleanroom.

Items strictly prohibited inside the cleanroom

The following must be stored in the lockers outside the gowning area and must not enter the cleanroom:

- USB memory sticks
- Food or drink
- Regular paper products of any kind

Items that generate particulates, including:

- Pencils
- Felt-tip pens
- Fibrous materials

Equipment and non-standard items

Equipment may only be brought into the cleanroom after approval through the SydneyFMS New Materials / New Process workflow. All approved equipment must:

- Comply with applicable Australian Standards
- Be tested and tagged within the previous 12 months
- Be free of dust, debris, and loose particulates

SNF staff reserve the right to refuse entry of any item that may pose a contamination, safety, or compliance risk.

3.6 Roles of SNF Staff

SNF staff are responsible for:

- Safety — stopping any unsafe activity immediately
- Expertise — providing technical guidance and support
- Processes — maintaining and improving baseline processes
- Equipment — maintaining, repairing, and upgrading tools

Staff have full authority to stop work, deny access, or require corrective action where needed.

3.7 Roles of SNF Users

As a user you are responsible for:

- Keeping your SydneyFMS profile, projects, and approvals current
- Only using tools and processes for which you are certified
- Only being in SNF spaces when you have a valid booking
- Respecting staff time, other users, and shared resources
- Maintaining a safe, clean, and professional working environment

If you are unsure about anything — stop and ask SNF staff.

3.8 Feedback and Complaints

SNF welcomes feedback as part of continuous improvement.
Concerns should first be raised with SNF staff or the Facility & Program Manager. Formal feedback may be submitted via SNF channels or email.

4.0 ACCESSING THE FACILITY

All access to the SNF is governed through SydneyFMS, the University's PPMS-based facility management platform. SydneyFMS is the single authoritative system of record for:

- User registration
- Project approval
- Training and certification
- Materials and process approvals
- Booking and access control
- Compliance and audit records

No access to SNF facilities, equipment, or laboratories is permitted outside of the SydneyFMS framework.

4.1 Overview of Access Arrangements

Access to SNF is controlled through a layered approval model:

- User registration in SydneyFMS
- Project approval defining the scope of work
- Materials and process approval for all substances, equipment, and procedures
- Induction and training for facilities and tools
- Certification as a competent user
- Booking and swipe access enabled only for approved users

Each layer must be completed and approved before the next is unlocked. This ensures safety, regulatory compliance, traceability, and protection of shared infrastructure.

4.2 New Users

All users — including University staff, students, visiting researchers, and external industry users — must be registered in SydneyFMS before entering SNF facilities.
New users must:

- Create or validate their SydneyFMS user profile
- Complete required University and SNF inductions
- Hold a valid approved project in SydneyFMS
- Be granted facility access through the appropriate SydneyFMS service

Users who have not completed these steps are not permitted to enter the cleanroom or laboratories, even if accompanied by others.

4.3 Projects

All work in SNF must be performed under an approved SydneyFMS project.
Each project defines:

- The research or commercial scope
- Responsible supervisor or project lead
- Approved users
- Approved materials, processes, and tools

No training, booking, or laboratory access is permitted without a valid project. Projects must be kept current, and any change in scope, materials, or processes must be approved before work proceeds.

4.4 New Materials and Processes

All new materials, chemicals, equipment, and fabrication processes must be reviewed and approved before use through the New Materials / New Process workflow in SydneyFMS.
This process assesses:

- Chemical and physical hazards
- SDS and regulatory compliance
- DSGL and sanctions obligations
- Waste and disposal requirements
- Contamination and compatibility risks

- Equipment suitability

No material or process may be introduced into SNF until this workflow is fully approved.

4.5 Training and Certification

Training is not ad-hoc or informal. All training is managed through SydneyFMS service requests linked to a specific project and tool.
Users must:

- Request training for each tool or process they require
- Complete training delivered or approved by SNF staff
- Be formally certified in SydneyFMS as a competent operator
- Only users with current certification may book and operate equipment.

4.6 Hours of Operation and After-Hours Access

- Standard and after-hours access is governed through SydneyFMS.
- After-hours access requires explicit approval through the After-Hours Access service
- High-risk processes (e.g. HF, hazardous wet chemistry) are not permitted outside standard hours
- Buddy and supervision requirements are enforced through SydneyFMS permissions
- Users present in SNF laboratories must hold an active booking, valid facility access, and all required approvals. Unauthorised presence is treated as a serious safety breach.

4.7 Visitors

The SNF welcomes visitors for tours, meetings, inspections, and supervised observations. Visitor access is operationally managed through Microsoft Teams, which serves as the entry point for visitor coordination and approval.

Visitor approval and coordination

All visitor access must be requested and approved in advance via the designated SNF Microsoft Teams channel. Visitor requests must include:

- Visitor name(s) and affiliation
- Purpose of visit
- Date, time, and areas to be accessed
- Responsible host (SNF staff member or approved user)

SNF staff retain full discretion to approve, restrict, or decline visitor access based on safety, operational load, or facility conditions.

Induction and supervision

- Visitors must receive an appropriate visitor induction before entering controlled areas.
- Visitors must be accompanied at all times by an authorised SNF staff member or approved user.
- Visitors may not enter laboratories or cleanroom areas unescorted.

Limitations on visitor activities

- Visitors are not permitted to operate equipment, handle chemicals, or perform fabrication or experimental work.
- Visitors may not bring personal items, equipment, or materials into controlled areas unless explicitly approved by SNF staff.

Transition from visitor to user

Any visitor intending to undertake hands-on work, training, or independent access must be registered as a user in SydneyFMS and follow the full access, project, training, and approval process described in this handbook. Unauthorised or unapproved visitor access is considered a safety breach and may result in removal from the facility and further action.

5.0 FURTHER INFORMATION

The SNF operates as a governed, shared research infrastructure. Up-to-date information, documentation, approvals, and communications are provided through the platforms below.

5.1 SydneyFMS (Facility Management System)

SydneyFMS is the single system of record for:

- User registration
- Projects
- Training and certification
- Materials and process approvals
- Facility and equipment bookings
- After-hours access
- Compliance and audit records

All users must interact with SNF through SydneyFMS to obtain and maintain access.
Access to SydneyFMS is provided through the University of Sydney. External users will be issued access as part of their onboarding.

5.2 SNF Microsoft Teams

Microsoft Teams is the operational front door for SNF.
It is used for:

- Visitor requests and coordination
- Operational updates and notices
- Service status and outages
- User support and queries
- Day-to-day communication with SNF staff

All users are expected to be members of the relevant SNF Teams channels.

5.3 Safety, Risk Assessments, and SDS

The following are authoritative safety systems:

- RiskWare — for all incidents, hazards, and investigations
- SydneyFMS — for approved Risk Assessments (RAs), Safe Work Procedures (SWPs), and chemical records
- University Chemical Database — for Safety Data Sheets (SDS)

Only documents stored or linked through these systems are considered current and valid.

5.4 Acknowledgement of SNF and ANFF

SNF operates as part of the Australian National Fabrication Facility (ANFF) supported by the National Collaborative Research Infrastructure Strategy (NCRIS).
All publications, presentations, and public outputs arising from work performed at SNF must include the following acknowledgement:

"*The authors acknowledge the facilities as well as the scientific and technical assistance of the Sydney Nano Foundry Core Research Facility at the University of Sydney, part of the NCRIS-enabled Australian National Fabrication Facility (ANFF).*"

5.5 Reporting Research Outcomes

Users are encouraged to report publications, awards, grants, and other research outcomes that have used SNF facilities. These are essential for continued funding and facility development.
Reporting instructions are available through SydneyFMS or via SNF staff.