

**University of Texas Health Science Center at San Antonio**  
**Standard Operating Procedures for**  
**Optical Imaging Core Facility**  
**Main Campus, Dental Building, 2.518U.3**  
**Laser Controlled Area**  
**Ver. 2.0 (February 11, 2011)**

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Laser Custodian:

Victoria Frohlich

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Laser Safety Officer:

Jennifer Watson



2/23/2011

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Name Printed

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Date

**INTRODUCTION**

Room 2.518U.3, Dental Building, Main Campus contains the following laser:

- 3-line Argon (458nm, 488nm, 514nm)
- Green HeNe (543nm)
- Red HeNe (633nm)
- MIRA/5W VERDI fs-pulsed tunable TiSaph laser (680 – 1080 nm)

Laser is connected to Zeiss Axiovert 200 Microscope via fiber optic cable. The output of the MIRA laser is coupled via hard-optics through an enclosed light path.

**Primary Laser Custodian:**

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### Authorized Primary Users

A list of authorized users is on file with Environmental Health and Safety. This list will be updated as frequently as needed.

### Incidental Personnel

In addition to the authorized primary users, incidental personnel may be in the room at the time of the experiment. These personnel are not trained on the system, nor have they gone through the laser safety program. They will be observing only and not involved in the operation of the system. They will not be in the room during any alignment or maintenance of the lasers.

### Normal Laser Operation

Room 2.518U.3, Dental Building, Main Campus contains the following lasers:

Class	Make	Model	S/N	Wavelength	Power output
		LGK 7812			
3B	Lasos Argon	ML4	577009-2125-000	457-514nm	500mW
3B	Lasos 633	LGK 7628 1	577009-0709-100	633nm	15mw
3A	Lasos 543	LGK 7786 P	577009-1136-000	543nm	5mW
4	Coherent	Verdi 5W	V5 90630883	532nm	5W
4	Coherent	Mira 900	1121907	680-1080nm	<2W

Visible light lasers are connected to the Zeiss LSM 510 Laser Scanning Confocal Microscope via fiber optic cable. The Multiphoton laser is connected to the LSM 510 through hard-coupled optics in an enclosed pathway.

The visible light lasers (Argon and HeNe's) are located on a laser module "cart" installed on the left of the anti-vibration table. The Verdi/Mira laser is located on the anti-vibration table, rear of the microscope and monitors.

The main purpose of these lasers is for Laser Scanning Confocal imaging of fixed and live specimens.

## **Eyewear**

Wavelength specific eyewear will be used by field service engineers during alignment into the fiber optic cable (visible laser lines) or the hard-couple optics (pulsed NIR lines). No employees will be within the laser controlled area during laser maintenance, service or alignment unless they are wearing appropriate laser protective eyewear.

## **Alignment Hazard Control**

The Class 3A & 3B Visible light lasers (Red Diode, Green HeNe, 3 line Argon) are factory aligned and maintained by field service engineers. Users are not required to perform any additional adjustments.

The Coherent MIRA/5W VERDI fs-TiSaph is aligned through the hard-coupled optics per manufacturer procedures. When changing operating wavelength it may be necessary to adjust alignment mirrors. These adjustments will only be performed by the Primary and Alternate Custodians while wearing appropriate laser protective eyewear.

## **Laser Hazard Control**

1. Access to LCA room is restricted to trained personnel. Main door is accessible by combination lock.
2. Main access door is locked when nobody is using the system.
3. Access to the power supplies to the Class 3A & 3B lasers (Green HeNe, Red HeNe, and 3-line Argon) is only available via computer software for the Zeiss LSM510 system. Computer access is restricted to trained users with unique login names and passwords.
4. Power supply to the Class 4 laser (Chameleon Multiphoton tunable laser) is located under the anti-vibration table.
5. A "Laser in Use" warning sign is mounted at the entrance to 2.518U.3. It will be illuminated when the Verdi/Mira fs-pulsed, tunable Ti-Saph laser is in operation.
6. Keys to the Verdi/Mira laser power supply are kept in a combination lockbox in 2.518U.1 with the combination made available only to trained users. The keys will be removed from the laser and stored in the combination lock box when the laser is not in use.

7. Clear Plexiglas tubes enclosed the beam path to prevent objects from crossing the beam. Since the beam is located on the far side of the anti-vibration table and behind the monitors, access to the beam by users is minimal.
8. A Main power switch is located to the left of the scope – In case of emergencies this switch may be used to turn off all operations, including visible lasers and computer.

Primary users are trained in the operation of the Zeiss LSM510 and the proper use and care for the lasers.

Alignment of the Class 4 laser is done by the Primary or Alternate laser custodian only.

### **Authorized User Signatures**

This standard operating procedure is reviewed and understood by each authorized laser user during initial training on the system.