NATIONAL UNIVERSITY OF SINGAPORE

Doc no: CIBA/RA/Eq/015 — Experiment-Based Risk Assessment Form

Name of Department	PHYSICS	Location of Lab	S11-02-09
Name of Laboratory	CIBA Optical Materials & Devices Lab	Name of PI	Asst Prof Andrew Bettiol
Name of Researcher/LO	Yan Yuanjun; Yang Chengyuan; Vanga Sudheer Kumar; Shuvan Prashant Turaga	Name of Activity/Experiment	Two Photon Lithography

No	Description/Details of Steps in Activity	Hazards	Possible Accident / Ill Health & Persons-at-Risk	Existing Risk Control (Mitigation)	Severity	Likelihood (Probability)	Risk Level	Additional Risk Control	Person Responsible	By (Date)
1	Laser alignment	1. Laser light(Class 4)	1. Laser light shining directly into eyes can cause permanent blindness. (burning of corneas)	1. All users should wear laser googles of appropriate wavelength. 2. Black non-reflective boards barricading areas where laser beams are aligned. 3. Keep the MIRA cavity closed at all times. 4. Use IR card for alignment.	3	1	3			
2		2. Fire hazard	1. Fire caused by high power femtosecond infrared light 2. Skin burn due to laser light	1. Always close the laser shutter when the laser is not in use. 2. Reduce the power to minimum during laser alignment. 3. Cover the light path when laser is in use. 4. No paper or anything that can catch fire in the light path 5. Use metal shields to block relected light	2	1	2			
3		3. Reflected laser light	1. Reflected laser light can cause permanent blindness.	1. No jewellrey allowed when working with lasers. 2. 'LASER IN USE' sign lighted when laser work is carried out.	1	1	1			
		4. Overloading of laser power source	1. Electrical short circuit	1. Label stating maximum allowed current allowed for each power supply. 2.Do not open power supply	1	1	1			
	Using Two Photon Optical Setup	Fire hazard	Focused beam can burn paper or flammable materials	1. Don't use paper for aligning the beam 2. Use IR Card for alignment 3. Close the laser shutter when not using the beam for fabrication.	2	1	2			
		Reflection Hazard	The reflection from the sample or a glass slide placed underneath objective	1.Don't align the beam at eye level. 2. Wear appropriate Optical Goggles while doing the alignment. 3. Keep the beam power low for alignment.	1	1	2			

Conducted By Yan Yuanjun

Yang Chengyuan

Vanga Sudheer Kumar

Shuvan Prashant Turaga

Approved By

Name: Asst Prof Andrew Bettiol

Signature:

Approval date: 1-Nov-11

Next Revision date (Maximum 3 years): 1-Nov-14