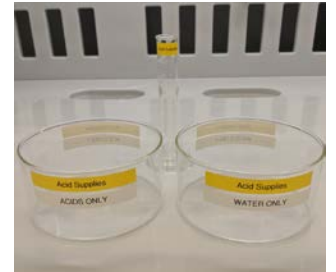
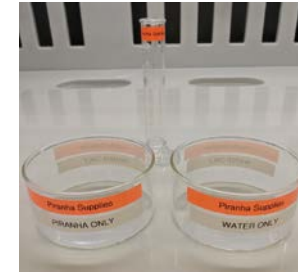
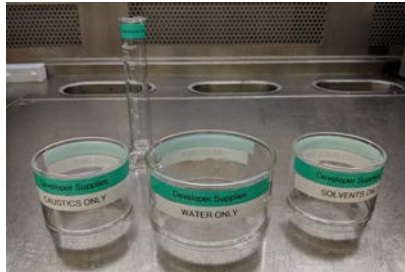
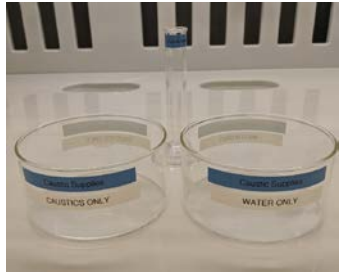


ASRC NanoFab Glassware Guide



- Created: January 15th, 2020
- Updated: January 15th, 2020

Hood supplies

- Supplies for the chemical hoods are no longer stored at the hoods, with the exception of the RCA hood. There is now a set of wire drawers in the lithography bay where most glassware and supplies are stored.
- All of the drawers are labeled for the type of supplies they contain and the hood in which those supplies are to be used. DO NOT use any glassware for something other than what it is labeled to be used for and DO NOT use the glassware in any hood other than the one it is labeled for.
- These storage drawers are for ASRC owned glassware and supplies only. If users store personal glassware in these drawers, that glassware will be confiscated, cleaned and relabeled as ASRC owned glassware for all users to use. You will never get it back, so if you want to keep your own glassware DO NOT store it in these drawers.



Hood supplies

- All supplies must be returned to these drawers when you are finished using them. Leaving glassware in the hoods is a violation of the new cleanroom policy.
- All supplies must be rinsed and dried before being returned to storage. Use DI water to thoroughly rinse everything (3x rinsing is a good practice) and then blow dry with nitrogen. A small amount of water droplets is okay, but nothing should be dripping wet when it is returned to the drawers.
- If users wish to reuse certain chemicals over the course of a few days, as is often the case with chromium and gold etchants, they must leave them covered and fully labeled. We now have reusable labels for this purpose. Whenever possible, try not to leave chemicals in a hood for more than 3 days.
- Users who violate these policies will receive a warning first, but if they continue to violate policies they will lose their access to the chemical hoods and potentially their access to the entire cleanroom.



Hood supplies – transporting glassware

- There are two sizes of white trays on top of the glassware storage drawers. These trays are for carrying glassware to and from the chemical hoods.
- When preparing to use the chemical hoods, gather all of the supplies you will be using from the drawers and place them in the tray. Be careful not to load more weight than you can carry.
- NEVER carry chemicals in the trays. Glassware should be empty when being transported in the trays.
- Keep the tray at the hood until you are finished, and then bring the rinsed and dried supplies back to the lithography bay for storage.




Hood supplies – chemical labels

- There are reusable labels on top of the glassware storage drawers along with black sharpies to fill them out.
- Fill out the form completely with your name, the date and time, and a full list of the chemicals you will be using. **All chemicals must be labeled.**
- Keep this label in the hood with the chemicals you are using. When finished clean the label with IPA and return it to the lithography bay with the glassware and supplies you used.
- There are directions on the back of the label. Be sure to follow them.

NanoFabrication Facility

ADVANCED SCIENCE RESEARCH CENTER



Member Name: _____

Date & Time Poured: _____

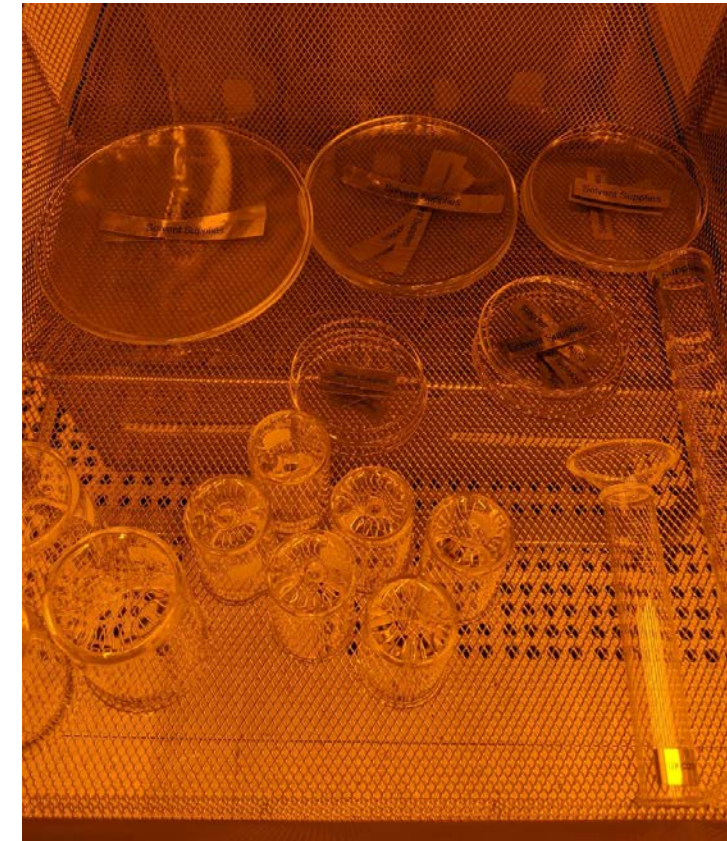
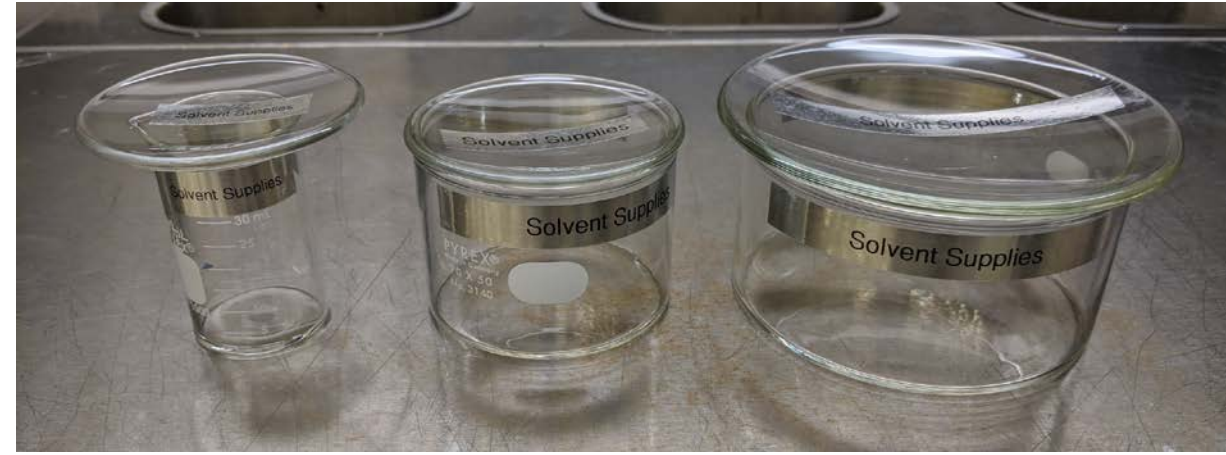
Chemical Contents: _____

All chemicals must be labeled. Hood users must fill this out completely and have it with any chemicals they are using in a hood. All users must cleanup after themselves or risk suspension of their access to the Nanofabrication Facility.

- Fill out the form on the opposite side completely with your name, the date and time, and a full list of the chemicals you will be using. All chemicals must be labeled.
- Use a white tray to carry all of the glassware you'll be using to the hood. Never carry any chemicals in the white tray.
- All glassware is labeled for use in specific hoods. Only use glassware labeled for the hood you are using.
- Most glassware is also labeled for use with specific types of chemicals. Only use glassware labeled for the chemicals you are using.
- When finished, all glassware must be rinsed thoroughly with DI water, blown dry with nitrogen, and then returned to the glassware storage drawer that matches its label.
- All users must cleanup after themselves or risk suspension of their access to the Nanofabrication Facility.

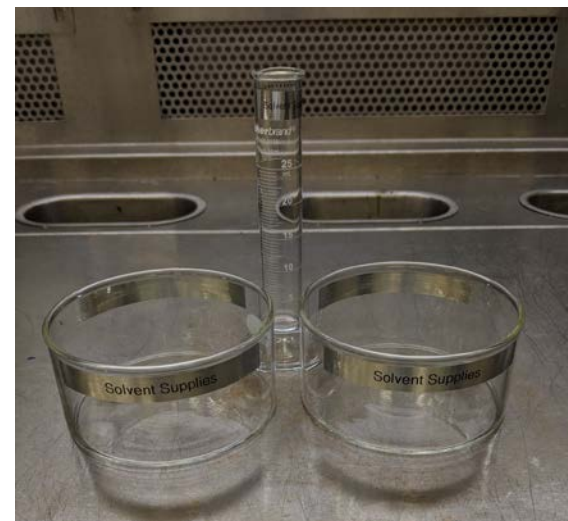
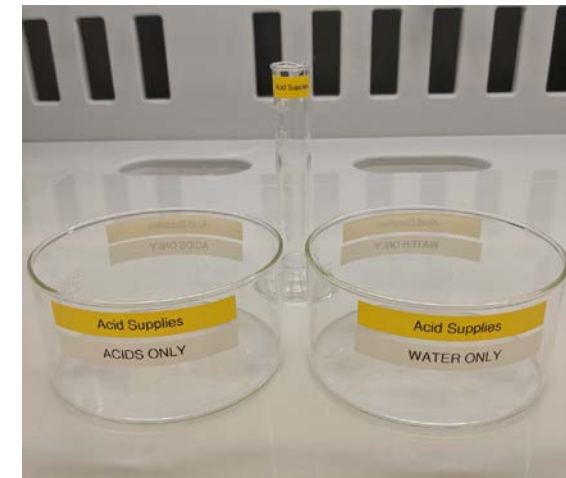
Hood supplies

- There should be an abundance of supplies for each chemical process and each hood, including various sizes of dishes, beakers and graduated cylinders, along with various sizes of watch glasses to use as lids. There are also thermometers.
- If any glassware is ever damaged, report it immediately so that we can replace it. We have plenty of spare supplies so it not a problem if anything ever accidentally broken.
- Glassware should be kept clean. Do not use glassware in such a way that it becomes too dirty to be used and must be replaced.



Hood supplies – always check the labels / color code

- There is specially labeled glassware for each hood and each chemical process you can perform in the cleanroom. Be sure that you are using the proper supplies for the chemical process you are performing, and be sure that you are using the supplies in the proper hood.
- If you misuse the glassware supplied by the ASRC, you will receive a warning the first time, but if you continue to misuse the glassware, you will lose access to the hoods and potentially to the entire cleanroom.



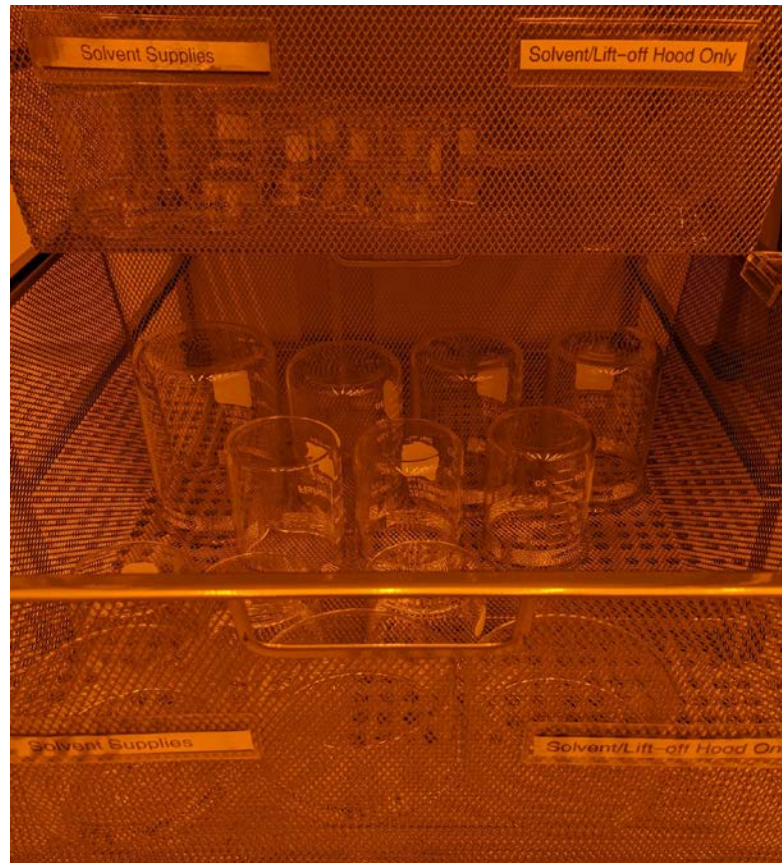
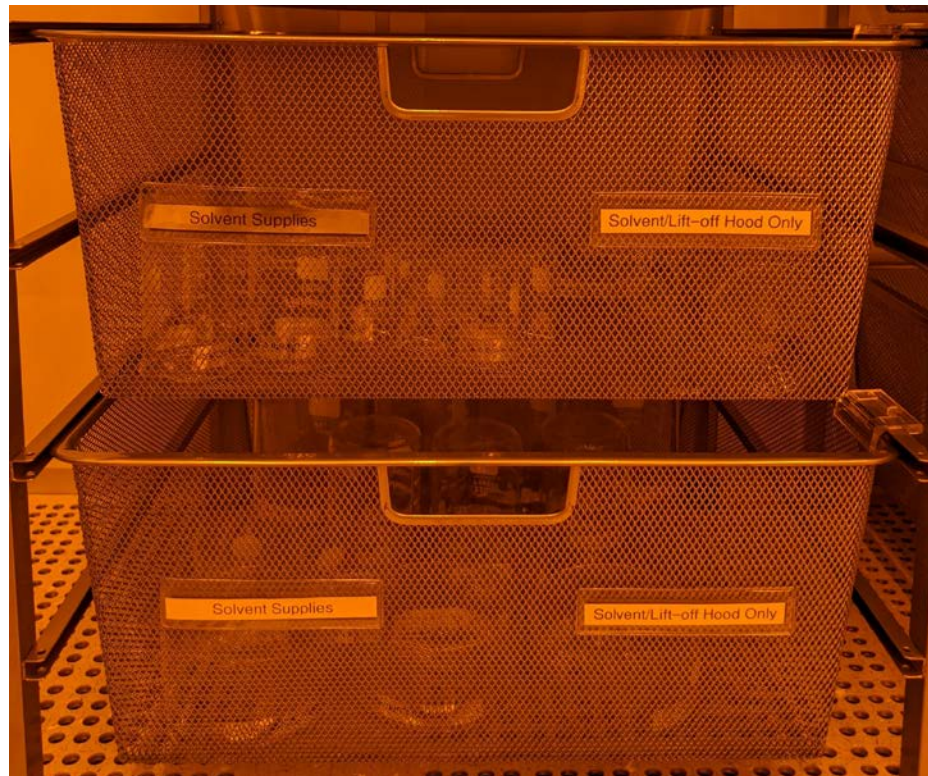
Hood supplies – solvent supplies

- When using solvents such as acetone, isopropanol, methanol, or NMP to clean substrates or perform lift-off of patterned resists, the chemical work should be done in the solvent/lift-off hood in the metrology bay.
- Glassware for such solvent work is labeled “Solvent Supplies” with a silver label. This glassware should only be used in the solvent/lift-off hood.
- This glassware should only be used for solvents, never for acids, caustics or developers.
- When finished using the glassware, it must be thoroughly rinsed, blown dry with nitrogen and returned to the proper drawer in glassware storage in the lithography bay.



Hood supplies – solvent supplies

- The solvent supplies are stored in the lithography bay in the drawers labeled “Solvent Supplies” and “Solvent/Lift-off Hood Only”. Be sure to only use them according to their labels.
- When putting glassware away, try to return it to the same drawer from which you originally retrieved. If you are unable to remember the exact drawer, just be sure that the labels match.



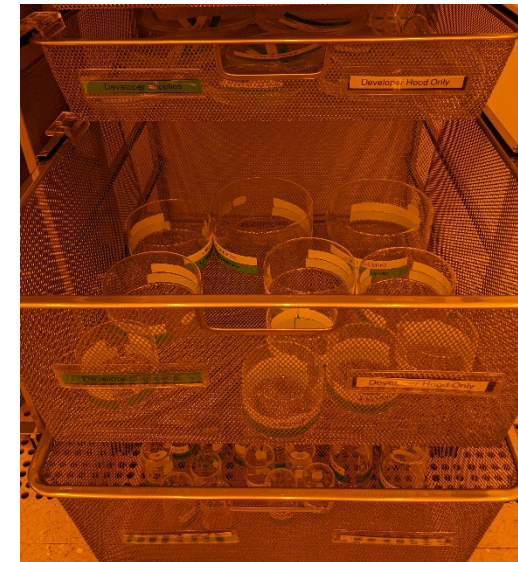
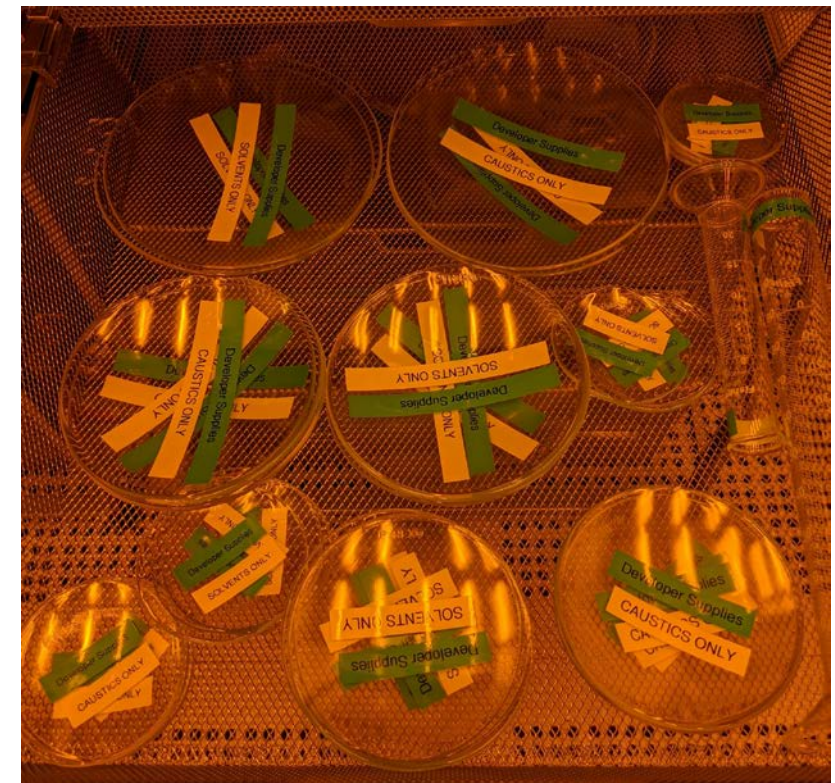
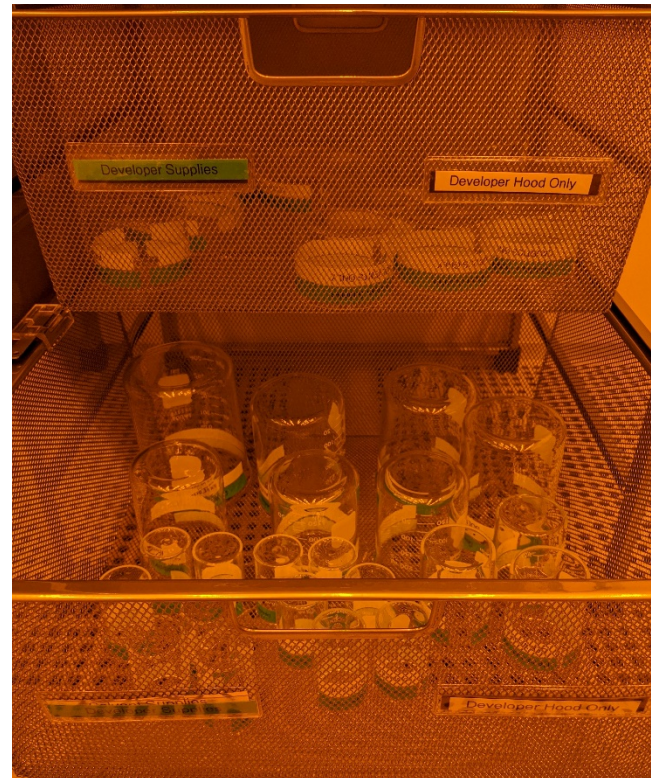
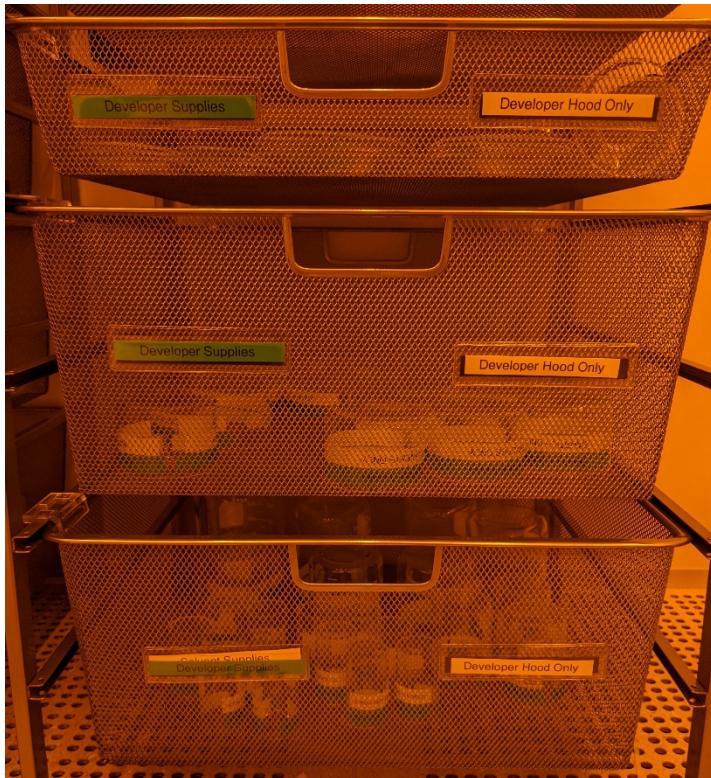
Hood supplies – developer supplies

- When using developers such as the AZ developers, SU-8 developer or other chemicals to develop patterns in photo or e-beam resists, the chemical work should be done in the developer hood in the lithography.
- Glassware to be used for developing photolithography is labeled “Developer Supplies” with a green label. This glassware should only be used in the developer hood.
- Glassware labeled for “CAUSTICS ONLY” should only be used for developers with caustic ingredients such as tetramethylammonium hydroxide (TMAH) or potassium borates.
- Glassware labeled for “SOLVENTS ONLY” should only be used for developers with solvent ingredients such as PEGMEA (SU-8 developer), methyl iso-butyl ketone (MIBK) or any other solvent.
- Glassware labeled for “WATER ONLY” should only be used for rinse water and nothing else.
- When finished using the glassware, it must be thoroughly rinsed, blown dry with nitrogen and returned to the proper drawer in glassware storage in the lithography bay.



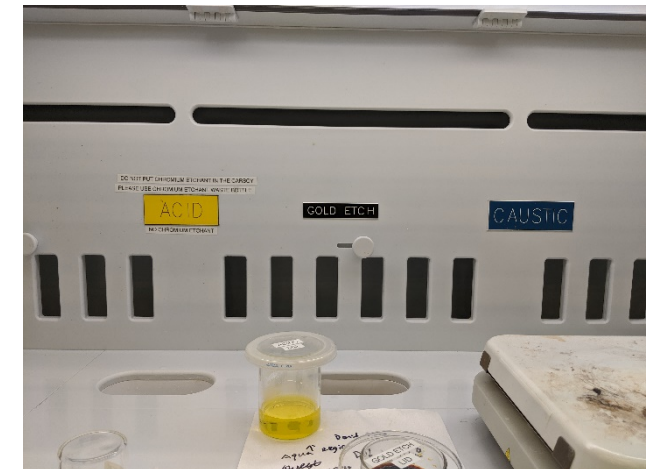
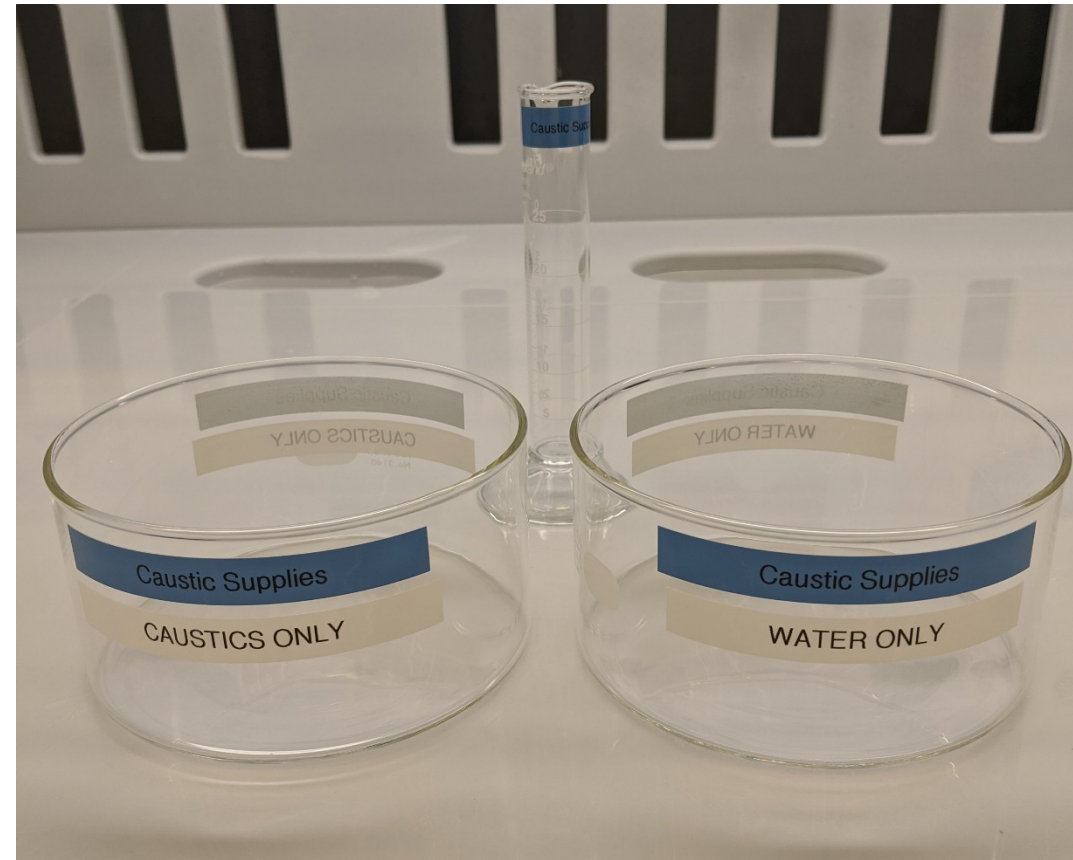
Hood supplies – developer supplies

- The developer supplies are stored in the lithography bay in the drawers labeled “Developer Supplies” and “Developer Hood Only”. Be sure to only use them according to their labels.
- When putting glassware away, try to return it to the same drawer from which you originally retrieved. If you are unable to remember the exact drawer, just be sure that the labels match.



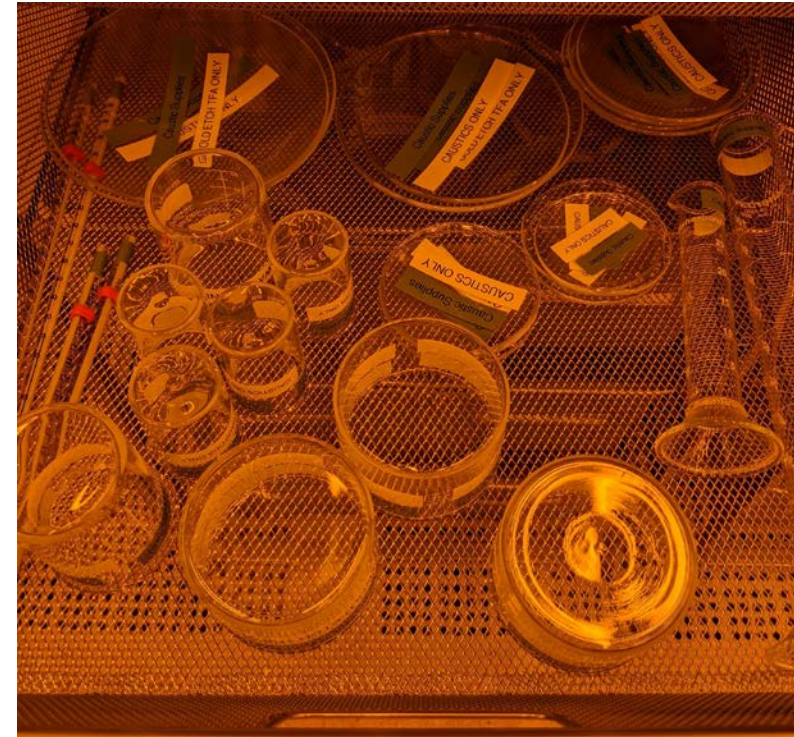
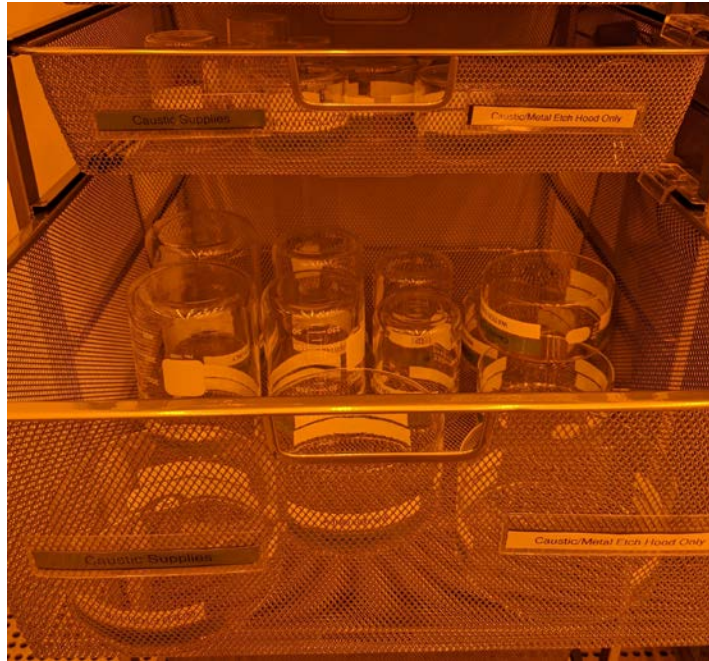
Hood supplies – caustic supplies

- Most chemical work using caustics, such as ammonium hydroxide, potassium hydroxide or tetramethylammonium hydroxide, should only be performed in the caustics/metal etch hood in the deposition bay.
- Glassware for caustic chemical work is labeled “Caustic Supplies” with a blue label. It should only be used in the caustics/metal etch hood.
- This glassware should only be used for caustic processes, never for acids, solvents or developers.
- When finished using the glassware, it must be thoroughly rinsed with DI water, blown dry with nitrogen and returned to the proper drawer in glassware storage in the lithography bay.



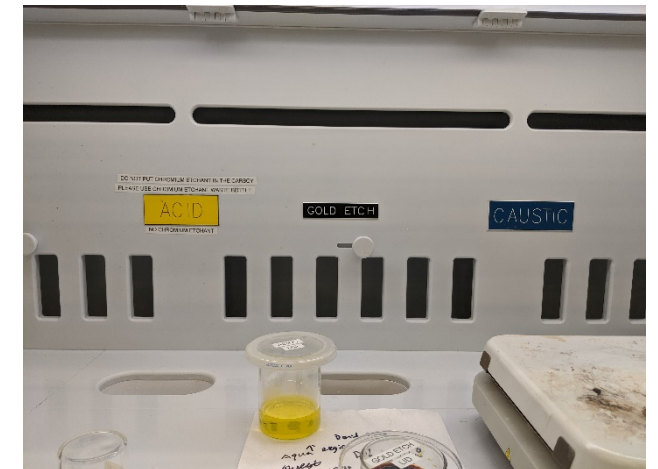
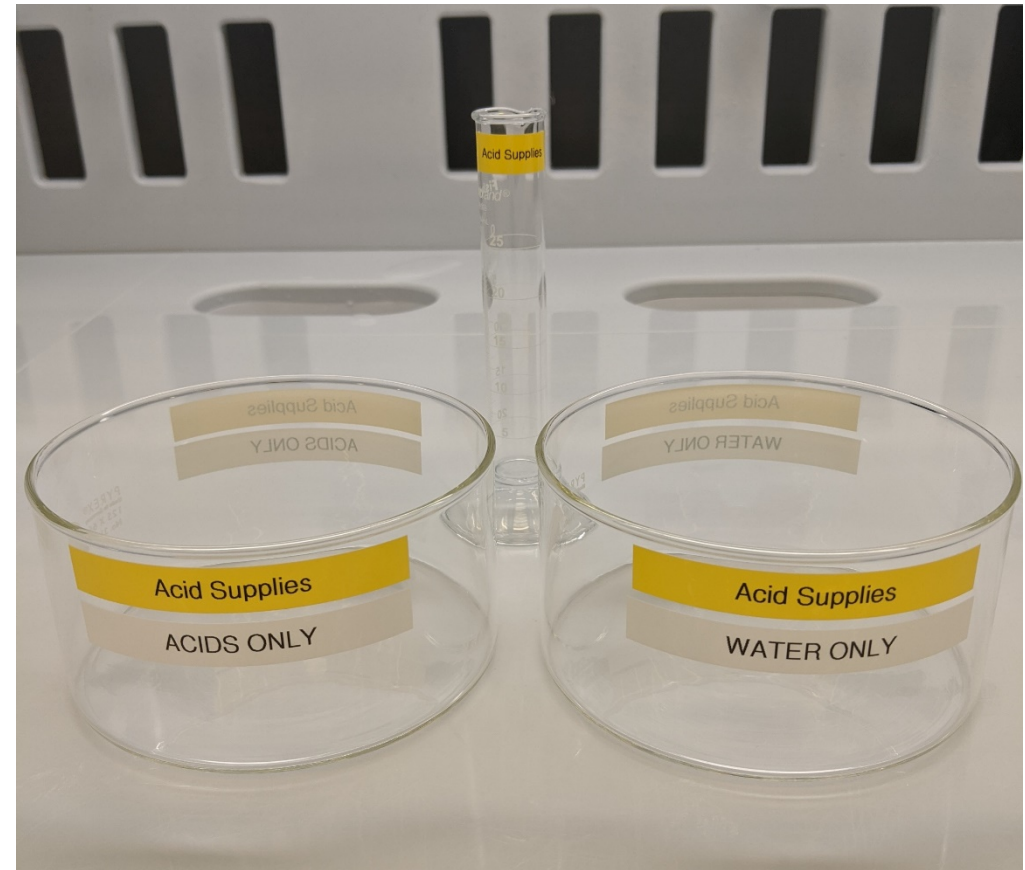
Hood supplies – caustic supplies

- The caustic supplies are stored in the lithography bay in the drawers labeled “Caustic Supplies” and “Caustic/Metal Etch Hood Only”. Be sure to only use them according to their labels.
- When putting glassware away, try to return it to the same drawer from which you originally retrieved. If you are unable to remember the exact drawer, just be sure that the labels match.



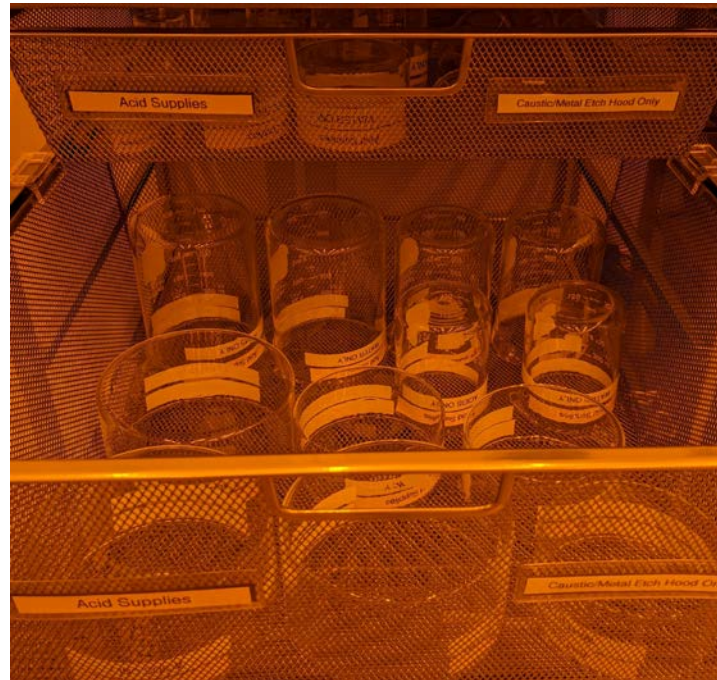
Hood supplies – acid supplies

- Most chemical work using acids, with the exceptions of sulfuric acid and hydrofluoric acid should only be performed in the caustics/metal etch hood. This means acids such as nitric acid, hydrochloric acid and phosphoric acid and any etchant solutions utilizing these acids should be performed in the caustics/metal etch hood in the deposition bay.
- Glassware for caustic chemical work is labeled “Acid Supplies” with a yellow label. It should only be used in the caustics/metal etch hood.
- This glassware should only be used for acid processes, never for caustics, solvents or developers.
- When finished using the glassware, it must be thoroughly rinsed with DI water, blown dry with nitrogen and returned to the proper drawer in glassware storage in the lithography bay.



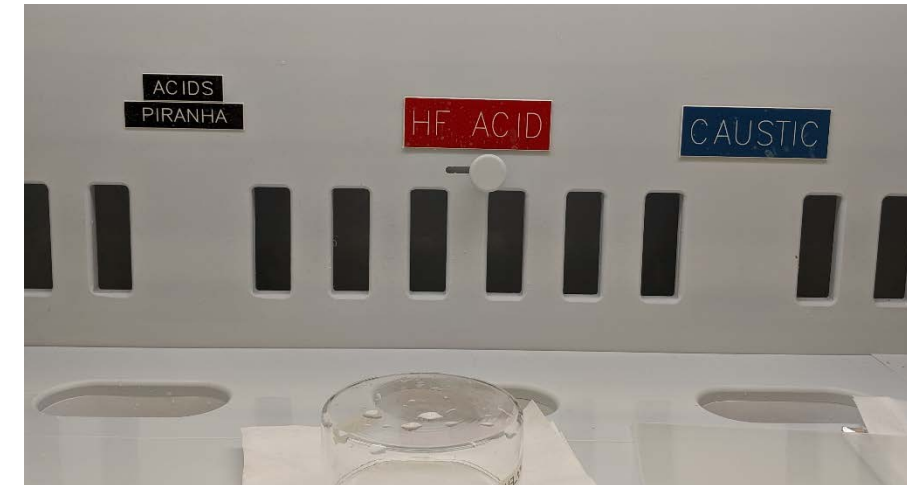
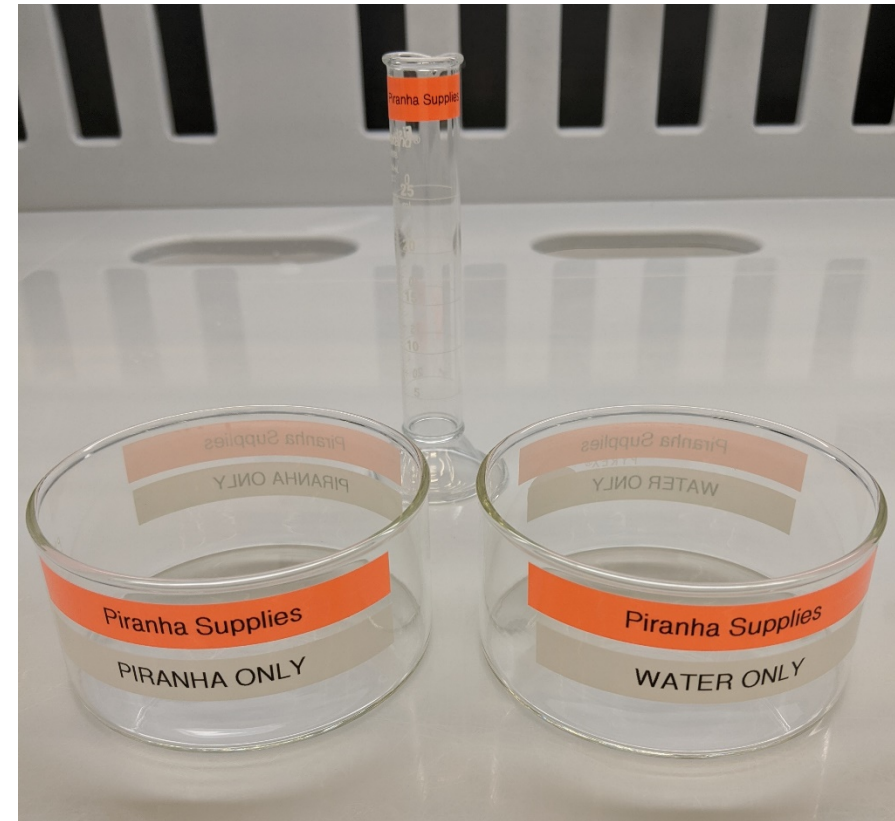
Hood supplies – acid supplies

- The acid supplies are stored in the lithography bay in the drawers labeled “Acid Supplies” and “Caustic/Metal Etch Hood Only”. Be sure to only use them according to their labels.
- When putting glassware away, try to return it to the same drawer from which you originally retrieved. If you are unable to remember the exact drawer, just be sure that the labels match.



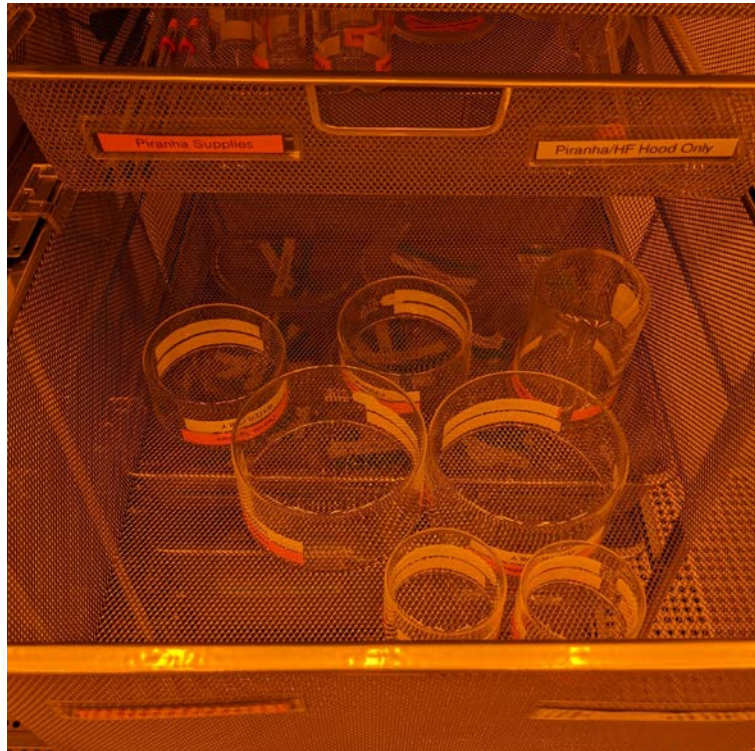
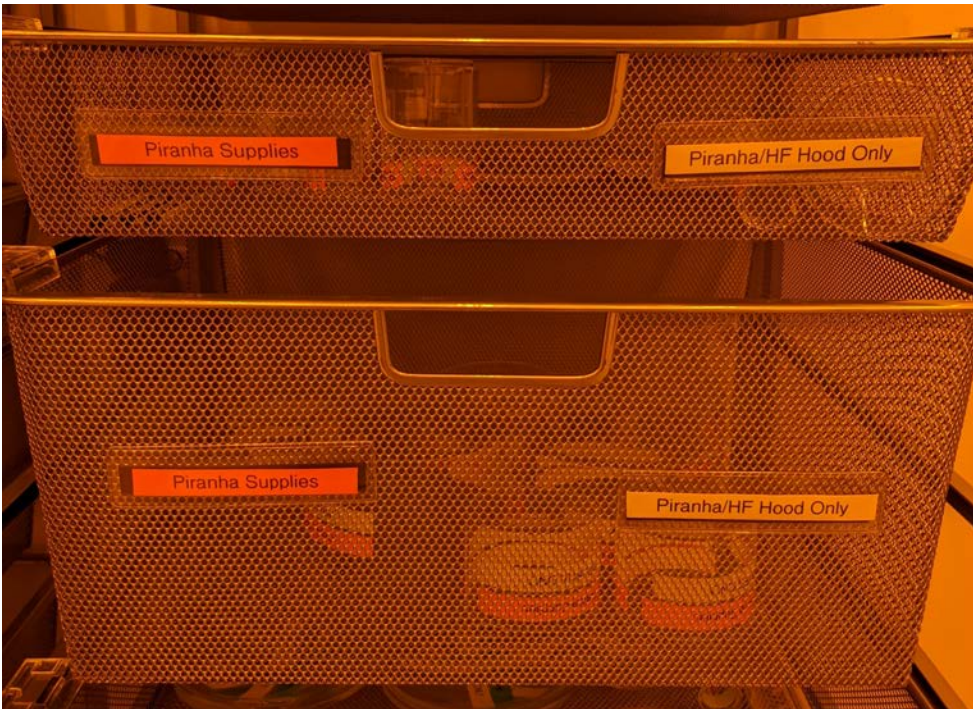
Hood supplies – piranha supplies

- Whenever performing a piranha clean, the chemical work should only be performed in the piranha/HF hood in the metrology bay. This includes other acid work that utilizes sulfuric acid.
- Glassware for piranha solution is labeled “Piranha Supplies” with an orange label. This glassware should only be used in the piranha/HF hood.
- This glassware should only be used for piranha processes, never for caustics, solvents, developers or acids other than sulfuric.
- When finished using the glassware, it must be thoroughly rinsed with DI water, blown dry with nitrogen and returned to the proper drawer in glassware storage in the lithography bay.



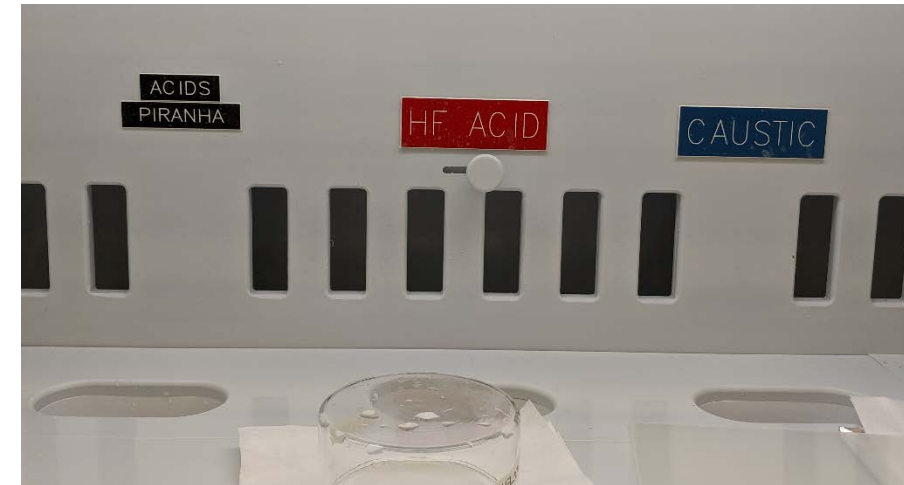
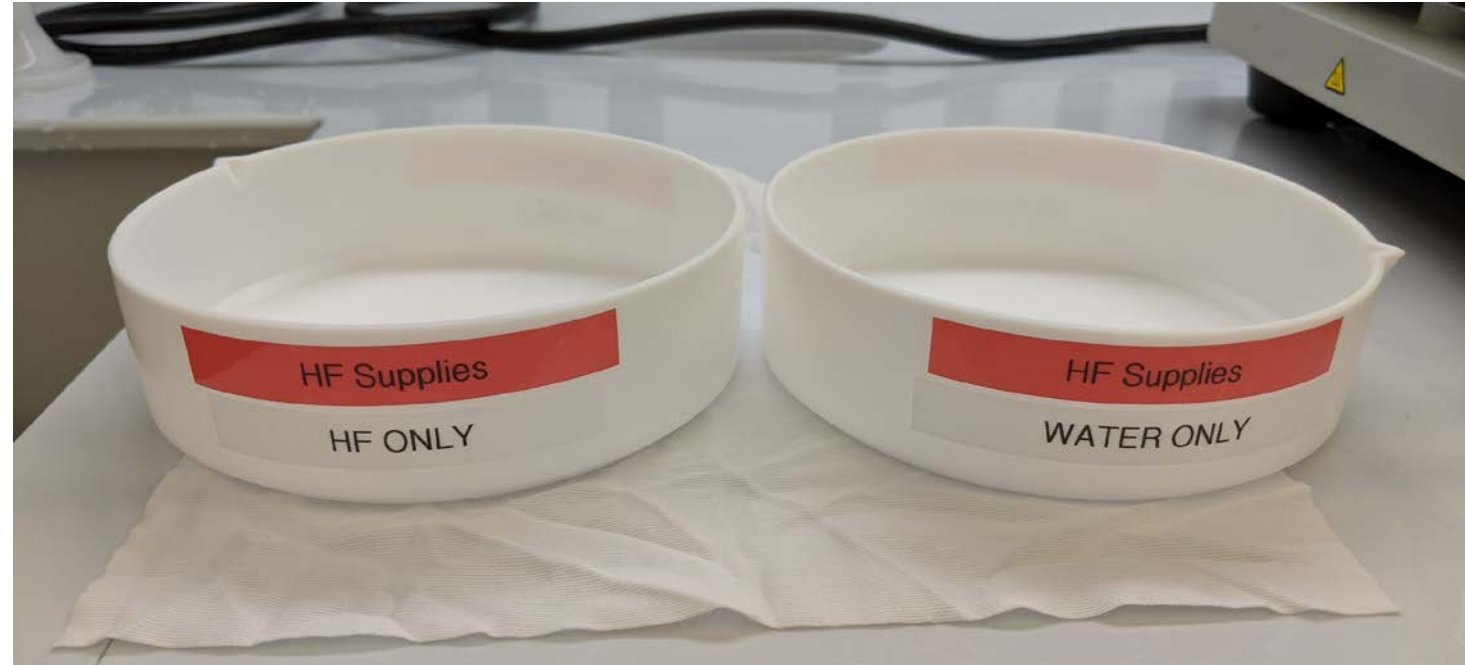
Hood supplies – piranha supplies

- The piranha supplies are stored in the lithography bay in the drawers labeled “Piranha Supplies” and “Piranha/HF Hood Only”. Be sure to only use them according to their labels.
- When putting glassware away, try to return it to the same drawer from which you originally retrieved. If you are unable to remember the exact drawer, just be sure that the labels match.



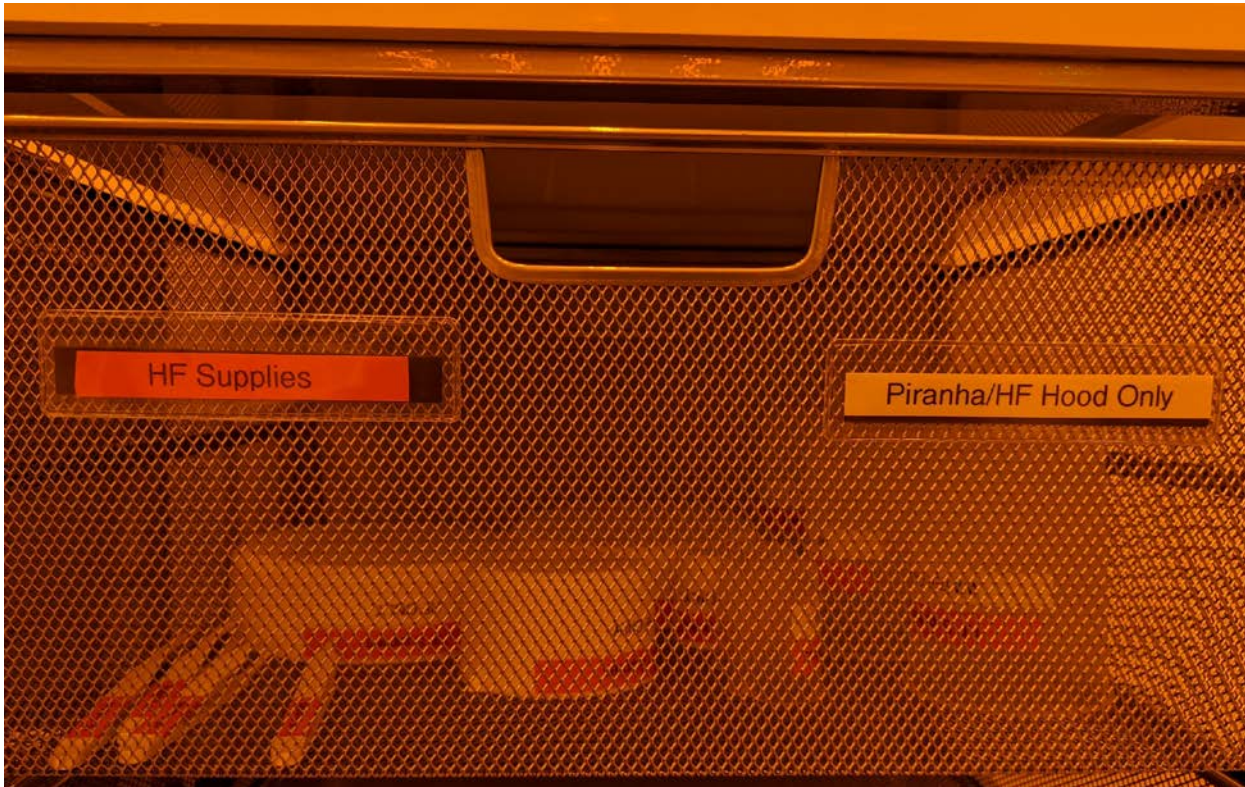
Hood supplies – HF supplies

- Chemical work utilizing hydrofluoric (HF) acid should only be performed in the piranha/HF hood in the metrology bay.
- HF acid etches glass and metal, so the dishes and tweezers for HF work are plastic.
- The dishware for HF acid is labeled “HF Supplies” with a red label. These dishes and tweezers should only be used for HF work, never for caustics, solvents, developers or other acids. These dishes and tweezers should only be used in the piranha/HF hood.
- When finished using the HF supplies, they must be thoroughly rinsed with DI water, blown dry with nitrogen and returned to the proper drawer in glassware storage in the lithography bay.



Hood supplies

- The HF supplies are stored in the lithography bay in the drawers labeled “HF Supplies” and “Piranha/HF Hood Only”. Be sure to only use them according to their labels.
- When putting glassware away, try to return it to the same drawer from which you originally retrieved. If you are unable to remember the exact drawer, just be sure that the labels match.



Hood supplies – RCA supplies

- RCA cleans should be performed in the RCA hood.
- The supplies for RCA cleaning have not been moved to the lithography like all the other glassware and supplies. RCA supplies are stored within the RCA hood.
- When finished using the glassware, it must be thoroughly rinsed with DI water, blown dry with nitrogen and then stored where it belongs. The glass cubes should be left upside down in the hood, while everything else should be stored in the bin under the hood.



- **All users are required to clean up after themselves when they are finished using chemical in the hoods. This means that all glassware must be thoroughly rinsed with DI water, blown dry with nitrogen and then returned to the storage drawer from which it was retrieved.**
- **Supplies are never to be left in the hood to air dry. Everything must be put away.**
- **If you find a hood in disarray with chemicals left unlabeled or glassware left behind, report it to staff immediately.**
- **Users who repeatedly violate these guidelines may have their access to the cleanroom suspended.**