

## **Microscopy Training- Laser Safety for the inverted multi-photon microscope KU139.**

**Lasers:** The multi photon 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:**

1. On entering room KU139 at the start of your microscopy session check the status of the MultiPhoton laser (MP) control box (large unit with a small screen and key, on left below the optical bench). If the key is in the lock assume the laser is on. Anyone who has not been specifically trained for the MP laser or who is not intending to use it must turn the key to the vertical position, then remove it and place in the top drawer (in front).
2. You may put the key in the lock and turn on the MP laser (key horizontal) if you have been specifically trained in its use and intend to use it.
3. Remove all rings or other reflective materials from hands. Always “**STOP**” the laser scanning before changing the specimen or working close to the lasers (inside the hot box in KU139). Remember that glass slides can behave like mirrors if held at the correct angle and can direct invisible laser light towards you or anyone else in the room.
4. The MP and visible lasers (Ar, HeNe 543 and HeNe 633) are class 1 (safe) in normal operation provided that step 3 above is followed and that nothing is done to concentrate the light beam and direct it towards anyone in the room.
5. 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 of these components 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.
6. The laser must be attended at all times unless the room is locked with a key and is displaying an “experiment in progress no entry” notice on the door. This notice should be removed when it is safe for unqualified persons to enter.

If you have any doubts or concerns regarding your safe working with the multi photon laser contact Colin Gray (Tel: 0114 2159580) [colin.gray@sheffield.ac.uk](mailto:colin.gray@sheffield.ac.uk) or Mark Ariaans (Tel: 0114 2159561) [m.ariaans@sheffield.ac.uk](mailto:m.ariaans@sheffield.ac.uk) . In the event of an accident please contact Colin, Mark, Millie Gillatt Tel: 26190, [Enquiries](#) Tel: 27466, [m.gillatt@sheffield.ac.uk](mailto:m.gillatt@sheffield.ac.uk) (University laser safety officer) or Giles Morrison Tel: 65191 (laser safety for the NHS trust).

I have been trained in the use of the multiphoton 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 (Tel: 0114 2159561) [m.ariaans@sheffield.ac.uk](mailto:m.ariaans@sheffield.ac.uk) 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