RIT Nanolithography Research Labs

GENERAL LABORATORY SAFETY PROCEDURES AND RULES

Laboratory safety

All users of the nanolithography labs must read and understand the information in this document with regard to laboratory safety and emergency procedures prior to entrance into the lab. **Your personal laboratory safety depends mostly on YOU**. Effort has been made to address situations that may pose a hazard in the lab but the information and instructions provided cannot be considered all-inclusive.

With good judgment, the chance of an accident in this course is very small. Nevertheless, research and teaching workplaces (labs, shops, etc.) are full of potential hazards that can cause serious injury and or damage to the equipment. Safety training and/or information should be provided by a faculty member, teaching assistant, lab safety contact, or staff member at the beginning of a new assignment or when a new hazard is introduced into the workplace.

Emergency Response

- It is your responsibility to read safety and fire alarm posters and follow the instructions during an emergency
- Know the location of the fire extinguisher, eye wash, and safety shower in your lab and know how to use them.
- Notify your supervisor immediately after any injury, fire or explosion, or spill.
- Know the building evacuation procedures.

A tour of the lab will be conducted to show the location of emergency equipment (fire extinguishers, safety showers, safety goggles, ect..) and the correct evacuation exit.

Common Sense

Good common sense is needed for safety in a laboratory. It is expected that each student will work in a responsible manner and exercise good judgment and common sense. If at any time you are not sure how to handle a particular situation, ask for advice. **DO NOT TOUCH ANYTHING WITH WHICH YOU ARE NOT COMPLETELY FAMILIAR**!!! It is always better to ask questions than to risk harm to yourself or damage to the equipment.

Personal and General laboratory safety

- Never eat, drink, or smoke while working in the laboratory.
- Read labels carefully.
- Do not use any equipment unless you are trained and approved as a user by your supervisor.
- Wear safety glasses or face shields when working with hazardous materials and/or equipment.
- Wear gloves when using any hazardous or toxic agent.
- Clothing: When handling dangerous substances, wear gloves, laboratory coats, and safety shield or glasses. Shorts and sandals should not be worn in the lab at any time.
- If you have long hair or loose clothes, make sure it is tied back or confined.

- Keep the work area clear of all materials except those needed for your work. Coats should be hung in the hall or placed in a locker. Extra books, purses, etc. should be kept away from equipment that requires air flow or ventilation to prevent overheating.
- Disposal - Students are responsible for the proper disposal of used material if any in appropriate containers.
- Equipment Failure - If a piece of equipment fails while being used, report it immediately to your supervisor. Never try to fix the problem yourself because you could harm yourself and others.
- Never pipette anything by mouth.
- Clean up your work area before leaving.
- Wash hands before leaving the lab and before eating.
- The user should complete the General Lab Safety Training offered by RIT's department of Environmental Health and Safety.
  http://finweb.rit.edu/grms/ehs/lab/

Electrical safety

- Obtain permission before operating any high voltage equipment.
- Maintain an unobstructed access to all electrical panels.
- Wiring or other electrical modifications must be referred to the Building Coordinator.
- When you are adjusting any high voltage equipment or a laser which is powered with a high voltage supply, USE ONLY ONE HAND. Your other hand is best placed in a pocket or behind your back. This procedure eliminates the possibility of an accident where high voltage current flows up one arm, through your chest, and down the other arm.

Mechanical safety

- When using compressed air, use only approved nozzles and never direct the air towards any person.
- Guards on machinery must be in place during operation.
- Exercise care when working with or near hydraulically- or pneumatically-driven equipment. Sudden or unexpected motion can inflict serious injury.

Chemical safety

- Treat every chemical as if it were hazardous.
- Make sure all chemicals are clearly and currently labeled with the substance name, concentration, date, and name of the individual responsible.
- Never return chemicals to reagent bottles. (Try for the correct amount and share any excess.)
- Comply with fire regulations concerning storage quantities, types of approved containers and cabinets, proper labeling, etc. If uncertain about regulations, contact the building coordinator.
- Use volatile and flammable compounds only in a fume hood. Procedures that produce aerosols should be performed in a hood to prevent inhalation of hazardous material.
- Never allow a solvent to come in contact with your skin. Always use gloves.
- Never "smell" a solvent!! Read the label on the solvent bottle to identify its contents.
- Dispose of waste and broken glassware in proper containers.
- Clean up spills immediately.
- Do not store food in laboratories.

Lasers safety

- NEVER, EVER LOOK INTO ANY LASER BEAM, no matter how low power or "eye safe" you may think it is.
- Always wear safety goggles if operating a laser.
- The most common injury using lasers is an eye injury resulting from scattered laser light reflected off of mountings, sides of mirrors or from the "shiny" surface of an optical table. The best way to avoid these injuries is to always wear your goggles and NEVER LOWER YOUR HEAD TO THE LEVEL OF THE LASER BEAM! The laser beam should always be at or below chest level.
- Always use "beam stops" to intercept laser beams. Never allow them to propagate into the laboratory. Never walk through a laser beam. Some laser beams of only a few watts can burn a hole through a shirt in only a few seconds.
- If you suspect that you have suffered an eye injury, notify the lab manager IMMEDIATELY! Your ability to recover from an eye injury decreases the longer you wait for treatment.
- The user should complete the RIT Laser Safety Training course offered by the RIT department of Environment Health and Safety if the user has significant laser use. http://finweb.rit.edu/grms/ehs/laser/

Additional Safety Guidelines

- Never do unauthorized experiments.
- Keep your lab space clean and organized.
- Do not leave an on-going experiment unattended.
- Always inform the lab manager if you break a thermometer. Do not clean mercury yourself!!
- Never taste anything. Never pipette by mouth; use a bulb.
- Check your glassware for cracks and chips each time you use it. Cracks could cause the glassware to fail during use and cause serious injury.
- Maintain unobstructed access to all exits, fire extinguishers, electrical panels, emergency showers, and eye washes.
- Do not use corridors for storage or work areas.
- Do not store heavy items above table height. Any overhead storage of supplies on top of cabinets should be limited to lightweight items only. Also, remember that a 36" diameter area around all fire sprinkler heads must be kept clear at all times.
- Areas containing lasers, biohazards, radioisotopes, and carcinogens should be posted accordingly. However, do not post areas unnecessarily and be sure that the labels are removed when the hazards are no longer present.
- Be careful when lifting heavy objects.
- Clean your lab bench and equipment.

By signing below I confirm that, ***"I have read, understood and will obey all Lab safety rules as stated above and that I have been given a tour of the lab safety features and have taken the appropriate trainings offered by RIT's Environmental Health and Safety department***". I have been given an opportunity to review the Lab Safety Rules and discuss my concerns before signing the above statement.

Signature:_____ Date:_____