THE UNIVERSITY OF CHICAGO | Office of Research Safety

Date:

Class 3b and Class 4 Laser Registration Form

LSO Use Only
UChicago Ref.:

All Class 3b and Class 4 lasers must be registered with University of Chicago Laser Safety Officer (LSO).
Complete this form and submit to lasersafety@uchicago.edu or fax (773) 702-4008.

Principal Investigator (Last, First):	CNetID:	Department/Division:	E-mail:

Laser Information

Laser Class: ☐3B ☐4*	Location (Building/Room Number):		Intended Use:		
Manufacturer:	Model:	Serial Number:	Active Medium/Material:	Acquisition Date:	Status: ☐ Active ☐ Inactive

*Class 4 Lasers must have illuminated 'Laser in Use' sign posted outside entrances of laboratory

Laser Output

☐ Continuous Wave (CW) Pulsed: ☐ Repetitive Pulse ☐ Q-Switched ☐ Single Pulse

Optical Fiber Type: ☐ Single Mode ☐ Multi-Mode

Wavelength(s) (nm)	Beam Diameter (mm)	Beam Divergence (mrad)	Avg. Power (W)	Energy per Pulse (Joules)	Pulse Rep. Frequency (Hz)	Pulse Duration (s)

LSO Use Only – Hazard Calculations			
Optical Density (OD)	Maximum Permissible Exposure (MPE) (W/cm^2)	Diffuse Nominal Hazard Zone (NHZ) (m)	Intrabeam Nominal Ocular Hazard Distance (NOHD) (m)

Any installation of new, used, relocated, or reactivated Class 3b and Class 4 lasers must be registered within 30 days per 32 Ill. Adm. Code 315.70

Laser Standard Operating Procedure

1. GENERAL LASER SAFETY PROGRAM

A. Operator Responsibilities

Operators of this laser system are responsible for:

- Completing appropriate training and reading The University of Chicago's Laser Safety Program Policy and Procedures before operating this laser system.
- Using this laser safely.
- Ensuring they are in compliance with established policy and procedural requirements.
- Promptly reporting any malfunctions, problems, accidents, or injuries, which may have an impact on safety.

B. Posting Requirements

The area must be posted with appropriate warning signs that indicate the nature of the hazard. The wording on the signs will be specified by the Laser Safety Officer (LSO) and conform to the ANSI Z136.1 guidelines.

C. Other General Safety Considerations

All laser beams must be terminated within the control area. Beam stops provide protection from misaligned beams and should be placed in all appropriate and practical locations.

If there is a possibility of viewing the beam, appropriate eye protection must be provided for all personnel within the laser control area, if such viewing could exceed the MPE. The eye protection must have an appropriate optical density and/or reflective properties based on the wavelengths of the beams encountered, beam intensity, and expected exposure conditions. At the same time, the need for laser eye protection must be balanced by the need for adequate visible light transmission. It is the responsibility of the user group to obtain appropriate laser protective eyewear from a vendor. Laser eye protection should be inspected periodically to ensure that it is in good condition.

Light levels in excess of the MPE must not pass the boundaries of the control area. All windows, doorways, open portals, and other openings through which light might escape from a laser control area must be covered or shielded in such a manner as to preclude the transmission of laser light.

There must be provisions for rapid egress from a laser control area under all normal and emergency conditions. Any control area interlock system must not interfere with emergency egress.

A visible sign or audible signal must be provided at the entrance to the control area to indicate when the laser is energized and operating, applies to Class 4 lasers only.

2. OPERATING AND SAFETY PROCEDURES

- Do not operate the equipment in this room without reading this SOP
- Familiarize yourself with the location of the safety goggles and infrared viewer
- Do not wear high-reflective (metal) objects such as watches, jewelry, etc.
- Always wear shoes, preferably with rubber soles
- Do not leave laser on and unattended without curtain fully closed and warning sign on.
- Know the light path and the potential position of the reflections from its mirrors
- Do not place flammable materials (plastics, wood, electrical tape, plastic bags etc.) into the laser beam path

- Familiarize yourself with the beam power at different points along the light path
- Keep the optical table simple, clean and organized
- Do not leave unnecessary optics on the table
- Check the position of the laser blocking optics
- Whenever possible block undesired beam reflections by using “beam blocks” or beam dumps
- Never lower your head to the tabletop level, use chair of appropriate height

A. Startup Procedure (**Required**), (including manufacturer’s recommended steps and the point at which laser protective eyewear must be donned):

B. Operating Procedure (power settings, Q-switch mode, pulse rate, etc.):

Special Procedures (alignment, safety tests, maintenance tests, etc.):

- Alignment (**Required**), (Laser system's specific alignment procedure (can attach) OR provide modified alignment procedure)

- Safety Tests (Interlock test, etc.)

- Maintenance

D. Shutdown Procedure **(Required)**

E. Emergency Procedure

- In an event of a laser or fire emergency, refer to the Laser Emergency Procedure posted in the laboratory.

3. CONTROL MEASURES

LASER/LASER SYSTEM CONTROLS		
Check if valid	CONTROL	COMMENTS
☐	Entryway (door) Interlocks or controls	
☐	Laser enclosure interlocks	
☐	Emergency Stop/Panic button	
☐	Master switch (operated by key or code)	
☐	Laser secured to base	
☐	Beam stops/beam attenuators	
☐	Warning signs	
☐	Reference to equipment manual	
☐	Appropriate/sufficient eyewear available	

Other:

SPECIFIC HAZARDS AND CONTROLS (Check all that apply and provide control measures that will be taken)		
Check if valid	Hazard	Control Measures Implemented
☐	Unenclosed beam/access to direct or scattered light	
☐	Laser at eye level of person sitting or standing	
☐	Ultraviolet Radiation/ Blue light exposure	
☐	Reflective Material in Beam Path	
☐	Chemical (dyes, solvents, etc.); attach MSDS	
☐	Fumes/Vapors	
☐	Electrical (high voltage, large current, etc.):	
☐	Capacitors	
☐	Compressed Gases or Cryogenic Liquids	
☐	Fire or Ignition Sources	
☐	Trip Hazard	

Other:

4. PERSONAL PROTECTIVE EQUIPMENT

A. Eyewear

LASER EYEWEAR					
For This Laser…			…Wear This Eyewear		
UChicago Ref:	Type	Wavelength(s) (nm)	Wavelength(s) Attenuated (nm)	Optical Density (OD)	Manufacturer/model
EXAMPLE: L3B-146	Nd:YAG	1064, 532	1064, 532	5+	UVEX

B. Other protective equipment required within the Nominal Hazard Zone

ITEM	LOCATION	USAGE CONDITION

5. OPERATOR REVIEW

I have read and understood this procedure and attachment and agree to adhere to the procedures outlined above.

Name (Print)	Signature	Date

Please e-mail this SOP to the Laser Safety Officer (LSO) for approval and to keep on file at lasersafety@uchicago.edu, subject line LASER SOP. This Laser SOP should be maintained in the laser lab and accessible for laser operators.