

**Laboratory Safety Management System**

**Centre of Ion Beam Applications**

Procedure No: CIBA/CSMS/01A

**Faculty of Science**

**National University of Singapore**

**Principal Investigators**

**Associate Prof. Thomas Osipowicz,  
Prof. Frank Watt,  
Prof. Mark Breese,  
Assistant Prof. Jeroen van Kan &  
Assistant Prof. Andrew Bettiol**

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## Laboratory Information

### Details of PI incharge of the Laboratory

Name	Associate Prof. Thomas Osipowicz
Contact No	65166745
E-mail	<a href="mailto:phyto@nus.edu.sg">phyto@nus.edu.sg</a>
Office Location	S12 03-09

### Details of PI incharge of the Laboratory

Name	Prof Frank Watt
Contact No	65162815
E-mail	<a href="mailto:phywattf@nus.edu.sg">phywattf@nus.edu.sg</a>
Office Location	S7-01-13

### Details of PI incharge of the Laboratory

Name	Prof. Mark Breese
Contact No	65162624
E-mail	<a href="mailto:phymbhb@nus.edu.sg">phymbhb@nus.edu.sg</a>
Office Location	S7-01-12

### Details of PI incharge of the Laboratory

Name	Assistant Prof. Jeroen van Kan
Contact No	65166978
E-mail	<a href="mailto:phyjavk@nus.edu.sg">phyjavk@nus.edu.sg</a>
Office Location	S13-02-02

### Details of PI incharge of the Laboratory

Name	Assistant Prof. Andrew Bettiol
Contact No	65164138
E-mail	<a href="mailto:phybaa@nus.edu.sg">phybaa@nus.edu.sg</a>
Office Location	S12-02-18

### Details of Safetylead for the Laboratory

Name	Dr Ren Minqin
Contact No	6516 2638
E-mail	<a href="mailto:nnicsf@nus.edu.sg">nnicsf@nus.edu.sg</a>
Location of office/Lab	S07-01-05

### Name of Lab Technologist

Name	Choo Theam Fook
Contact No	65162998
E-mail	<a href="mailto:phyctf@nus.edu.sg">phyctf@nus.edu.sg</a>
Location of office/Lab	S7-01-07

### Details of Laboratory

Location	CIBA Main Lab (3.5 MV dynamitron ion accelerator):S7-02-01 & 01-01; CIBA Cleanroom: S7-01-01A; CIBA Van der Graaf Accelerator lab: S7-01-07; CIBA/ESP Nano fabrication lab: S7-01-08; CIBA Chemistry lab: S7-01-09; CIBA Thermal Processing lab: S7-01-16 and CIBA Optical Materials & Device lab: S11-02-09.
Type of Major Research activities in the lab	<p>The Centre for Ion Beam Applications (CIBA) is a state-of-the-art research centre utilizing advanced high energy (MeV) ion beam techniques covering a wide range of disciplines, including biophysics, lab-on-a-chip technology, nuclear microscopy of degenerative diseases, microphotonics, advanced materials characterization and semiconductor micromachining.</p> <p>CIBA facilities include a 3.5 MV dynamitron ion accelerator and 3 advanced beam line facilities: The proton beam writer, the NUS nuclear microscope, and the ion beam analysis high resolution spectrometer, are all state-of-the-art facilities and places CIBA as the premier facility of its kind worldwide. It is worth noting that the 3.5 MV accelerator is only one of three such high brightness accelerators worldwide, the proton beam writing facility is the only one of its kind in the world (CIBA is pioneering this research), the nuclear microscope facility has the world's best performances, and the IBA high resolution spectrometer is a state-of-the-art facility for advanced materials characterization and is one of a few such facilities worldwide.</p>

### No of People Working in the Lab

Research Staff	13
Post Graduate Student	17
Honors Student	0
UROPS	0
Short term students	1
Other Visitors	

### Major Hazards in the Laboratory

Biological Safety	N/A
Chemical Hazards	Yes
Radiation Hazards	Yes
Physical Hazards	Yes
Other Hazards	N/A

### Other Relevant Information

*Please attach separate sheet if needed*

## Activity Register

No	Name of Activity	Location	Frequency	Need Analysis			Remarks
				Risk Assessment	SOP	NA	
1	Optical Trapping; Micro-Photoluminescence measurements; Light coupling into waveguides	S11-02-09	Few experiments in 1month	√	√		CIBA/RA/Exp/001
2	RBS measurement	S7-01-07	Few experiments in 1month	√			CIBA/RA/Exp/002
3	High-resolution RBS	S7-01-01	Few experiments in 1month	√			CIBA/RA/Exp/003
4	Poly-dimethylsiloxane (PDMS) casting	S7-01-08/S7-01-01A	Few experiments in 1month	√	√		CIBA/RA/Exp/004; CIBA/SOP/Exp/001
5	Piranha Etching	S7-01-09	Few experiments in 1month	√	√		CIBA/RA/Exp/006; CIBA/SOP/Exp/002
6	Thin films used for sample preparation	S7-01-09	Few experiments in 1month	√			CIBA/RA/Exp/007
7	Nuclear Microscopy experiments	S7-01-01	Few experiments in 1month	√			CIBA/RA/Exp/008
8	Re-fill of LN2	S11-01-01	Few experiments in 1month	√	√		CIBA/RA/Exp/005
9	General Laboratory Operations	S7-01-01,07,08,09,16; S11-02-09	Few experiments in 1month	√			CIBA/RA/Exp/012
10	CIBA ESP Nanofabrication Lab: Chemical Handling & General Laboratory Operations and Lab practices for ESP	S7-01-08	Few experiments in 1month	√	√		CIBA/SOP/Exp/003; CIBA/RA/Exp/013
11	Silicon Etching of selecting areas	S7-01-09	Few experiments in 1month	√	√		CIBA/RA/Exp/014
12	KOH etching	S7-01-09	Few experiments in 1month	√	√		CIBA/RA/Exp/015
13	Removal of positive polymer resists (NanoStripper)	S7-01-09	Few experiments in 1month	√	√		CIBA/RA/Exp/016
14	Optical Characterization of waveguides	S11-02-09	Few experiments in 1month	√	√		CIBA/RA/Exp/017
15	Parallel UV Lithography	S7-01-08, S7 01-01A	Few experiments in 1month	√	√		CIBA/SOP/Exp/004; CIBA/RA/Exp/011
16	Plasmonic Imaging Microscope	S11-02-09	Few experiments in 1month	√	√		CIBA/SOP/Exp/016; CIBA/RA/Exp/018

17	two photon lithoraphy	S11-02-09	Few experiments in 1month	√	√		CIBA/SOP/Eq/0q7; CIBA/RA/Eq/015
18	Critical Point Dryer	S7-01-09	Few experiments in 1month	√	√		CIBA/SOP/Eq/018; CIBA/RA/Eq/017
19	20 degree beamline	S7-01-01	Few experiments in 1month		√		CIBA/SOP/Eq/013;
20	Development of multiphoton lithography for the fabrication of photonic structures and metamaterials	Related CIBA labs	Few experiments in 1month	√			OSHE/RA/03/04/FO S-353
21	30 degree beamline	S7-01-01	Few experiments in 1month		√		CIBA/SOP/Eq/019;
22	Proton beam writing of silicon waveguides for near and mid-IR applications	Related CIBA labs	Few experiments in 1month	√			OSHE/RA/03/04/FO S-351
23	High-Efficiency Deflection of TeV ions in Bent Crystals using Multiple Volume Reflection	Related CIBA labs	Few experiments in 1month	√			OSHE/RA/03/04/FO So-37
24	Integrated Optical cells/particle sorter	Related CIBA labs	Few experiments in 1month	√			OSHE/RA/03/04/FO So-103
25	Ultimate beam focusing for MeV protons, the quest for sub 10nm beam spot size	Related CIBA labs	Few experiments in 1month	√			OSHE/RA/03/04/FO So-188
26	Operation and Maintenance of Megasonic cleaner	S7-01-01A	Few experiments in 1month	√	√		CIBA/RA/Eq/012; CIBA/SOP/Eq/013
27	Nickel Plating Machine Maintenance	S7-01-01A	Few experiments in 1month	√	√		CIBA/SOP/Eq/012; CIBA/RA/Eq/003
28	Laser writer	S7-01-08	Few experiments in 1month	√	√		CIBA/SOP/Eq/008; CIBA/RA/Eq/013
29	10 degree beamline	S7-01-01	Few experiments in 1week	√	√		CIBA/SOP/Eq/014; CIBA/RA/Exp/018
30	Maintenance of High Voltage Accelerator	S7-01-01	As & when is needed	√			CIBA/RA/Eq/001
31	CARBOLITE Tube furnace	S7-01-16	Few experiments in 1month	√	√		CIBA/RA/Eq/002
32	Magnetron Sputtering/ FCVA C.SY System	S7-01-01	Few experiments in 1month	√	√		CIBA/RA/Eq/004
33	Hot Embossing Machine	S7-01-01	Few experiments in 2month	√	√		CIBA/RA/Eq/005

34	Spin Coating Machine	S7-01-01A/08	Few experiments in 1month	√	√		CIBA/RA/Eq/006
35	Sample and chemical storage fridges	S7-01-01	Few experiments in 1month	√	√		CIBA/RA/Eq/007
36	Polishing machine: Silicon polishing	S7-01-09/S11-02-09	Few experiments in 1month	√	√		CIBA/RA/Eq/008; CIBA/RA/Eq/010
37	Femto-second laser applications	S11-02-09	Few experiments in 1month	√	√		CIBA/RA/Eq/009
38	Gamma irradiation	S7-01-07	Few experiment in 6months	√	√		CIBA/RA/Eq/014
39	Chemical treatment of resist samples and handling of chemicals	S7-01-01A/08/09	Few experiments in 1week	√			CIBA/RA/Exp/019
40							
41							

## LIST OF LABORATORY MEMBERS & EXPERIENCE

No.	Name	Designation	Training (including Educational Qualifications)	Relevant Experience
1	Assoc Prof Thomas Osipowicz	Assoc Professor	Sept 27 2007 dept safety training/workshop; CIBA Safety Talk on 1 April 2010	
2	Prof Frank Watt	Professor	Sept 27 2007 dept safety training/workshop; CIBA Safety Talk on 1 April 2010	
3	Prof Mark Breese	Assoc Professor	Sept 27 2007 dept safety training/workshop	
4	Asst Prof Jeroen van kan	Asst Professor	Sept 27 2007 dept safety training/workshop; N3 License number: N3/01444/0106; CIBA Safety Talk on 1 April 2010	
5	Asst Prof Andrew Bettiol	Asst Professor	N3 License number: N3/01444/0062; Sept 27 2007 dept safety training/workshop; CIBA Safety Talk on 1 April 2010	
6	Dr. Ren Minqin	Research Fellow	Radiation Safety (non-ionizing), Faculty Safety Induction Feb 2009; CIBA Safety Talk on 1 April 2010	



7	Dr. Chammika N.B. Udagama	Research Fellow	Faculty Safety Induction Feb 2009. First Aider since Oct 2008; N3 License number: N3/01444/0139; CIBA Safety Talk on 1 April 2010
8	Dr. Chan Taw Kuei	Research Fellow	Faculty Safety Induction Aug 2008; CIBA Safety Talk on 1 April 2010
9	Dr. Piraviperumal Malar	Research Fellow	Faculty Safety Induction 26th August 2010; Chemical Safety on 27 August 2010; Risk Management for Laboratories, 1st Oct 2010
10	Mr. Choo Theam Fook	Lab technologist	Fire warden training (award); Sept 27 2007 dept safety training/workshop; CIBA Safety Talk on 1 April 2010
11	Dr. Pattabiraman Santhana Raman	Research Fellow	Faculty Safety Induction; Chemical Safety; Radiation Safety, Biohazard safety, Fire Safety, First Aid training, Aug 2011 and Chemical Spill management, 23rd Sep, 2011

			Faculty Safety Induction 26th August 2010; Chemical Safety on 27 August 2010; Risk Management for Laboratories, 1st Oct 2010	
12	Dr. Chen CeBelle	Research Fellow		
13	Mr Armin Baysic De Vera	Lab technologist	Faculty Safety Induction Program Feb 2009; CIBA Safety Talk on 1 April 2010	
14	Ms Xiong Boqian (Aky)	Ph.D Student	N3 License number: N3/01444/0105; Faculty Safety Induction Program Aug 2008; CIBA Safety Talk on 1 April 2010	
15	Mr Yan Yuanjun (John)	Ph.D Student	N3 License number: N3/01444/0111; Faculty Safety Induction Program Aug 2008; CIBA Safety Talk on 1 April 2010	
16	Mr Chen Xiao (Kyle)	Ph.D Student	Faculty Safety Induction Program Aug 2008; CIBA Safety Talk on 1 April 2010	
17	Ms. Sara Azimi	Ph.D Student	Faculty Safety Induction Program Aug 2008; CIBA Safety Talk on 1 April 2010	
18	Mr Mallikarjuna Rao Motapothula	Ph.D Student	Faculty Safety Induction Program Feb 2009; CIBA Safety Talk on 1 April 2010	
19	Mr Vanga Sudheer Kumar	Ph.D Student	Faculty Safety Induction Program Feb 2009; CIBA Safety Talk on 1 April 2010	

20	Ms. Dang Zhiya	Ph.D Student	Faculty Safety Induction Program Sept 2009; CIBA Safety Talk on 1 April 2010	
21	Ms. Song Jiao	Ph.D Student	Faculty Safety Induction Program Sept 2009; CIBA Safety Talk on 1 April 2010	
22	Mr. Liang Haidong	Ph.D Student	Faculty Safety Induction Program Sept 2009; CIBA Safety Talk on 1 April 2010	
23	Mr. Wang Yinghui	Ph.D Student	Faculty Safety Induction Program Sept 2009; CIBA Safety Talk on 1 April 2010	
24	Mr. Yang Chengyuan	Ph.D Student	Faculty Safety Induction Program Sept 2009; CIBA Safety Talk on 1 April 2010	
25	Mr Turaga Shuvan Prashant	Ph.D Student	Faculty Safety Induction, 21st Feb, 2011 and Chemical Spill management, 23rd Sep, 2011	
26	Mr Yao Yong	Ph.D Student	Faculty Safety Induction 26th August 2010; Chemical Safety on 27 August 2010; Risk Management for Laboratories, 1st Oct 2010	
27	Mr Liu Fan	Ph.D Student	Faculty Safety Induction 26th August 2010; Chemical Safety on 27 August 2010; Risk Management for Laboratories, 1st Oct 2010	

			Faculty Safety Induction 26th August 2010; Chemical Safety on 27 August 2010; Risk Management for Laboratories, 1st Oct 2010	
28	Mr Wu Jian Feng	Ph.D Student		
29	Mr Liu NanNan	Ph.D Student	Faculty Safety Induction 26th August 2010; Risk Management for Laboratories, 1st Oct 2010	
30	Mr Mi Zhao Hong	Ph.D Student		
<i>Note: Please refer to CIBA CSMS (Procedure No: CIBA/CSMS/02)</i>				

## Roles & Responsibility Register

No	Description of Duties	Frequency	Responsible Person		Remarks
			Primary	Secondary	
1	Safety Lead (Person In charge of safety activities in the laboratory to communicate with PI, students and department safety committee to establish and maintain good safety management practice in the laboratory)		Choo Theam Fook	Ren Minqin	
2	Training (Each group leader within CIBA will be responsible for members of his own group)		Frank Watt Thomas Osipowicz Mark Breese Jeroen van Kan Andrew Bettiol	N/A	
3	Inventory Management [Equipment (Fume hood, pressure vessel etc)]		Choo Theam Fook	N/A	
4	Inventory Management (Chemicals)		Ren Minqin		
5	Waste Disposal		Ren Minqin		
6	Housekeeping		Thomas Osipowicz	All CIBA members	
7	First Aider		Chammika Udalagama	Chen Xiao	
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11					
12					
13		-----			
14					
15					
16					

**Experiment-Based Risk Assessment Form**

Name of Department \_\_\_\_\_ Location of Lab \_\_\_\_\_  
 Name of Laboratory \_\_\_\_\_ Name of PI \_\_\_\_\_  
 Name of Researcher/LO \_\_\_\_\_ Name of Activity/Experiment \_\_\_\_\_

1. Hazard Identification			2. Hazard Assessment				Additional Risk Control and follow-up*			
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							0			
2							0			
3							0			
4							0			
6							0			
7							0			
							0			
							0			

**Conducted By** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Approved By** \_\_\_\_\_  
 Name \_\_\_\_\_  
 Signature \_\_\_\_\_  
 Approval date \_\_\_\_\_

\* Additional risk control are compulsory for high risk and optional for medium risk, pls identify responsible person and time line (column K) for all additional risk control steps

Next Revision date \_\_\_\_\_  
 (Maximum 3 years)

## Legislations applicable to the lab

No	Legislations/ guidelines	Applicable to lab
1	Workplace Safety and Health Act	Yes
2	Petroleum And Flammable Materials (PFM) Regulations	Yes
3	Chemical Weapons Convention (NACWC)	N/A
4	Poisons Act	Yes
5	Environmental Protection and Management Act	Yes
6	Environmental Public Health Act	Yes
7	Sewerage and Drainage Act	Yes
8	Misuse of Drug Act	N/A
9	Arms and Explosives (Amendment) Act	Yes
10	Radiation Protection Act (2007)	Yes
11	Fire Safety Act	Yes
12	Biological Agents and Toxin Act	N/A
13	WHO guidelines for biosafety	N/A
14	Guidelines on the Release of Agriculture-related Genetically Modified Organisms (GMOs)	N/A
15	Any other Acts or Guidelines (if yes, please provide details)	

*Note: Please refer to CIBA CSMS's Chapter 3.2 Legal and other Requirements (Procedure No: CIBA/CSMS/01)*







## Laboratory Training Register

	Name/Name of Training	Facutly Safety Orientation	Lab Orientation	CIBA Safety Multiple Choice Online Quiz	CIBA Safety Multiple Choice Online Quiz For Clean room Users	Remarks
1	Prof Frank Watt	√	√	√		
2	Assoc Prof Thomas Osipowicz	√	√	√		
3	Prof Mark Breese	√	√	√		
4	Asst Prof Jeroen van kan	√	√	√		Approver for both CIBA MCOQ
5	Asst Prof Andrew Bettiol	√	√	√		
6	Dr Chammika N.B. Udalagama	√	√	√		
7	Dr Ren Minqin	√	√	√	√	
8	Dr Chan Taw Kuei	√	√	√		
9	Dr Chen CeBelle	√	√	√		
10	Dr Piravi Perumal Malar	√	√	√	√	
11	Dr Pattabiraman Santhana Raman	√	√	√	√	
12	Mr Choo Theam Fook	√	√	√		
13	Mr Armin Baysic De Vera	√	√	√		Verifier for all members' CIBA MCOQ
14	Miss Xiong Boqian (Aky)	√	√	√	√	
15	Mr Yan Yuanjun (John)	√	√	√	√	
16	Mr Chen Xiao (Kyle)	√	√	√	√	

17	Miss Sara Azimi	√	√	√	√		
18	Mr Mallikarjuna Rao Motapothula	√	√	√	√		
19	Mr Vanga Sudheer Kumar	√	√	√	√		
20	Miss Dang Zhiya	√	√	√	√		
21	Miss Song Jiao	√	√	√	√		
22	Mr Liang Haidong	√	√	√	√		
23	Mr Wang Yinghui	√	√	√	√		
24	Mr Yang Chengyuan	√	√	√	√		
25	Mr Turaga Shuvan Prashant	√	√	√	√		
26	Mr Yao Yong	√	√	√	√		
27	Mr Liu Fan	√	√	√	√		
28	Mr Wu Jianfeng	√	√	√	√		
29	Mr Liu NanNan	√	√	√	√		
30	Mr Mi Zhaohong	√	√	√	√		

*Note: Please refer to Safety Awareness Communication to Members and Visitor: Check List (Doc No: CIBA/CSMS/02 ) for all members' training records*

## Standard Operating Procedure Register

No	Name of Procedure	Prepared by	Date	Approval Date	Next Revision Date	Remarks
1	Poly-dimethylsiloxane (PDMS) Casting	Jeroen Van Kan	14-Nov-08	14-Nov-08	13-Nov-11	CIBA/SOP/Exp/001
2	Piranha Ethching	Mark Breese /ZhiYa	31-Oct-11	31-Oct-11	31-Oct-14	CIBA/SOP/Exp/002
3	Standard Operating Procedure for Chemical Handling	Jeroen Van Kan	31-Oct-11	31-Oct-11	31-Oct-14	CIBA/SOP/Exp/003
4	Parallel UV Lithography	Jeroen Van Kan	14-Nov-08	14-Nov-08	13-Nov-11	CIBA/SOP/Exp/004
5	Re-fill of Liquid Nitrogen from Main tank to 35 L Dewar Storage vessel & Re-fill of Detector Dewar tank from Storage vessel	Armin/Raman	13-Jul-11	13-Jul-11	13-Jul-14	CIBA/SOP/Exp/005
6	Low Level Gamma measurement	Thomas /TK/Min	1-Jun-11	1-Jun-11	1-Jun-14	CIBA/SOP/Exp/006
7	3.5 MV dynamitron ion accelerator	Armin/Choo	31-Oct-07	31-Oct-07	13-Nov-11	CIBA/SOP/Eq/001
8	Van Der Graff Accelerator	Choo Theam Fook/Armin	31-Oct-07	31-Oct-07	13-Nov-11	CIBA/SOP/Eq/002
9	Spin coater	Jeroen Van Kan /LiuFan/YingHui	31-Oct-11	31-Oct-11	31-Oct-14	CIBA/SOP/Eq/003
10	Magnetron Sputtering/ FCVA C.SY	Jeroen Van Kan/Malar/Armi	31-Oct-11	31-Oct-11	31-Oct-14	CIBA/SOP/Eq/004
11	Hot Embossing Machine	Jeroen vanKan /Yinghui/Liufan	31-Oct-11	31-Oct-11	31-Oct-14	CIBA/SOP/Eq/005
12	Refrigerators and -85°C freezer	Ren Minqin	30-Apr-08	30-Apr-08	13-Nov-11	CIBA/SOP/Eq/006
13	Grinding and polishing machine	Teo EeJin	30-Apr-08	30-Apr-08	13-Nov-11	CIBA/SOP/Eq/007
14	Laser Writing	Jeroen Van Kan	31-Oct-11	31-Oct-11	31-Oct-14	CIBA/SOP/Eq/008
15	Plasma Cleaner	Jeroen Van Kan	31-Oct-11	31-Oct-11	31-Oct-14	CIBA/SOP/Eq/009
16	Spin coater, SPIN150 (ESP lab)	Jeroen Van Kan	31-Oct-11	31-Oct-11	31-Oct-14	CIBA/SOP/Eq/010
17	Femto-second laser	Andrew Bettiol	12-Apr-10	12-Apr-10	11-Apr-13	CIBA/SOP/Eq/011
18	Nickle Plating	Jeroen Van Kan	31-Oct-11	31-Oct-11	31-Oct-14	CIBA/SOP/Eq/012
19	20 degree beamline	Jeroen/Raman /YaoYong/Ying Hui/LiuFan				CIBA/SOP/Eq/013
20	10 degree beamline	Jeroen Van Kan/Malar	31-Oct-11	31-Oct-11	31-Oct-14	CIBA/SOP/Eq/014

21	Optical Characterization of Waveguides	Vanga Sudheer Kumar	31-Oct-11	31-Oct-11	31-Oct-14	CIBA/SOP/Eq/015
22	Plasmonic imaging microscope	Andrew Bettiol	31-Oct-11	31-Oct-11	31-Oct-14	CIBA/SOP/Eq/016
23	Two photon lithography	Andrew Bettiol	31-Oct-11	31-Oct-11	31-Oct-14	CIBA/SOP/Eq/017
24	Critical Point Dryer	Chen CeBelle	31-Oct-11	31-Oct-11	31-Oct-14	CIBA/SOP/Eq/018
25	30 degree beamline	Frank Watt/Kyle	31-Oct-11	31-Oct-11	31-Oct-14	CIBA/SOP/Eq/019
26	90 degree beamline	Thomas/TK	31-Oct-11	31-Oct-11	31-Oct-14	CIBA/SOP/Eq/020
27	High Temperature Furnace	Mark/ZhiYa	31-Oct-11	31-Oct-11	31-Oct-14	CIBA/SOP/Eq/021
28	Lab sign posting and labeling	Ren Minqin	21-Oct-04	21-Oct-04	By OSHE	OSHE/SOP/GL/01
29	Incident/ Accident Reporting and Investigation	Choo Theam Fook	2-Aug-06	2-Aug-06	By OSHE	OSHE/SOP/GL/02
30	Hazardous Substance Inventory Record	Choo Theam Fook/Ren Minqin	21-Oct-04	21-Oct-04	By OSHE	OSHE/SOP/GL/03
31	Project/Task Risk Assessment	PIs	22-Nov-05	22-Nov-05	By OSHE	OSHE/SOP/GL/05
32	Personal Protective Equipment	Choo Theam Fook / Ren Minqin	21-Oct-04	21-Oct-04	By OSHE	OSHE/SOP/GL/08
33	Electrical Safety in the Laboratory	Choo Theam Fook/Armin Baysic De Vera	21-Oct-04	21-Oct-04	By OSHE	OSHE/SOP/GL/10
34	Chemical Waste Disposal	Choo Theam Fook /P Malar/Armin	21-Oct-04	21-Oct-04	By OSHE	OSHE/SOP/CS/01
35	Chemical weapons (Prohibition) Act- Storage,Use & Disposal Requirement	Choo Theam Fook / Ren Minqin	16-Jun-05	16-Jun-05	By OSHE	OSHE/SOP/CS/02
36	Safe Operation of Fume Hood	Choo Theam Fook / Ren Minqin	21-Oct-04	21-Oct-04	By OSHE	OSHE/SOP/CS/03

37	Chemical Spill Response	Choo Theam Fook / Ren Minqin	21-Oct-04	21-Oct-04	By OSHE	OSHE/SOP/CS/ 04
38	Controls for Safe Use of Class 3b & 4 lasers	Andrew Bettiol	13-Mar-08	13-Mar-08	By OSHE	OSHE/SOP/RS/ 02
<i>Note: Please refer to CIBA SOP attachments (Procedure No: CIBA/CSMS/03)</i>						







## Risk Assessment Register

No	Name of Experiment	Conducted by	Date	Approval Date	Next Revision Date	Remarks/ Documentation code
1	Maintenance of High Voltage Accelerator	Choo Theam Fook & Armin de Vera	12-Apr-10	12-Apr-10	11-Apr-13	CIBA/RA/Eq/001
2	CARBOLITE Tube furnace	Chan Taw Kuei	7-Apr-10	7-Apr-10	6-Apr-13	CIBA/RA/Eq/002
3	Nickel Plating Machine Maintenance	Wang YingHui	12-Apr-10	12-Apr-10	11-Apr-13	CIBA/RA/Eq/003
4	Magnetron Sputtering/ FCVA C.SY System	Armin de Vera	12-Apr-10	12-Apr-10	11-Apr-13	CIBA/RA/Eq/004
5	Hot Embossing Machine	Wang YingHui	12-Apr-10	12-Apr-10	11-Apr-13	CIBA/RA/Eq/005
6	Spin Coating Machine	P Malar/Liu Fan	12-Apr-10	12-Apr-10	11-Apr-13	CIBA/RA/Eq/006
7	Sample and chemical storage fridges	Ren Minqin	25-Aug-11	28-Aug-11	28-Aug-14	CIBA/RA/Eq/007
8	Polishing machine: Silicon polishing	Mallikarjuna Rao Motapothula	7-Apr-10	7-Apr-10	6-Apr-13	CIBA/RA/Eq/008
9	Femto-second laser applications	Yan Yuanjun; Yang Chengyuan; Vanga Sudheer Kumar	12-Apr-10	12-Apr-10	11-Apr-13	CIBA/RA/Eq/009
10	Polishing machine	Teo EeJin/ Xiong Boqian	12-Apr-10	12-Apr-10	11-Apr-13	CIBA/RA/Eq/010
11	UV Exposure	P Malar/Liu Fan	12-Apr-10	12-Apr-10	11-Apr-13	CIBA/RA/Eq/011
12	Pirahna Etching	Dang Zhi Ya	31-Oct-11	31-Oct-11	31-Oct-14	CIBA/RA/Eq/012
13	Laser Writer	P Malar/Liu Fan	12-Apr-10	12-Apr-10	11-Apr-13	CIBA/RA/Eq/013
14	Gamma irradiation	Choo Theam Fook	12-Apr-10	12-Apr-10	11-Apr-13	CIBA/RA/Eq/014
15	two photon lithography	Sudheer /ChengYuan	1-Nov-11	1-Nov-11	1-Nov-14	CIBA/RA/Eq/015
16	Supercontinuum Laser Source	Sudheer /Prashant	1-Nov-11	1-Nov-11	1-Nov-14	CIBA/RA/Eq/016
17	Critical Point Dryer	Chen CeBelle	31-Oct-11	31-Oct-11	31-Oct-14	CIBA/RA/Eq/017
18	High Resolution RBS	Chan Taw Kuei	1-Nov-11	1-Nov-11	1-Nov-14	CIBA/RA/Eq/018
19	Optical Trapping; Micro-Photoluminescence measurements; Light coupling into waveguides	Andrew Bettiol	12-Apr-10	12-Apr-10	11-Apr-13	CIBA/RA/Exp/001
20	Low-level Gamma Spectroscopy	Chan Taw Kuei	1-Nov-11	1-Nov-11	1-Nov-14	CIBA/RA/Exp/002
21	Poly-dimethylsiloxane (PDMS) casting	Jereon Van Kan	12-Apr-10	12-Apr-10	11-Apr-13	CIBA/RA/Exp/004
22	Thin films used for sample preparation	Ren Minqin	12-Apr-10	12-Apr-10	11-Apr-13	CIBA/RA/Exp/007
23	Nuclear Microscopy experiments	Ren Minqin	12-Apr-10	12-Apr-10	11-Apr-13	CIBA/RA/Exp/008

24	General Laboratory Operations	Choo Thiam Fook/Ren Minqin	12-Apr-10	12-Apr-10	11-Apr-13	CIBA/RA/Exp/012
25	General Laboratory Operations and Lab practices for ESP	Jereon Van Kan	12-Apr-10	12-Apr-10	11-Apr-13	CIBA/RA/Exp/013
26	Silicon Etching of selecting areas	Dang Zhiya	7-Apr-10	7-Apr-10	6-Apr-13	CIBA/RA/Exp/014
27	KOH etching	Dang Zhiya	7-Apr-10	7-Apr-10	6-Apr-13	CIBA/RA/Exp/015
28	Removal of positive polymer resists (NanoStripper)	Jereon Van Kan	7-Apr-10	7-Apr-10	6-Apr-13	CIBA/RA/Exp/016
29	Optical Characterization of waveguides	Andrew Bettiol	12-Apr-10	12-Apr-10	11-Apr-13	CIBA/RA/Exp/017
30	Plasmonic microscope imaging	Andrew Bettiol	1-Nov-11	1-Nov-11	1-Nov-14	CIBA/RA/Exp/018
31	Chemical treatment of resist samples and handling of chemicals (clean room, ESP and Chemistry room)	P Malar/Liu Fan	12-Apr-10	12-Apr-10	11-Apr-13	CIBA/RA/Exp/019
32	Silver plating	John/Prashant	1-Nov-11	1-Nov-11	1-Nov-14	CIBA/RA/Exp/020
33	Microfluidics	Andrew Bettiol /Yan YuanJun	1-Nov-11	1-Nov-11	1-Nov-14	CIBA/RA/Exp/021
34	Chemical disposal	Malar/Armin	1-Nov-11	1-Nov-11	1-Nov-14	CIBA/RA/Exp/022
35	Removal of Protek photoresist	Dang Zhiya	1-Nov-11	1-Nov-11	1-Nov-14	CIBA/RA/Exp/023
36	HF usage	Sara Azimi	1-Nov-11	1-Nov-11	1-Nov-14	CIBA/RA/Exp/024
37	HF transport	Sara Azimi	1-Nov-11	1-Nov-11	1-Nov-14	CIBA/RA/Exp/025
38	HF storage	Sara Azimi	1-Nov-11	1-Nov-11	1-Nov-14	CIBA/RA/Exp/026
39	HF spillage	Sara Azimi	1-Nov-11	1-Nov-11	1-Nov-14	CIBA/RA/Exp/027
40	HF disposal	Sara Azimi	1-Nov-11	1-Nov-11	1-Nov-14	CIBA/RA/Exp/028

*Note: Please refer to CIBA RA attachments (Procedure No: CIBA/CSMS/02)*



## Incident Register

No	Name of Incident	Breif Description of Incident	Report Date	Reported by	Incident Reprot Filed	Remarks
1	No accidents to date					

*Note: No past incidents reports*

