DUBLIN CITY UNIVERSITY

School of Physical Sciences- SPS

Laser Safety Policy Document

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Version number: #3

1. INTRODUCTION

Lasers are in common use in physics departments, mostly as research tools. A laser produces a beam of coherent electromagnetic radiation (or light), either continuously (CW) or in pulsed form. Laser radiation has unique characteristics and properties that are not found in natural light sources. Most conspicuous among these properties are the very high directionality, i.e. very low divergence, and the high power of laser beams. Thus, exposure to laser beams may lead to injury and adequate safety procedures must be in place in areas where lasers are in use.

This is version #3 (January 2012) of the laser safety policy document of the School of Physical Sciences (SPS). The main aims of this document are to:

1. Provide the School members with adequate, accurate and up-to-date information on all the relevant aspects of laser safety (hazard classification, safety precautions, risk assessment, personal protection, etc...)
2. Provide an accurate record of the SPS inventory of class IIIb and class IV lasers,
3. Provide a record of laser safety inspections by the SPS Laser Safety Officer

This document will be updated on a regular basis.

2. LASER SAFETY: GENERAL GUIDELINES

2.1 HAZARD CLASSIFICATION

2.2 SAFETY PRECAUTIONS
2.3 RISK ASSESSMENT
2.4 PERSONAL PROTECTION

INVENTORY OF CLASS IIIb and CLASS IV LASERS IN USE IN SPS (APRIL 2011and JANUARY 2012)

The first SPS laser inventory was conducted by J.P. Mosnier during the period from the 11th to 15th April, 2011.
A total of 18 lasers was listed. Each laser was assigned an SPS number and relevant safety information also recorded for each laser. The detailed information is provided in the

REPORT ON IMPLEMENTATION OF SAFETY PRECAUTIONS AND USE OF PERSONAL PROTECTION EQUIPMENT

J.P. Mosnier in addition to carrying out an inventory of lasers also inspected the laser protection equipment (laser goggles), checked the general safety procedures (interlocks) and enquired about special procedures that would have been put in place for the specific requirement of an experiment involving lasers.
All the groups inspected provide adequate eye protection for the users. All the laser goggles are suited to the wavelengths delivered by the lasers and have typical optical densities (OD) of 6+ or more. Where multiple wavelengths were in use, adequate goggles providing protection for all the wavelengths were found. All groups provide more than one pair of suitable laser goggles so as to allow several users to carry out work simultaneously when the laser is fired.
All the groups currently operate the same policy regarding the use of laser goggles: the goggles are left permanently in the laser areas and a user takes a pair of goggles as needed when laser work is to be carried out. Once the user has finished laser work, the goggles are returned to a designated area and made available to the next user(s). An alternative policy whereby individual users would be assigned a personal set of goggles has been suggested by the DCU H&S Officer. While presenting obvious merits, this alternative policy appears to be very costly and does offer additional safety. It was

decided to discuss it at a forthcoming School meeting.

Interlocks are in place in several areas. The labs where no interlocks have been fitted operate strict locked door policies and/or provide other beam protection, e.g use of perspex screens. The attached laser inventory will be updated to include information on extra safety procedures such as interlocks, use of screens, curtains, etc...

School of Physical Sciences Laser Inventory and Classification Jan 2012

Laser SPS number	Room Number	PI in charge	Laser type	Manufacturer	Model	Serial #	Maximum Pulse Energy	Wavelength used	Power used	Pulse length	Repetition rate	Class
1	N123	J.P. Mosnier	Frequency-quadrupled Nd:YAG	Continuum	Powerlite 8010	14005	1 J @ 1064 nm; 0.5 J at 532 nm; 0.25 J at 355 nm; 0.160 J at 266 nm	266 nm	Max	6 ns	10 Hz	IV
2	N122A	J.P. Mosnier	Frequency-quadrupled Nd:YAG	Continuum	Surelite III-10		0.850 J at 1064 nm	1064 nm	Max	6 ns	10 Hz	IV
3	N122A	J.P. Mosnier	Frequency-quadrupled Nd:YAG	Continuum	Surelite I-10		0.450 J at 1064 nm	1064 nm	Max	6 ns	10 Hz	IV
4	N122C	J. Costello	Frequency-quadrupled Nd:YAG	Continuum	Surelite III-10		0.850 J at 1064 nm	1064 nm	Max	6 ns	10 Hz	IV
5	N122C	J. Costello	Frequency-quadrupled Nd:YAG	Spectron	SL 404		0.300 J	1064 nm	Max	15 ns	10 Hz	IV
6	N122D	J. Costello	Frequency-quadrupled Nd:YAG	Spectron	SL 404		0.300 J	1064 nm	Max	15 ns	10 Hz	IV
7	N122D	J. Costello	Frequency-quadrupled Nd:YAG	Spectron	SL 803		0.850 J	1064 nm	Max	15 ns	10 Hz	IV
8	N122D	J. Costello	Nd:YAG pumped optical parametric oscillator OPO	Continuum	Panther		0.100 J	tunable 200 nm-500 nm	Max	5 ns	10 Hz	IV
9	N112D	J. Costello	Nd:YAG ps	EXSPLA	SL312P		0.500 J	1064 nm	Max	170 ps	5 Hz	IV
10	N122D	J. Costello	Nd:YAG + amplifier	Spectron	SL858		2 J	1064 nm	Max	15 ns	10 Hz	IV
11	N114	B. Ellingboe	Nd:YAG	Spectron	SL 404		0.300 J	1064 nm	Max	15 ns	10 Hz	IV
12	N130	E. McGlynn	He-Cd	Kimmon	K5652R-G	52596		325 nm or 442 nm	300 mW	CW	N/A	III-b
13	N130	E. McGlynn	Diode-pumped nd-YAG	Spectra Physics	Millenium II-SS	409		532 nm	2 W	CW	N/A	IV
14	N131	E. McGlynn	He-Cd	Kimmon	K5652R-G	91215		325 nm or 442 nm	300 mW	CW	N/A	III-b
15	N131	E. McGlynn	Diode-pumped nd-YAG	Spectra Physics	Millenium II-SS	409		532 nm	2 W	CW	N/A	IV
16	NG06	E. McGlynn	He-Cd					325 nm	15 mW	CW	N/A	III-b
17	NG06	E. McGlynn	He-Ne					632 nm	500 mW	CW	N/A	IV
18	N214	J. Ducrée	CO_2 laser engraving system	Epilog Laser	ZingLaser			10.6 microns	30 W	CW	N/A	I