

Chip-Scale Photonics Testing Facility Policies and Procedures

UC San Diego

The intent of the policies and procedures outlined in this document is to ensure that an environment is created in which researchers can work together safely and productively while maintaining the integrity of the facility and equipment. These policies and procedures will continuously adapt to changes to our facility as it evolves. We strongly encourage users to make us aware of how we can more effectively meet the goals of the facility.

Chip-Scale Photonics Testing Facility Staff Contact Information

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1 Safety

The Chip-Scale Photonics Testing Facility (CSPTF) at UCSD – Calit2 is committed to the highest possible safety standards. It is our goal to operate the facility in a manner that ensures that no unacceptable risks exist for all persons operating within the space. Safety is the responsibility of everyone. We require strict adherence to all applicable Federal and State health and safety regulations, and will enforce these as necessary.

1.1 User Safety Requirements

- Each user must schedule and attend a general orientation with Chip-Scale Photonics Testing Facility staff.
- Each user must read the Chip-Scale Photonics Testing Facility Policies and Procedures document and complete the Policies and Procedures exam.
- Internal users must have their faculty sponsor sign the Chip-Scale Photonics Testing Facility Internal User Agreement. External users must have their company representative sign the Chip-Scale Photonics Testing Facility External User Agreement
- Each user will be required to complete an annual Chip-Scale Photonics Testing Facility safety quiz.
- UCSD internal users must attend the UC Laboratory Safety Fundamentals course and the Laser Safety Seminar (provided by EH&S) and submit a copy of the certificates of completion to Chip-Scale Photonics Testing Facility staff. You can register for these courses by following links at:
<http://blink.ucsd.edu/safety/resources/training/general-lab.html#Laboratory-personnel>
<https://blink.ucsd.edu/safety/resources/training/laser.html>

1.2 Resources

- UCSD Environment, Health and Safety:
<http://blink.ucsd.edu/sponsor/EHS/index.html>
- Phone numbers:

Fire/Police/Emergency:	9-1-1 (858) 534-4357
UCSD Poison Center:	(800) 876-4766
Chemical Spill:	(858) 534-3660 (Weekdays) (858) 534-4357 (Evening & Weekends)
Physical Plant Trouble Desk:	(858) 534-2930
- Material Safety Data Sheets (MSDS):
<http://blink.ucsd.edu/safety/resources/MSDS/sources/index.html>
<http://siri.org/msds/>
<http://www.cdc.gov/niosh/database.html>
http://www.camd.lsu.edu/msds/msds_search.html
<http://www.ehs.cornell.edu/lrs/internetMSDS.htm>

2 General Emergency Procedures

The Nano3 facility environment contains many potential hazards, posed primarily by the chemicals used. For all emergency evacuations the meeting point is across Voigt Dr. and in parking lot number 502. Follow the green arrows on the map at the beginning of this document.

Note: It is each user's responsibility to read through the operating manuals associated with the equipment they plan to use and to familiarize themselves with their potential hazards prior to using them.

2.1 Laser Safety Emergency Procedure

In the event of a laser accident, do the following:

- 1) Shut down the laser system.
- 2) Provide for the safety of personnel (first aid, evacuation, etc.) Seek medical assistance:
 - a) During normal business hours (8:00 am to 4:30 pm):
 - i) If you are an employee of UCSD, contact the **Occupational Medicine Clinic: (858) 657-1600** and follow their instructions.
 - ii) If you are a student, refer to **Student Health Services: (858) 534-3300** and follow their instructions.
 - iii) If you are unsure of your employment status contact **(858) 534-2454**.
 - iv) If you are an external user proceed to the **Thornton Hospital Emergency/Urgent Care Unit: (858) 657-7600**.
 - b) After normal business hours:
 - i) Proceed to the **Thornton Hospital Emergency/Urgent Care Unit: (858) 657-7600**.
Laser eye injuries should be evaluated by a physician as soon as possible!
- 3) Inform the Chip-Scale Photonics Testing Facility Staff of the accident as soon as possible.
 - a) Andrew Grieco: agrieco@eng.ucsd.edu / (858) 534-8770
 - b) Yeshaiahu Fainman: fainman@eng.ucsd.edu / (858) 534-8909
- 4) Additionally if you are an internal user:
 - a) Inform your Principle Investigator of the accident as soon as possible. An Incident Report must be filed within one business day after the accident. Information on completing an Incident Report can be obtained at:
<http://blink.ucsd.edu/safety/occupational/reporting.html>
 - b) Inform the UCSD Laser Safety Officer of the accident as soon as possible.
 - i) During normal business hours: (858) 822-2850 or (858) 822-2494
 - ii) After normal business hours: UCSD Police Department **(858)-534-4357**
- 5) Online resources: <http://blink.ucsd.edu/safety/radiation/lasers/emergency.html>

2.2 Emergency Evacuation Procedures:

Proper evacuation routes vary by building. See the sections below for details.

2.2.1 Atkinson Hall

Some emergency situations will require evacuation from the building. If evacuation is necessary please proceed to the nearest emergency exit and exit the building. Follow the green arrows in Figure 1 (below) to parking lot P502. **Parking lot P502 is the designated assembly area in case of emergency evacuation from Atkinson Hall.** Proceed to parking lot P502 and wait for further instructions.

Atkinson Hall – 5th Floor



Figure 1: Atkinson Hall 5th floor floor plan. Note locations of fire extinguishers, emergency showers/eyewashes, fume hoods (FH) and emergency evacuation routes. The emergency evacuation routes are indicated by the green arrows. See section 2 for more information on evacuation procedures.

2.2.2 Engineering Building Unit 1

Some emergency situations will require evacuation from the building. If evacuation is necessary please proceed to the nearest emergency exit and exit the building. Follow the green arrows in Figure 2 (below) to Warren Mall. **Warren Mall is the designated assembly area in case of emergency evacuation from Engineering Building Unit 1.** Proceed to Warren Mall and wait for further instructions.

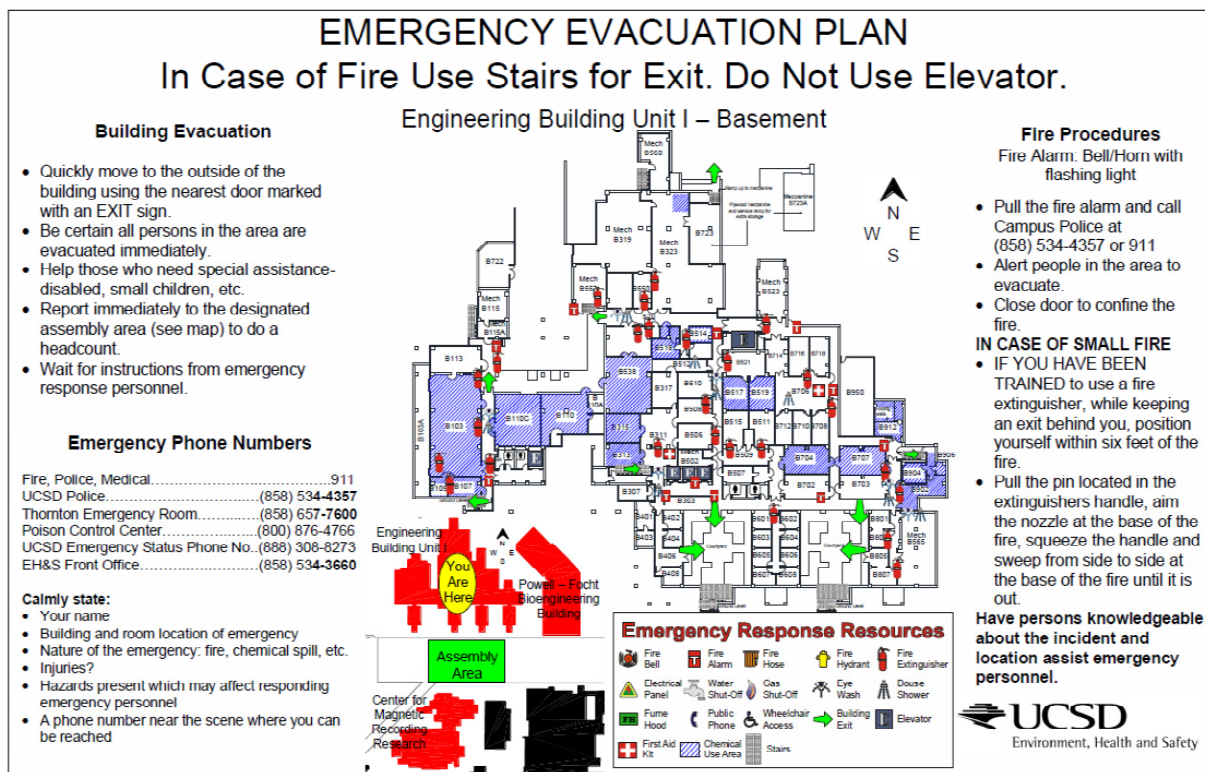


Figure 2: Engineering Building Unit 1 basement floor plan. Note locations of fire extinguishers, emergency showers/eyewashes, fume hoods (FH) and emergency evacuation routes. The emergency evacuation routes are indicated by the green arrows. See section 2 for more information on evacuation procedures.

2.3 Fire:

In case of fire, evacuate the Chip-Scale Photonics Testing Facility and building immediately through the nearest emergency exits. There is a fire alarm located near the elevators and another located near the stairwell across from the elevators. Pull a fire alarm to alert the fire department.

2.4 Earthquake:

In case of a large earthquake, take cover under a doorsill or sturdy table. Do not attempt to evacuate during the earthquake. Wait until the shaking has subsided and then evacuate the cleanroom and building through the nearest emergency exits without de-gowning. Move away from open containers of hazardous chemicals if possible as the shaking may cause them to spill and/or splash.

2.5 Alarms:

In the event of an alarm exit the Chip-Scale Photonics Testing Facility and leave the building.

Do not delay. Follow the green arrows in Figure 1 (above) to parking lot P502. **Parking lot P502 is the designated assembly area in case of emergency evacuation from Atkinson Hall.**

Proceed to parking lot P502 and wait for further instructions.

3 Access Procedures

The Chip-Scale Photonics Testing Facility is a cross-departmental, general user facility, designed to support the campus research effort. The facility is open to all trained personnel on a recharge basis, including UCSD as well as external personnel. It is our mission to provide a state of the art facility for advanced photonic device characterization. Additionally, this facility is intended to facilitate the pursuit of research in emerging, interdisciplinary, and rapidly growing fields.

How To Gain Access:

3.1 UCSD internal users:

- 1) Contact Andrew Grieco (agrieco@eng.ucsd.edu) with a brief description of your processing goals and requirements at the Chip-Scale Photonics Testing Facility.
- 2) Print the Chip-Scale Photonics Testing Facility Internal User Agreement and sign it. Have your faculty advisor sign it as well. Scan and email this form to Andrew Grieco (agrieco@eng.ucsd.edu).
- 3) Attend the UC Laboratory Safety Fundamentals course, and the Laser Safety Seminar, and email copies of your certificate of completion to Andrew Grieco. You can access a copy of your certificate in your UC Learning Center account in the transcripts page. You can register for these courses by following the links below:
 - a) <http://blink.ucsd.edu/safety/resources/training/general-lab.html#Laboratory-personnel>
 - b) <https://blink.ucsd.edu/safety/resources/training/laser.html>
- 4) Thoroughly study the Chip-Scale Photonics Testing Facility Policies and Procedures document. Contact Andrew Grieco to arrange a facility orientation, and pass the Policies and Procedures exam at the end of the orientation.
- 5) Provide a recharge index number to Andrew Grieco. Facility usage rates are outlined on the Chip-Scale Photonics Testing Facility website.
- 6) After you have completed all of the access requirements email Andrew Grieco to request that your campus ID card be activated.

3.2 External (non-UCSD) users:

- 1) Contact Andrew Grieco (agrieco@eng.ucsd.edu) with a brief description of your processing goals and requirements at the Chip-Scale Photonics Testing Facility.
- 2) If your company is new to the facility complete the Chip-Scale Photonics Testing Facility External User Service Agreement.
 - a) Enter the required information in Exhibit A, then print and sign the document.
 - b) Scan and email the signed agreement to Andrew Grieco.
 - c) Please note that approval may take a couple of weeks.
- 3) If your company has already established a service agreement with the Chip-Scale Photonics Testing Facility, you can be added to the existing service agreement by signing the New User Form. Please note that your supervisor must also sign the New User Form.

- 4) Thoroughly study the Chip-Scale Photonics Testing Facility Policies and Procedures document. Contact Andrew Grieco to arrange a facility orientation, and pass the Policies and Procedures exam at the end of the orientation.
- 5) When all the access requirements are complete, the Chip-Scale Photonics Testing Facility will supply external users with a facility access card (\$25 per card) and upon university approval of the service agreement the card will be activated for Chip-Scale Photonics Testing Facility access.
- 6) Submit payment for Chip-Scale Photonics Testing Facility usage in the form of a check or PO for the value stated in your service agreement. Please note:
 - a) The Chip-Scale Photonics Testing Facility cannot accept PO's for payments less than \$1000. If the payment is less than \$1000 it must be submitted by check. Make checks payable to "UC Regents."
 - b) PO's will be invoiced monthly based on usage. Monthly payments can be submitted by check payable to "UC Regents."
- 7) Facility usage rates are outlined on the Chip-Scale Photonics Testing Facility website.

4 Considerations Prior to Entering the Facility

The Chip-Scale Photonics Testing Facility contains advanced test equipment that is by nature very delicate and sensitive. *It is crucial for each user to understand that their individual commitment to following these protocols is what ultimately determines the success of failure of the facility.*

4.1 Items Prohibited Inside the Facility

Items are prohibited which might pose a safety threat, and which might cause damage to the optical components and test equipment. Notably some materials outgas and release particles that can coat optical components and disrupt their operation. This is especially problematic for optical components that contain coatings that can be easily damaged during the cleaning process. Finally, the introduction of outside optical sources, test equipment, or chemicals into the facility is prohibited without prior approval of the facility staff. The following list provides some common examples of prohibited materials:

- Food or drinks
- Make-Up
- Unapproved Optical Sources
- Unapproved Test Equipment
- Unapproved Chemicals
- Oils and Greases (nonvolatile lubricants are acceptable but must be approved by staff)

4.2 Card Swipe Access System

The Chip-Scale Photonics Testing Facility is equipped with a card system, which limits access to authorized users. Users must swipe a valid access card, typically your campus ID card, in order to be able to enter the facility. The card swipe system is not used to record facility use time for charge purposes. Therefore it is necessary for users to manually enter this information into the facility log book immediately adjacent to the door when they enter and exit. *The access card is strictly for your own personal use.* Please do not admit anyone other than yourself into the facility for any reason other than an emergency. Should you need to admit another person into the facility due to an emergency, both the authorized user and the person who was given access to the facility must notify the Chip-Scale Photonics Testing Facility staff. Please see the relevant section of this document for details regarding visitor policy.

Please understand that we will enforce all lab rules and that any breach of these rules can result in nullification of your access privileges.

4.3 Eye Protection

Appropriate eye protection must be worn at all times in the lab. Laser safety goggles are provided that attenuate the optical radiation to safe levels for all the available light sources in

the facility. Before using any laser safety goggles inspect them for damage. If they appear damaged do not wear them. Instead clearly label the goggles indicating they are damaged, notify the facility staff.

5 Using Chip-Scale Photonics Testing Facility Equipment

No user is allowed to operate any piece of Chip-Scale Photonics Testing Facility equipment without supervision until he or she has completed sufficient training AND authorization by Chip-Scale Photonics Testing Facility staff. Equipment that is labeled ‘Do Not Disturb’ should not be touched without permission from facility staff.

All equipment use must be carried out within the guidelines provided by Chip-Scale Photonics Testing Facility’s management. The introduction of equipment and materials not in common use at the facility need to be reviewed by Chip-Scale Photonics Testing Facility management, and the facility reserves the right to disallow anything that might harm equipment or disrupt other processes.

5.1 Overview

The facility is composed of permanent measurement stations, as well as room to build custom measurement stations. Scheduling the use of permanent measurement stations (without any customization) is described in section 5.3 below. If a user desires to temporarily customize a permanent measurement station, or construct a custom measurement station, they must first contact Chip-Scale Photonics Testing Facility staff for approval. The staff will then allocate equipment and space for the custom project. Both the permanent measurement stations and custom projects will be labeled with ‘Do Not Disturb’ signs, and should not be touched without permission from facility staff. **All users should check carefully for ‘Do Not Disturb’ signs before using any equipment.**

The operation of commonly used Chip-Scale Photonics Testing Facility equipment will be covered during the mandatory user orientation. However, some particularly complex equipment requires additional training and authorization before it can be accessed by users. To become such an authorized user follow the procedure described in section 5.2 below. If you have any uncertainty about using a piece of equipment, or whether it requires extra training, contact Chip-Scale Photonics Testing Facility staff for clarification before operating it.

5.2 Training and Authorization

Make an appointment with Chip-Scale Photonics Testing Facility staff or any authorized user to obtain training on the operation of the equipment. If you have any uncertainty about using a piece of equipment, or whether it requires extra training, contact Chip-Scale Photonics Testing Facility staff for clarification before operating it.

Go through as many hands on training sessions as necessary until you feel comfortable operating the equipment. You are not permitted to use any equipment alone before being officially authorized. An authorized user **MUST BE WITH YOU** at all times while you are

learning/practicing. Users must not only “push buttons,” they should have a good understanding of everything that happens with each part of the process.

When you feel you understand the process thoroughly and can operate the machine independently, you may make an appointment with the superuser for authorization. To obtain the superuser’s name and email address, contact Chip-Scale Photonics Testing Facility staff. Be sure to review your notes prior to authorization.

Have your samples and/or materials ready for the authorization procedure. During the authorization procedure, the superuser will watch you use the system while you explain the operation of the instrument. If you demonstrate that you are sufficiently knowledgeable with the operation of the instrument, the superuser will give you authorization to independently use the instrument and your name will be added to the authorized user list.

To insure the safety of people in the lab and to minimize equipment down time, it is absolutely necessary that all Chip-Scale Photonics Testing Facility users follow this procedure. Equipment authorization can only be done by Chip-Scale Photonics Testing Facility staff.

5.3 Equipment Scheduling

Access to the Chip-Scale Photonics Testing Facility reservation calendar will be provided following successful completion of the facility orientation. Likewise, access to separate reservation calendars for equipment requiring authorization will be provided upon the successfully completing the authorization process. Please make your reservations as far in advance as possible. If you make a reservation and then decide not to use it for any reason, please be sure to remove the reservation so that other users can schedule time instead.

Please be prompt. You must begin your process within 30 minutes of the start of your reserved time slot. After 30 minutes you will lose your reservation privileges and the equipment is considered available to other authorized users.

6 General Behavior Inside the Facility

We strive to keep the user rates for our facility as low as possible. Please help us by being committed to the **preservation of resources**, and to keeping to a minimum the necessity for facility staff to spend time on cleaning up after users, repairing things, etc. **Never, however, hesitate to request staff time to help you with things that you are unsure about.**

The following bullets are meant as a brief reminder of appropriate general behavior while inside the facility. The list is by no means comprehensive, but contains items we believe are of particular importance.

- **Eating, drinking and gum chewing are prohibited** while inside the lab.
- **If you turn something ON, remember to turn it OFF when you are finished.**
- If you make a mess, **clean it up**. Return everything to its original condition, or ideally, leave conditions a little better than you found them. This includes your entire set-up for experiments or projects.
- Be aware of **supplies**. If quantities of stock appear to be low, report it to the Chip-Scale Photonics Testing Facility staff.
- ANYTHING left unattended **MUST** be labeled with your NAME, PHONE NUMBER WHERE YOU REALLY CAN BE REACHED (not the number of your department's front office), WHAT IT IS THAT IS SITTING THERE, and the DATES AND TIME of when you left it AND when you will return to get it. We will **THROW OUT** anything not appropriately labeled.

7 Visitor Policy

It is prohibited to bring any person into the facility that is not an authorized user, unless permission to do so is granted by Chip-Scale Photonics Testing Facility staff. If such permission is granted, a qualified staff member/authorized user must escort the visitor AT ALL TIMES. The escort is responsible for ensuring that the visitor adheres to the facility policies and procedures.

8 Explanation of Charges

The Chip-Scale Photonics Testing Facility is a campus recharge facility open to all UCSD affiliated students and researchers as well as users from companies and research labs outside the university. We charge by the minute for time spent in the lab.

9 Enforcement

We embrace the idea of a user facility and recognize that the success of the facility depends on making it a friendly and accessible environment for the users. Although we hope to never have to penalize users for not following the policies outlined above, the user must recognize that the successful operation of the facility depends on strict adherence to these policies. Adherence to these policies is essential for maintaining a safe environment; it is in everyone's best interest to follow them. Unfortunately we must prepare for breaches of policy. We reserve the right to invoke the following penalties for the listed transgressions:

- Failure to create an entry in the logbook when using the lab:
 - First Offense: Verbal warning.
 - Second Offense: Written warning.
 - Third Offense: Temporary suspension from the facility.
- Not wearing proper safety equipment:
 - First Offense: Verbal warning.
 - Second Offense: Written warning.
 - Third Offense: Temporary suspension from the facility.
- Bringing food or drink into the facility:
 - First Offense: Verbal warning.
 - Second Offense: Written warning.
 - Third Offense: Temporary suspension from the facility.
- Not cleaning up after using the facility:
 - First Offense: Verbal warning.
 - Second Offense: Written warning.
 - Third Offense: Temporary suspension from the facility.

Temporary suspension from the facility will occur on the first occurrence of more serious offenses. Some examples are:

- Granting access to an unauthorized user to use equipment. No user can grant access to an unauthorized user to use the facility unless escorted by a staff member in accordance with the visitor policy.
- Using the facility with someone else's access card without being an authorized user and/or not under supervision.
- Using equipment reserved for another user. A user may not use any equipment reserved by another user for the first hour the equipment is reserved. After that time, the equipment may be used until the next reservation. If a user's run exceeds a scheduled time, the next user who has reserved the equipment should try to reach a compromise with the previous user. The machine does, however, belong to the user who reserved it, and he/she may ask the previous user to terminate their run.

- Using equipment when it is undergoing maintenance and is marked not to be used or “Machine Down”. Under no circumstances is a user allowed to perform any maintenance on any equipment. Any abnormalities while using the equipment must be promptly reported to CSPTF staff.
- Not leaving the facility during an emergency.
- Installing software on any computers or modifying equipment settings on equipment dedicated computers without permission.
- Removing supplies and/or equipment from the facility.