

Guideline and Rules for NISB X-ray Crystallography Platform

The instruments in the NISB X-ray Crystallography Platform represent a substantial investment and resources for the NTU research community. To ensure that these resources are available at the optimum performance level and a minimum of downtime, NISB X-ray Crystallography Committee has established the following in house policy rules and regulation. Please note that the rules will be reviewed periodically by the committee and are subjected to change.

1: Protein Crystallography Laboratory user

1.1 Pre-requisites for user access

- 1.1.1 A user briefing meeting involving new user with or without his/her supervisor is a prerequisite prior to use the instrument in NISB facility. The platform manager will introduce and identify suitable technique and instrumentation to fit user's scientific research work. The platform manager will also brief the safety regulations, training requirement, and instrument usage charges during the meeting.
- 1.1.2 Users are required to complete and submit the [Application Form](#) together with a copy of **NTU OHSE Online Safety Courses transcript** (refer Appendix A) and approved **OHSE Risk Assessment (RA)** (submit online through the WRAS online system, click [here](#)) to the nisb-admin@ntu.edu.sg before they are allowed to use the facility.
- 1.1.3 For users who are not from NTU, they are required also to complete and submit the [Indemnity Form](#) and submit it to NISB.

1.2 Bookings and Cancellation

- 1.2.1 Only trained users are allowed to reserve and use the instruments independently. The reservation is via Bookkit (Please kindly contact Dr. Liew Chong Wai, cwliew@ntu.edu.sg, for Bookkit account registration).
- 1.2.2 New users, who requires training, are requested to indicate the preferable training time/date in the application form. Please take note that new user will be under supervision until he/she becomes an independent user and service charges will be applicable if long-hour supervision involved.
- 1.2.3 User will be charged for the **ENTIRE** reserved slot reflected in the booking system (unless the delay is due to instrument fault). Users may inform platform manager if they plans to start late but this is only acceptable if the users inform the platform manger **2 hours** in advance, subjected to slot availability. Users **MUST** inform the platform manager on the cancellation of reserved slots **1 day** before the beginning of the reserved slot.



- 1.2.4 NISB should be acknowledged in publications. This is important for NISB to justify future funding which will be used to improve and procure new instruments.

“ The authors acknowledge the use of (X-ray/cryo-EM/Biophysics and Biochemistry) platform at the NTU Institute of Structural Biology.”

1.3 Safety and Operations

- 1.3.1 Users are **NOT ALLOWED** to attempt to resolve the problem if they experience any problems while operating the instruments. Users need to inform and report to the platform manager immediately.
- 1.3.2 Users are **NOT ALLOWED** to install any programs/software onto the instrument's computer without permission from the platform manager.
- 1.3.3 If users abuse facility policies and/or act with a lack of respect toward other users or the facility manager, their access to the facility may be revoked.
- 1.3.4 The **Principle Investigator (PI)** is responsible for the action of the user(s) from his/her lab, i.e. the PI must ensure that the user follows all Policies & Rules of the NISB X-ray Crystallography Platform.

1.4 User Responsibilities and Equipment

- 1.4.1 NISB X-ray Crystallography platform provides shared instruments and tools to the research community. The users and the quality of their research rely heavily on them and their pristine conditions. Therefore, users must treat the instruments with care and are not authorized to remove any instruments/tools/reagents from the platform at any time.
- 1.4.2 Users **MUST** sign the logbook (with their name, group and time) at the beginning of their session. At the end of the session, the users are required to sign out. If any issues have occurred, these must also be noted down in the logbook.
- 1.4.3 Users **MUST** clean up their work areas after finishing their session. All tools and consumables must be returned to their proper storage locations. Rooms and instruments should be cleaned and left in their original conditions, ready for the next user.
- 1.4.4 Due to limited space, users should remove his/her expired crystallization plate in the RockImager or plate incubator every 3 months.

2: X-ray Diffraction Laboratory user

2.1 Pre-requisites for user access

- 2.1.1 Above mentioned policy and rules, from **Point 1.1 to 1.4**, are applicable and mandatory to X-ray Diffraction Laboratory users.
- 2.1.2 Users are required to take additional OHSE Safety Online Courses (refer Appendix A).
- 2.1.3 Users **MUST** possess valid **R1 license** and **Radiation Badge** (TLD card) issued by NEA (National Environment Authority). Users must submit their **R1 license certificate** together with the **Application Form** to nisb-admin@ntu.edu.sg.
- 2.1.4 Users without valid R1 license and TLD card are prohibited from entering NISB X-ray diffraction laboratory. Radiation badge **MUST** be worn at all the times when they are inside the X-ray Diffraction Laboratory.
- 2.1.5 First timer user, regardless new or experienced, **MUST** be briefed and/or trained by platform manger before using the X-ray diffractometer. Only certified users are allowed to operate the X-ray diffractometer.

2.2 Safety and Operations

- 2.2.1 Be aware of the safety precautions in handling X-ray equipment which is explained in detail in the instruction manual placed next to the workstation.
- 2.2.2 **VERY IMPORTANT:** If users experience any problems while operating the instruments (hardware issues or software/computer errors such as pop-up icons “red highlighted number” or beeping sound from the X-ray diffractometer), users **MUST NOT** attempt to resolve the problem (unless specifically instructed by the platform manager or the support team), but contact the platform manger immediately. If an error causes termination of the session, the user will not be billed for the remainder of the reserved time.
- 2.2.3 Only certified users with proper training are allowed to operate the X-ray diffractometer independently. The platform manger will provide such training and carry out the certification. A “**certified user**” is one that can work independently from the platform manager and support team, meaning the user is certified to (also) work during weekends, holidays and overnight when the platform manager and support team are not present.



For certification, individual users must demonstrate proficiency in performing all required steps and tasks independently, including but not limited to:

- 1) Turn on the X-ray generator
- 2) Power up the X-ray diffractometer
- 3) Turn on the cryo-jet
- 4) Mounting and unmounting of the crystal, and centring of the crystal
- 5) Screening and collecting data
- 6) Ending of session
- 7) Basic troubleshooting (being able to assess what does/does not constitute “basic troubleshooting” vs problems that require immediate notification of the facility manager).

Users should be able to perform all necessary steps mostly without having to refer to their notes, and while operating all instrument components safely

2.2.4 The computers and instruments in the NISB X-ray Crystallography are protected by a dedicated firewall. Therefore, users **MUST NOT** install any programs without permission from the platform manager.

3: Contacts

NISB X-ray Crystallography Platform Support Team

Boo Zhao Zhi (NISB X-ray Crystallography Platform Manager)
zhaozhi.boo@ntu.edu.sg

Abbas El Sahili
aelsahili@ntu.edu.sg

Wong Yee Hwa
YHWong@ntu.edu.sg

Appendix A: OHSE Safety Courses.

Safety Courses	Protein Crystallography Laboratory	X-ray Diffraction Laboratory
Risk Management: Introduction	•	•
Risk Management: Legal Requirement	•	•
Risk Management: Risk Control Measures	•	•
Risk Management: Doing Risk Assessment	•	•
Basic Safety Training Program	•	•
Ionising Radiation: Introduction to IR and Local Regulations		•
Ionising Radiation: Hazards and Monitoring		•
Ionising Radiation: Protection and Spill Response		•

Appendix B: Check list

Documents/Forms	Protein Crystallography Laboratory User	X-ray Diffraction Laboratory User
Application Form	•	•
WRAS Risk Assessment (<i>Submit via WRAS online system. Send approved copy to NISB</i>)	•	•
NTU OHSE Safety Courses Transcript	•	•
NEA R1 Licence Certificate		•