Updated 3/7/2017

Lin Lab General Safety Rules and Procedures

Or, how I learned to stop worrying and love the clean(ish)-room

Safety Rules

There are a lot of potential hazards in the 1113 Etcheverry Lab: PEGDA causes skin irritation, H_2SO_4 causes severe acid burns, and acetone and IPA can potentially catch on fire. Be careful! Due to a tragic laboratory accident at UCLA, the UC System is now taking laboratory safety far more seriously, and is helping provide us with materials to keep us safe.

1) **Take EH&S 101**
    a. Covers important safety issues that you'll encounter in any scientific laboratory
        i. Gives a good idea of how to protect yourself and others
    b. This is partly a liability question as well
    c. You can find EH&S 101 (with some digging) here: http://jwas.ehs.berkeley.edu/lmsi
2) **NO Food and Drink in the Lab Area!!**
    a. **Food and science don't mix**; imagine that everything in the lab is contaminated
    b. You may eat/drink in the common computer area or the group meeting area
    c. Take off gloves and other protective equipment before eating
3) **Laboratory clothing requirements**
    a. Close-toed shoes (no flip-flops or sandals)
    b. Full-length pants (or equivalent coverage)
4) **Gloves**
    a. **Always wear gloves when**
        i. Working at the microscope station
        ii. Working at one of the M3B benches
        iii. Handling chemicals
        iv. Using the computer in the Clean Tent
    b. We use PEGDA a good amount in 1113. It can cause chemical burns and skin irritation (similar to burns from grabbing a really hot mug of tea). It's best to assume that most things in the lab are contaminated.
5) **Lab Coats**
    a. We have some new Lab Coats for you to wear when doing experiments. There are several benefits to wearing a lab coat:
        i. It keeps you safer (e.g. from sprayed chemicals)
        ii. It keeps your clothes from getting ruined
        iii. It makes you look and feel like a legit scientist
6) **Safety Glasses**
    a. Wear them whenever you're working with chemicals that can splash, squirt, or spray
    b. **That's most chemicals**, for the record
        i. Hot oil is also a hazard, for the 3D printing group
    c. Don't have to wear glasses when looking through the microscope (because that's really hard to do), but wear them the rest of the time

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General Rules and Procedures

The 1113 Lab gets messy ***extremely*** quickly, and it requires active work to keep clean. It's possible to get stalled for days because someone else misplaced an item or didn't report a used-up chemical, and this can be extremely frustrating. Experiments also tend to fail less often in a clean workspace; remember: dust is often larger than the **micro**fluidic channels we're working with and can short out electrical circuits. Fortunately, there are ~20 grads/visiting scholars and ~35 students in M3B, so laboratory hygiene is relatively easy if it doesn't get out of hand.

These rules are also for **safety**. Knowing where and what all the chemicals are, how to dispose of them, and how to clean up after yourself can keep you and your colleagues safe.

1) **Keep your supplies labeled**
    a. **All containers with chemicals** should have a label with Chemical and Your Name. It is very expensive to throw away unmarked chemicals.
        i. This is actually a major safety issue. In case something goes wrong in lab, or someone needs to clean up, we need to know what everything is
    b. Anything you need to leave unattended on the work tables should have something telling us (i) what it is, (ii) who you are, and (iii) how long you need to use it (include today's date and specific times, if possible)
2) **Put your samples and supplies away**
    a. Unlabeled supplies or samples that are left sitting on the tables for more than a few days might be repurposed or thrown away **without warning**
    b. The work **tables are not a storage cabinet**
        i. We have limited space to work with. Please put your things away to reduce the clutter and mess for everybody else
    c. The best way to keep your experiments uncontaminated and free from accidental damage is to keep them in your group's drawer
    d. If you *do* need to leave something out, mark how long you plan to use it
        i. Even labeled items might find be repossessed if they sit out for too long
3) **Leave the lab stations as clean (or cleaner) than you found them**
    a. When you finish cleaning up your experiment for the day, try to spend five additional minutes tidying up the lab space
    b. The exception is stuff accidentally spilled on the LabMats protecting the table. Try not to spill, but if you do, don't worry too much about it; that's what the mats are there for.
    c. The squares of clean-wipes can be good for keeping your mess contained to an easily-disposed-of surface.
        i. This will also protect your samples from whatever has been spilled on the tables previously
    d. If you spill something, wipe it up best you can
    e. Leaving the lab a little cleaner takes only five extra minutes per student.
4) **Supplies and the Inventory**
    a. There's a Lin Lab Supply Inventory[1] which is updated periodically.
        i. The list should eventually have most of what we use in M3B and Etcheverry 1113
        ii. Use it to find where things are in lab
    b. Ideally, we should be able to use the Inventory at a glance before buying anything

[1] http://tinyurl.com/linlab-supplies

c. If you use something up (or finish a box) make note of it
d. If you get something from the stockroom, try to note it on the list

5) Specific Equipment Rules

a. Know how to use and clean any machine you need to use for research. Get training from superusers on specialized equipment. As of this last update,

Equipment	**Super users**
Furnace (and vacuum set up)	Xining, Emmeline, Caiwei
Sonicator	Caiwei
Compressed gas cylinders	Xining, Emmeline
Gamry (and Xenon lamp set up)	Xining, Emmeline, Caiwei
Electrospinner (and electrospraying)	Hyun Sung
Electrical Measurement Equipment	Ben, Junwen
Semiconductor Analyzer	Takeshi and Simon
Spin Coater	Simon
Hazardous Chemicals	Emmeline
High voltage power source	Junwen

b. If something's not working properly, check with one of the superusers before you try to fix it yourself
    i. **Don't over twist knobs ever**!
c. When you're done, clean up the machine. This might include
    i. Wipe up chemical waste/residue
    ii. Run the proper cleaning protocol for flushing out chemical waste
    iii. Remove excess tape, debris, paper towels, etc.
d. Turn off any power supplies, pressure sources, microscope lights