

# Engineering Physics / C.E.D.T. Research Hazards Safety Report

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Researcher: Eric Mahoney Phone: 289-745-9628 Office: ETB 303 Lab: ETB/431  
Supervisor: Dr. Qiyin Fang Phone: 905-525-9140 ext. 24227 Office: ETB 403

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## A. Potential Project Hazards:

**Class C: Oxidizing Materials** – Oxidizing materials may be required for the development of microfluidic devices.

**Class E: Corrosive Materials** – Corrosive materials may be required for the development of microfluidic devices.

**Radiation: Laser** - High power pulse lasers and high power continuous UV LEDs are used in the lab. Exposure to high power laser radiation, particularly the exposure to invisible IR and UV radiation is dangerous considering the potential damage to eyes and skin.

**Electrical: High Voltage Enclosed** – High voltage laser power sources and power supplies may be required. The use of evaporator may be required.

**Electrical: High Current** – High current devices such as the oxygen plasma cleaning machine is required for preparing surfaces for bonding.

**High Temperature: (Soldering Iron)** – Soldering iron will be required for soldering sensors to microcontrollers.

**Mechanical:** The use of machine tools may be required.

**Potential Falling Objects: (Bookcases)** – tall bookcases in the lab could potentially pose a hazard for falling objects should books or containers be disturbed from a high shelf.

**Very Bright Light:** The use of lasers or high power light sources may be required and could potentially damage the eyes.

**Protective Clothing in Lab:** closed toe shoes, lab coats, gloves, and protective eyewear should be worn in the lab.

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## **B. Operating Procedures:**

**Use of chemicals including Oxidizing and Corrosive Materials** – The MSDS must be present in the lab and consulted before handling materials. Any materials used will be stored in the appropriate location, and only handled using the appropriate PPE.

**Laser radiation** – The appropriate PPE will be worn at all times. If others are present in the lab they must be informed of the work being done and the potential hazards. All others in the lab will be required to wear the appropriate PPE including protective goggles as well. Efforts will be made to contain any laser radiation within the lab such as black covers on doors and windows, black safety curtain pulled closed around the work area, and enclosure around the devices used.

**High voltage and High current devices** – Manuals will be consulted before the setup and operation of any high voltage and high current devices. Devices will be turned off and disconnected from power before changing connections.

**High temperature devices** – Manuals will be consulted before the use of any soldering irons. Care will be taken to ensure the irons are not operated near anything that could be potentially combustible or meltable. Care will be taken to avoid potential burns while irons are in operation.

**Mechanical** – appropriate training will be attended for the use of any machine tools that may be required. Manuals will be consulted before the operation of any machine tools.

**Potential falling objects** – Care will be taken to avoid disturbing bookcases in such a way that might cause something to fall from a shelf. When placing objects on shelves care will be taken to ensure they are stable and not at risk to fall. When removing objects from shelves care will be taken to prevent knocking adjacent objects from the shelves.

**Very bright light** – whenever working near bright light sources the appropriate eye protection and any other required PPE will be worn

**Protective clothing in lab** – the appropriate protective clothing will be worn at all times to prevent personal harm and potential harm to others in the lab.

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**C. Emergency Procedures:**

For immediate assistance in the case of an accident or a fire, dial 88 on campus. After calling 88 the supervisor will be contacted as soon as possible. If there is a large fire, alert surrounding staff, pull the fire alarm, and evacuate the building in addition to calling 88.

In case of chemical spill, acquire the appropriate spill kit and contain the spill to prevent it from travelling across the floor or exiting the lab from under the door or from getting into the floor drain. Cover the spill with the appropriate absorbent material.

For accidents involving lasers, block the laser beam or turn off laser first to reduce eliminate the possibility of causing further damage or harm to others. 88 should be called immediately, and the supervisor and EOHSS LSO designate should be contacted.

An incident report should be filed with the department as soon as possible following any accident.