

## Microscopy Training- Laser Safety for the upright multi-photon /confocal microscope FU319.

**Lasers:** The multiphoton laser is **powerful** and **invisible**. It could blind or burn you. Although the visible lasers are less powerful they can still cause blindness if focussed into the eye.

### Safe working procedure:

All instructions starting “**Everyone:**” apply to EVERYONE including BSU staff, hospital and university maintenance staff and any other person wishing to enter the room.

All instructions starting “**All users:**” apply to all laser users confocal as well as MP laser users.

1. **Everyone:** on opening the door of room FU319 check the status of the Multiphoton laser (MP) large control box with a small screen and a key (bottom left below the microscope). **If the MP laser key is in the lock assume the laser is turned on and you MUST wear the laser safety goggles** (on hooks on the back of the half door)! Other goggles/safety glasses will **NOT** work with our MP laser and must not be used.
2. **All users:** you may only use the MP laser if you have been specifically trained in its use and intend to use it during your session.
3. **Everyone:** If the key is in the laser power supply lock and you have not been trained, or do not require the MP laser; turn it to standby (vertical), then remove the key and place it in the bottom right drawer of the desk. Once the key is in the drawer, the laser safety goggles can be returned to the hooks behind the door (the goggles offer no protection against the Ar, HeNe 543 and HeNe 633 lasers).
4. **MP users:** When the MP laser key is not in the bottom right hand drawer of the desk you **MUST** wear the laser goggles provided and also display “Experiment in progress no entry” and “Invisible laser in use” warnings outside the lab door.
5. **All users:** Remove all rings or other reflective materials from hands. Always “**STOP**” the laser scanning before changing the specimen or working close to the lasers. Remember that glass slides can behave like mirrors if held at the correct angle and can direct laser light towards you or anyone else in the room.
6. **All users:** The visible lasers (Ar, HeNe 543 and HeNe 633) are class 1 (safe) in normal operation provided that step 6 above are followed and that nothing is done to concentrate and direct the light beam towards anyone in the room.
7. **All users:** At no time shall anyone other than qualified service personnel touch or otherwise manipulate the laser scan head, any of the grey laser duct, or any other enclosed parts of the microscope system. During maintenance the laser is class 4 and may only be attended by trained service personnel using appropriate safety equipment. A no entry notice must be placed on the door during such work.

8. **All users:** The laser must be attended at all times unless the door is shut and is displaying an “experiment in progress no entry” notice. Please remove the notice when it is safe for unqualified persons to enter.
9. **All users:** If you have any doubts or concerns regarding your safe working with any of the lasers contact Colin Gray [colin.gray@sheffield.ac.uk](mailto:colin.gray@sheffield.ac.uk) (Tel 0114 2159580) or Mark Ariaans [m.ariaans@sheffield.ac.uk](mailto:m.ariaans@sheffield.ac.uk) (Tel 0114 2159561). In the event of an accident please contact Colin, Mark, Millie Gillatt (Tel: 26190), [Enquiries](mailto:Enquiries@sheffield.ac.uk) (27466), [m.gillatt@sheffield.ac.uk](mailto:m.gillatt@sheffield.ac.uk) (University laser safety officer) or Giles Morrison xtn 65191 (laser safety for the NHS trust).

I have been trained in the use of the lasers and have read and received a copy of the above operating procedure.

Signed.

Date

Microscopy Training- Safety.

**Mercury arc lamps:** The mercury arc lamp is a bright light source used with fluorescence microscopy. It is a strong source of Ultra Violet (UV) light.

The lamp contains mercury metal which becomes a vapour at high pressure when in operation. The lamp can explode in normal use.

If this should happen leave the room and prevent anyone else entering for at least 30 minutes to allow the mercury vapour to disperse or condense. Seek further assistance contact Colin Gray (Tel 0114 2159580) [colin.gray@sheffield.ac.uk](mailto:colin.gray@sheffield.ac.uk) Room LU104 or Mark Ariaans [m.ariaans@sheffield.ac.uk](mailto:m.ariaans@sheffield.ac.uk) (Tel 0114 2159561) or your local safety officer.

To reduce the risk of explosion and extend the working life of the lamp it must be cool before being turned on. If it is hot allow 30 minutes cooling before starting. Once turned on the lamp must be run for a minimum of 15 minutes. Do not turn off the lamp if it is likely to be needed within the next 45 minutes (e.g. by the next user). The microscope user who turns the lamp on is responsible for handing over to the next user or ensuring the lamp has been turned off if they fail to arrive.

Do not use if the lamp counter shows >300 hours since there is an increased risk of explosion.

I have been trained in the safe use of mercury arc lamps and have read the above instructions.

Signed

Date