UNIVERSITY OF Southampton

RECORD OF RISK ASSESSMENT

Title of the risk assessment	Area Risk Assessment for Nanometrology
Date risk assessment carried out	10th January 2018
Describe the work being assessed	General research.
Describe the location at which the work is being carried out	Building 7, room 5019
Where appropriate list the individuals doing the work and the dates/times when the work will be carried out	Visitors, Technical, Academic Staff, Research and Project Students
List any other generic or specific risk assessments or other documents that relate to this risk assessment – use hyperlinks if possible	"Risks outside this generic assessment (based on the materials employed) will require a separate assessment to be made."
Name and post of risk assessor	Terry Harvey, Area Academic Lead
List the names and post of those assisting in compiling this risk assessment	Tom Bull, PhD student
Name, post and where required, signature of the responsible manager/supervisor approving the risk assessment	Tomas Polcar, Head of Group
Reference number and version number of risk assessment	Version One

Assessment

Title of risk assessment	Equipment Risk Assessment for Plint TE77 reciprocating rig in nCATS Laboratory

Risk Acceptability	
1-3	Risk Acceptable
4-6	Risk to be reduced if readily possible
7-14	Risk to be reduced if reasonably practicable
15-25	Risk Unacceptable

Risk Matrix			Severity				
			very low	low	medium	high	very high
			1	2	3	4	5
Likelihood	Certain	5	5	10	15	20	25
	Likely	4	4	8	12	16	20
	Possible	3	3	6	9	12	15
	Less likely	2	2	4	6	8	10
	Improbable	1	1	2	3	4	5

ref	Task/Aspect of work	Hazard	Harm and how it could arise	Who could be affected?	Existing measures to control risk	Risk Factors		Residual Risk Score	Any changes or extra controls?
						Overall Likelihood	Overall Severity		
1	Electrical equipment	Electricity	Electrical shock/burn from contact with mains powered equipment	User	Installation and maintenance of equipment conducted by qualified electricians. Annual PAT testing. Visual inspection prior to use.	1	2	2	no
2	Chemicals	Fumes; skin and eye irritation	Splashes and spillages	User	Only small volumes of chemicals are used for cleaning and testing. PPE supplied, follow COSHH regulations.	1	2	2	no
3	All areas	Slips, trips and falls	Injury through slipping on liquids; tripping on leads, equipment, boxes on floor	All	Keep room clean, clean up spills, keep walkways clear of obstructions and trailing leads	2	2	4	no
4	Handling biological samples	Biological samples	Biological hazard	All	Individual risk assessments required; autoclave (where possible) samples to eliminate risk.	1	3	3	no
5	Non-ionising radiation	Lasers	Eye damage if stared at directly	User	Training in safe use the Xyris systems.	1	3	3	no
6	Soldering	Heat and fumes	Skin blistering if contacting hot soldering iron/soldered surface, inhalation of flux fumes	User	Typically the amount heat produced if very low and dissipates quickly. The room is well ventilated and any fumes produced will represent minimal hazard.	1	1	1	no

Post Risk Assessment Actions

Title of risk assessment

Equipment Risk Assessment for Plint TE77 reciprocating rig in nCATS Laboratory

Have any of the specialist control measures listed below been identified as required during risk assessment? – indicate yes or no – if yes then include details on the post assessment action list below.	**Yes/No**
Is any exposure monitoring required?	No
Is any occupational health monitoring required?	No
Are there any hazards or other factors that could affect pregnant or nursing mothers?	No

Is any specific training required before people can carry out this work?	Yes
All operators of equipment must have training in the equipment (profilometers and AFM) before they carry out any experimental work	

Are there any additional procedures or risk assessments required as a result of this risk assessment?	Yes
Risk Assessment outside of this area risk assessment and the equipment risk assessment will require task based risk assessment	

Are there any specialist disposal arrangements required?	No

Are there any special emergency arrangements required?	No

Post Assessment Actions			
Ref	Action	By whom	By when

Examples of hazards	Examples of work activities during hazard may be encountered	Examples of harm that can result if risks are not adequately controlled
Substances that are harmful if contacted, ingested, injected, inhaled	Use or generation during laboratory work, cleaning activities, outdoor pursuits, maintenance work	Dermatitis, chemical burn, poisoning or other illness
Manual handling	lifting, carrying, pushing, pulling, sliding of equipment or people	Bruising, Back injury, strains
Water	watersports, outdoor pursuits, field work, research using flumes	Drowning
Pressure and vacuum systems	compressed air or gas systems, vacuum rigs	explosion or implosion, injury from pressure jets, hearing damage
Psychological	working alone, overseas, isolated situations, adverse conditions	stress or distress, suicide, long term mental conditions
Vehicle	moving or manoeuvring vehicles on public or private roads or yards, towing, cross country	Crushing, impact injuries
Electrical	equipment, temporary generators or supplies, experimental rigs, exposed cables, maintenance work	Electrical shock/burn
Environmental	exposure to extremes of heat, cold, wind, dust during field work or maintenance work	Hot burns, cold burns
Height	working at height, outdoor activities	Cuts/bruises, Broken bones, Concussion
Fire	flame cutting equipment, welding or brazing, heating equipment, outdoor barbeques or fires	burns, smoke inhalation,
Ionising radiation	radioactive materials, imaging machines	long term illness, burns
Machinery and equipment	workshop tools, mobile equipment, hand tools	Crushing. trapping, cuts and bruises, amputation
Non Ionising radiation	lasers, ultrasound, microwaves	surface or deep burns, eyesight damage
Noise or vibration	agricultural machinery, wind tunnels. vehicles. workshop equipment, test rigs	hearing loss, hand arm vibration syndrome, internal organ damage
Confined spaces	entering tanks, voids in buildings, boilers, furnaces, sewer and water pipes and manholes	Asphyxiation, illness due to breathing harmful gasses or vapours, explosion

Method Statement for Nanometrology (Building 7 Room 5019)

The Laboratory is used for metrological characterisation of surfaces for Teaching, Research and Commercial Clients.

All experimental users will have a laboratory induction. Equipment training will be provided where appropriate; activities not covered by this area risk assessment or covered by equipment/generic/area risk assessments will be required to fill out task-based risk assessments.

For health and safety issues consult with the laboratory manager and where appropriate safety officers.

Risks

Slips, Trips & Falls

All users must ensure potential trip hazards are away from pedestrian areas and walk ways kept free from obstructions. Trailing leads should be covered or routed away from walk ways.

Spills should be cleaned immediately.

Chemical Handling

Only small volumes, below 500 millilitres, of flammable solvents to be used or stored openly on the bench. Larger quantities must be stored in flammables cupboard.

Users to Follow Good Laboratory Practice and COSHH regulations, read MSDS to determine risk, disposal options and potential fire handling methods.

Standard PPE is supplied, specialised equipment needs to be arrange with laboratory manager

Electrical equipment

Installation and maintenance of electrical equipment must be conducted by qualified electricians. PAT testing must be conducted according to HSE guidelines.

Moving and lifting heavy objects.

Extensive requirements for moving and lifting heavy objects will require undertaking the University manual handling course. Users should be comfortable in lifting and moving objects (of any weight) and ask for assistance when needed. General lifting equipment can be provided and should be discussed with laboratory manager and where appropriate safety officers.

Computer controlled instrument operation

Users working at computer stations, that operate laboratory equipment, need to ensure that lighting, seating, VDU, keyboard, mouse, temperature and noise are assessed. If issues arise please discuss with laboratory manager and where appropriate safety officers.

Sample preparation and sharps

Ensure that broken glassware is cleaned up immediately using the appropriate tools. Broken glassware should be placed in a suitable (impermeable) marked container. Hand protection should be used when handling broken glass. Use glassware only for the purpose in which it was designed.

Disposal of sharps must be done in the sharps bins provided.

Fire

In the event of a fire users must follow University fire strategies (including trained fire wardens and emergency evacuation procedures).

Soldering and crimping

Setting up equipment occasionally requires electrical connections to be made via soldering and crimping. Crimping pose a low finger-crush hazard, but instruction and common sense to make sure this minimal. Soldering requires the heating of solder to melting point (typically around 190°C) using a soldering iron/gun. This is usually achieved by heating the wire and melting the solder onto and then onto the component/connector. The amount of solder employed is typical very small and thus the amount of heating is small, resulting rapid dissipation of any heat applied and injury likely to occur is handled immediately after soldering, users are trained not to do this. The soldering process also produces a small amount of flux fumes, but the room is very well ventilation and thus poses minimal risk.

Laser

The XYris 2000 has Class 3B laser (10mW) and Class 1 lasers and the XYris 4000 has a class 1 laser. The Class 1 are low power and pose no risk. The 3B is powerful enough to do ear damage if someone stares at it. Users for both system are trained in safe use of the systems to avoid an risk the lasers pose.

Equipment/rigs/processes

Non/minimal risk equipment and processes, which includes operation of the balance; Alicona G4 InfiniteFocus; Taylor-Hobson Talysurf 120L, Xyris 2000 and Xyris 4000 (except laser risk mentioned above), and any process that has no inherent risk (if in doubt consult with laboratory manager and where appropriate safety officers) that is covered by this Area Risk Assessment (ERA) does not need a risk assessment.