

Updated by Alice on 14 August 2015

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

Getting access to the building and offices

Contact Sylvia Paris 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 Shing Shing about getting an account on the dionne.stanford.edu server.

Printer

We have a black and white printer in the middle office with IP address:
171.64.118.81

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 Matsci Office:

Xerox WorkCentre 7545 (the big printer)

172.24.118.78

note this one prints a cover sheet for everything you print

Tarun has figured out a way to NOT print the coversheet:

1) Download the driver for the printer here: [http://www.support.xerox.com/support/workcentre-7545-7556/downloads/enus.html?](http://www.support.xerox.com/support/workcentre-7545-7556/downloads/enus.html?associatedProduct=XRIP_WC7525_base&operatingSystem=macosx)

associatedProduct=XRIP_WC7525_base&operatingSystem=macosx

2) Set up the driver and connect printer

3) When printing, choose the Xerox WorkCenter 7545 option

4) In print settings, choose Xerox Features, then choose the Advanced tab

5) Disable Job ID

This should now be the default for when you print to that printer. Talk to Tarun if you have help, not sure if it works for Windows like this!

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:

casimir.stanford.edu

cashmere.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!

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

Next, read through both the Wet Lab and Optics Lab safety manuals.

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 Diane 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 Yusong to get an account at the Fisher Store and Physics Stores. 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

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. Talk to Sylvia 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, 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!

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>); version 1 is simpler but you can try out version 3 as well (it's useful for getting storage groups).

- 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 Tarun or Alice 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:

Hoods & glove boxes: Tarun
Angstrom evaporator: Justin, Guru
UV-vis & fluorimeter: Guru, Alice, Diane
Safety/Waste: Alice, Tarun
Gas cylinders: Michael, Fariah

The Optics Lab (Durand 179)

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

Lasers: Yang, Michael, Guru, Alice
AFM: Yang, Alice
NIRvana: Justin
Dark-field microscopy: Justin
PL & UC spectroscopy: Michael, Alice

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): Brian, Yang, Shing Shing, Justin

- Sirion SEM: Diane, Michael, Fariah

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): Diane, Justin

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: Justin, Diane, Alice
2x 2 hr training session

- XRD: Michael, Alice, Diane
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: Tarun, Alice, Diane, Fariah, Justin, Guru, Katherine
2x 3 hour training sessions (maybe 1 supervised, I forget)

- Titan TEM (in basement of Nano): Tarun, Fariah, Katherine

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

-JEOL e-beam lithography/e-beam technique: Guru, Yang
Contact Rich Tiberio.

- NanoSEM: Diane
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: Justin, Guru

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

Please talk to Justin, Guru, Yang, or Diane for more information

- Ellipsometer: Justin, Guru

5) Flexible clean room, located in Spilker

Run by Tom Carver

- wet benches, microscopes, post and pre-lithography, gold etching: Justin, Guru

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.

1) Lumerical/FDTD: Brain, Yang, Diane, Justin

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: Brian, Guru
- 3) BEM: Fariah, Katherine, Tarun
- 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
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