

Updated by Alice on 4 April 2017

Welcome to the D-Lab! The fun is just beginning.

Online training

All new members need to complete 3 online safety trainings before starting in lab:

Chemical safety: EHS 1900

Compressed gas: EHS 2200

Laser safety: EHS 4820

To purchase chemicals you'll need to complete these trainings

Purchasing Using Stanford's SmartMart (catalog) (FIN-0412-000002)

Non-Catalog Purchasing Using Oracle iProcurement (FIN-0410-000001)

Getting access to the building and offices

Contact Patricia Cruz for a key to the lab and offices (this gives you after-hours access to Durand).

Contact Fi Verplanke for a passcode to the main Materials Science office if you anticipate needing to access that after 5 PM.

Server

Talk to David about getting an account on the dionne.stanford.edu server.

Group drive (dionnelab@gmail.com) and dionnestud (dionnestuds@lists.stanford.edu) email list

Talk to Shing Shing for access to group SOPs, experimental procedures, and misc. emails

Printers

We have a black and white printer in the middle office with IP address:
171.64.118.37

To set up: On a Mac, you go to System Hardware, Print & Scan, then click the + under the list of printers to Add Printer

Choose the IP tab, Protocol: HP Jetdirect - Socket, and the above IP address.

There are more printers in the Durand 126B Matsci Office:

Main color printer/scanner (will need SU ID card to log in)

Contact Fi to get registration and follow the instructions below

Windows: <https://soeithelp.zendesk.com/entries/28087426-Add-CanonMFD-Secured-Unsecured-Print-Queue-for-Windows>

OSX: <https://soeithelp.zendesk.com/entries/27913368-Add-CanonMFD-Secured-Unsecured-Print-Queue-for-OS-X>

First time login: <https://soeithelp.zendesk.com/entries/27691008-Canon-MFD-One-Time-Login-Process>

HP color LaserJet 4600dn (on the counter)
171.64.118.106

Xerox Phaser 8560MFP (next to the large WorkCentre)
172.24.118.77

Remote Desktop Access

We have set up remote desktop access to the simulation computers at the following addresses:

dionnecurry.stanford.edu
dionnecurie.stanford.edu
kheer.stanford.edu
kerr.stanford.edu

There is also remote desktop access to the front table computer in the optics lab (so you can run Labview or Winspec remotely)
171.64.118.97

Access to any of these requires signing into the Stanford VPN:
<http://itservices.stanford.edu/service/vpn/>

Getting into D-Lab!

After completing the online safety trainings (see above), read through both the Wet Lab and Optics Lab safety manuals. Have Alice or Michelle give you a general tour and make sure to sign the binders with SOPs.

We have a sign-up system using a google calendar for the following equipment:

- 1) Simulation computers
- 2) Hoods in the wet lab
- 3) UV-Vis spectrometer in the wet lab
- 4) Angstrom in the wet lab
- 5) Optics equipment (lasers, spectrometers)
- 6) AFM in the optic lab

Contact Katherine about getting added to these calendars. Lab policy is that you forfeit your time if you're half an hour late; if there's high demand for whatever equipment you're using, please be considerate of others and reserve only what you need :)

Buying Things

ON CAMPUS

Contact Patricia to get an account at the Fisher Chemistry and Bio Stores and Physics Store. Store hours and common things purchased at each:

Fisher: 8:30-4 PM

Glassware, gloves, some chemicals, solvents, lab notebooks, storage containers,

chemistry things

Physics: 8 AM -5 PM (<http://www.stanford.edu/dept/physics/facilities/stockroom.html>)
compressed gases, nuts and bolts and plumbing things, tubing, fittings, lab notebooks
with the Stanford logo

BioStore: 8 AM - 4 PM (<http://web.stanford.edu/group/fms/fingate/docs/shows/FisherStoresOpenHouse.pdf>)
lab supplies (glass slides, petri dishes, etc.), bio reagents, etc.

ONLINE

Smartmart is sort of a catalog that Stanford uses to purchase things from common suppliers. Contact Fi for an account and password, and follow these instructions for using it:

http://www.stanford.edu/group/fms/fingate/finsystem/smartmart/howto/buy_items.html

You can buy things not listed on Smartmart by using a Non-catalog RPO (instructions on link above).

If the item you are trying to purchase is less than \$1250 and NOT a chemical, you can use the department credit card (P-CARD). Talk to Patricia and use this sparingly (i.e., when the company will only take a credit card or you need to get something shipped quickly).

Purchasing chemicals and using Chemtracker

We keep an inventory of all chemicals in our laboratory; it's important to update this as soon as a new chemical arrives or any chemicals are used up.

Before purchasing a chemical, check that we do not already have it in our inventory on Chemtracker, and also check the Stanford free chemicals website (freechemicals.stanford.edu) to see that it's not available on campus.

Suppliers of chemicals on campus include the Fisher Store on the first floor of Lokey; they have many solvents and some reagents. The Biostore also carries solvents. Be sure to BRING A SECONDARY CONTAINER when going to purchase chemicals on campus so that you can bring them back to lab! the secondary container is located below the computer tables in the wet lab (it is clean and you can handle it WITHOUT gloves - make sure to keep it clean for others).

It's often less expensive to purchase reagents on Smartmart from Sigma Aldrich or Fisher, although you may need to wait a few days for shipping. Aldrich tends to ship faster than Fisher. Check with an older student or synthesis papers if you're not sure about the purity of the chemicals you're buying; often there are many, many options.

Once your chemical arrives, update our chemical inventory in Chemtracker (<http://www.stanford.edu/dept/EHS/prod/researchlab/chem/inven/index.html> and <https://www.stanford.edu/dept/EHS/prod/researchlab/chem/inven/index.html>)

stanford.chemtracker.org/?state=login) . To get an account, please contact Debbie Amoroso (debbiel@stanford.edu), indicating that you are a member of the Dionne Group and would like access to ChemTracker for Durand 190 and 174.

- 1) Load the Dionne group inventory by running a Search for "Dionne" in Chemical Owner and clicking Run Query.
- 2) Once you are able to view the inventory ("All Matching Inventory" has chemicals listed in it), click Add.
- 3) Fill in the required information for your chemical. You might want to add the supplier and product number for easy replacement in the future.
- 4) Click Add Record
- 5) Your new chemical should now show up in the inventory.
- 6) A critical safety measure is storing chemicals properly. As you learned in the Axess safety training, Stanford has organized chemicals into storage groups. To find out the proper storage location, you can get an Inventory Report (under the list of chemicals). Select Storage Group Update Report and you'll be able to find your chemicals listed with storage group.
- 7) Label the bottle with the storage group before you store it.

Beginning research in the...

The Wet Lab (Durand 190)

Talk to Alice or Michelle about general wet lab safety measures like wearing safety goggles, lab coats, and gloves. For training and information on specific instruments, please talk to the gurus below. The first name on the list is your primary contact, but if they are not available, please see the others for assistance:

Hoods, glove boxes, schlenk lines, cleaning stir bar training: Chris, Randy

Angstrom evaporator: Shing Shing, Michelle

UV-vis & fluorimeter: Katherine, Stefan

Safety: Alice, Michelle

Waste: Alice (solid), Michelle (liquid)

Restocking common consumables inventory, gas cylinders: Rea

Spin-coater: David

The Optics Lab (Durand 179)

Talk to Alice or Michelle about general optics safety like wearing laser safety goggles. For training and information on specific instruments, please talk to the gurus below:

Ti-Sapphire and other lasers: Mark, David

AFM: Yang, Alice

Microscopy, spectroscopy (dark-field, UC/PL): Randy, Amr, Stefan

The Bio Lab (Below the main office)

Talk to Shing Shing, Amr, or Alice for general information and capabilities of the bio lab below the main office. This space is shared with the Appel group and includes fume hoods, tissue culture hoods, and a small optics space for bio-related experiments.

Log book

For several instruments, including the Angstrom, microscopes, Ti:Sapphire laser, and UV-Vis, there is an electronic, Google doc log book. Remember to fill this out at the end of your session so we can keep track of changes between users.

Shared Facilities

Stanford Nano Shared Facilities (SNSF) is comprised of shared facilities in various locations. Please visit <https://snsf.stanford.edu/equipment/index.html> for a detailed list.

FIRST, fill out an SU-13 form to set up a Badger ID (this is the log-in you use to enable all of the equipment) and tell SNL what account to use to pay for the equipment use (<https://snsf.stanford.edu/about/join.html>). Jen will then approve the form, which you'll turn in before your first training on any equipment. Look online to see who to contact in order to schedule training session.

Below are some common facilities our group uses. Please contact the listed individuals for more information about training, shadowing, etc.

1) Stanford Nanocharacterization Lab (SNL); located on first floor of McCullough

- Focused ion beam (FIB): David, Mark, Amr

- Sirion SEM: Katherine

3x 3 hour training sessions, followed by 3x supervised solo sessions during work hours (8:30 AM to 5:00 PM -- These are really hard to schedule, so get trained on the SEM early if you think you'll need it!)

- Magellan SEM (in the Nano building basement): Randy, Michelle

Need to get trained on Sirion and use that first, then contact Rich Chin for details about Magellan-specific training (~1 training session and a sign-off)

- XPS: Alice

2x 2 hr training session

- XRD: Rea, Randy, Alice

X-ray safety training online, followed by an in-person quiz and movie screening at the EHS office, THEN

1x 2 hr training session

- Tecnai TEM: mostly everyone in the group is trained on Tecnai

2x 3 hour training sessions (additionally, 1 supervised final with Ann)

- Titan TEM (in basement of Nano): Fariah, Katherine, Michal, Daniel, Stefan

2) Stanford Nano Center (SNC); located in Nano building Spilker basement

-JEOL e-beam lithography/e-beam technique: David, Michal, Rea, Michelle

Contact Rich Tiberio.

- NanoSEM

Contact Rich Tiberio. This machine is located in the clean room near the JEOL e-beam, and if you just need a good SEM you may find the Magellan to be more useful.

- NanoSIMS

Contact Chuck Hitzmann for training.

3) Stanford Nano Fab (SNF); located in CIS-X

- Film deposition, RIE etching, oxidation furnaces, cleanrooms, wet benches: Michelle

- Photolithography: Michelle, Amr

4) Soft & Hybrid Materials (SMF), located within the Shriram Building

Please talk to Randy and Michelle

5) Flexible clean room, located in Spilker

Run by Tom Carver

- wet benches, microscopes, post and pre-lithography, gold etching

6) Stanford Microscopy Facility CSIF (in Shriram or Beckman Center)

LSM 780 multiphoton laser scanning confocal microscope in Shriram: Alice

7) nano-patterning in Spilker: Randy

8) Horiba Labram Raman in Spilker: Shing Shing

Simulation Computers & Methods

Software can be found on our simulation computers. Feel free to ask any of the simulation gurus below for help using specific analytic methods.

Simulation computer gurus: David, Mark

1) Lumerical/FDTD: Mark, Michelle, Yang

A free 30-day trial version of Lumerical is available on the website; you need to fill in some information about yourself and the lab for them to activate it. Otherwise, you can use Lumerical on any of the simulation computers.

2) Comsol/FEM: Mark

3) BEM: Fariah, Katherine

4) Matlab: Shing Shing

5) Other (Mie Theory, RCWA): Fariah, Katherine, Yang, Shing Shing

Literature

To keep updated on the latest research, we recommend

1) Papers/Mendeley

Both are very useful programs for sorting, reading, and searching for research papers. "Papers" is designed for Mac, and can be purchased with a student discount for about \$20. Mendeley is compatible with Mac and PC and can be downloaded for free.

2) Feedly

A great way to keep up with the literature; just subscribe to the feeds of your favorite journals and Feedly will compile their RSS feeds in one site; you can assign searches for keywords based on your research or get the entire feed for a journal. Journals that many of our group members follow include:

Nature

Science

Nature Materials

Nature Photonics

Nano Letters

ACS Nano

JACS

J. Phys. Chem. C.

Angewandte Chemie

Chemistry of Materials

Physical Review Letters

Optics Express

...

3) Paperpile

Organize papers and create a library through your web browser, subscription is ~\$3/month

Writing

1) Overleaf

It's like google docs for LaTeX. A great resource for writing papers collaboratively. Sign up for free with your Stanford email account