

**Risk Assessment Form**



Title of Assessment

Date of assessment

Department

Date for review

Descriptions of Activities

Name of those working to this assessment

Any others who may be affected by this assessment

Assessment carried out by

**Additional information**

## Risk Assessment Form

Foreseeable Significant Hazard	Existing control measures	Inherent Risk	Additional control measures	By whom & when	Controlled Risk Level
<b>Laser exposure - ruby spectrometer (normal use)</b>	Laser equipment only to be used by trained and authorised personnel. Full enclosure fitted to prevent accidental exposure to high power beam sections. Output from enclosure (end of fiber optic) is 1 mW, 532 nm visible CW. Overall system therefore does not exceed the power limit of laser Class 2 – no further safety measures than appropriate signage required. Dedicated risk assessment and safe system of work are provided separately and kept with the laser. All users must review. Note that opening the bolted enclosure and defeating the interlocks renders the system a Class 3b laser hazard, as advised by signage. This is necessary for realigning the system and this operation requires separate specific training, risk assessment and authorisation.	Severe	Clear signage informs personnel of the laser class and hazards. Avoid staring into the beam output from the optical fibre.	Users	V Low
<b>Laser exposure - ruby spectrometer (realignment)</b>	Laser equipment only to be used by trained and authorised personnel – authorised specifically for this operation in addition to the normal use. This operation requires opening the enclosure and overriding the interlocks to keep the beam on while adjusting the alignment of optical components. The laser hazard is therefore Class 3b.	Severe	Clear signage informs personnel of the laser class and hazards. To be carried out only in a keycard locked room with no optical access and clear signage forbidding entry. Lab then constitutes a Laser Controlled Area. Only users specifically trained and authorised for the realignment operation to be permitted inside the Area. Laser safety goggles appropriate	Users trained and authorised for this specific operation only – all other personnel to be removed from laser controlled area	V Low

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	Dedicated risk assessment and safe system of work are provided separately and kept with the laser. All users must review.		to this laser are kept with the system – these must be worn throughout, but not solely relied upon.		
<b>Diamond Anvil Pressure cells – mechanical failures under load</b>	Safety goggles worn when loading (loading refers to increasing the stored pressure via an external hydraulic press). Specifically trained and authorised users only. The stored energy in a diamond anvil type cell is extremely low due to the small pressure fluid volume.	Minor	Only trained users to be present in the lab during loading operations.	User, and (reduced risk) personnel in lab during operation	Low
<b>Piston Cylinder Pressure cells – mechanical failures under load</b>	Safety goggles worn when handling. Face guard worn during loading. Cells under load kept in strong, secure, well-labelled boxes when not in use. Avoid aiming the cylindrical axis of the cell at peoples’ faces at all times when under load. Specifically trained and authorised users only.	Severe	Only trained users to be present in the lab during loading operations. Two users must be present for loading operations.	Users	Low
<b>Hydraulic ram – catching body parts between surfaces under load</b>	Ram fitted with surrounding guard plates - must be in place when ram under load. Hands etc to be kept out of enclosure while loading. Specifically trained and authorised users only.	Severe	Only trained users to be present in the lab during operations where the press is under load.	Users	Low
<b>Handling chemical samples – inhalation or ingestion</b>	MSDS to be consulted in each case and appropriate PPE worn and individual measures taken such as use of fume hoods in some cases. Standard lab procedures to be observed - no eating or drinking, hands to be washed after leaving etc.	Minor		User, and (reduced risk) personnel in lab during operation	V Low

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<p><b>Machining and polishing of BeCu alloys</b></p> <p>Ingestion of toxic Beryllium-containing dust</p>	<p>Minimal quantities involved (typically 8 mm disk, 0.08 mm thick, 0.5 mm diameter holes).                  Select machining parameters to minimise production of particulate matter.                  Ensure work area is free of draughts.                  Clean work areas thoroughly after use.                  Dispose of any contaminated gloves and cleaning tissues as hazardous waste in dedicated container within the lab.                  Conform to lab rules on washing hands and not eating and drinking in the lab environment.</p>	<p>Minor</p>	<p>All lab users to familiarise themselves with BeCu MSDS documentation. PPE (dust mask, gloves, goggles – when not using microscope to view) must be worn. Only trained users to work machining BeCu.</p>	<p>All personnel in lab environment</p>	<p>Low</p>
<p><b>Use of chemical solvents – irritation to skin or eyes</b></p>	<p>Appropriate PPE and steps to be taken as with safety data sheets, as above.</p>	<p>Low</p>	<p>Any spills must be correctly cleaned, and major spills require department to be notified. All solvents to be correctly disposed of.</p>	<p>User, and (reduced risk) personnel in lab during operation</p>	<p>V Low</p>
<p><b>Use of furnaces</b></p>	<p>Furnaces used to heat-treat metals can cause burns when inserting/removing item from hot oven (330 C). Specialised thermal gloves to be worn, and care taken to introduce only heat-safe materials to hold the part, such as alumina crucibles, into the furnace.</p>	<p>Low</p>		<p>User</p>	<p>V Low</p>
<p><b>Laboratory sharps - blades, needles and used glassware</b></p>	<p>Adherence to safe lab protocol to be followed. Safe storage of sharps, and tidiness of work surfaces to keep hazards clear and identifiable. All sharps to be disposed of in dedicated sharps containers.</p>	<p>Low</p>		<p>All personnel in lab environment</p>	<p>Low</p>
<p><b>Use of cryogenic liquids</b></p>	<p>Suitable ventilation is provided - asphyxiation hazard due to boiling cryogenic liquids. Dewars containing gases or cryogenic liquids are not to be</p>	<p>Major</p>		<p>All personnel in lab environment</p>	<p>Low</p>

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	accompanied in elevators. Eye and hand protection to be worn when handling cryogens.				
<b>Use of instruments involving large magnetic fields – possible interference with pacemakers or metal implants</b>	Warning signs displayed to warn any entering lab of hazard. Lab p127 is keycard locked to restrict access, due to the presence of the strong 17 Tesla magnet system. Loose metal objects or sensitive electronics to be kept outside 5 Gauss radius of magnet – this is marked on the floor, along with the 10 Gauss line.	Severe	Non-essential personnel to be kept out of labs with strong magnetic fields active or potentially active.	All personnel in lab environment who may enter 5 Gauss line of magnet in question	Low
<b>Use of instruments involving X-ray generation (Ionising radiation source) – possible radiation burns or cellular damage</b>	Diffractometers are located in designated X-ray areas and are commercial controlled setups including interlocking doors and shields to prevent radiation exposure the surroundings, coupled with warning systems to indicate source is in use. Only to be used following proper training.	Severe	Ionising radiation safety course and training on individual instruments to be completed.	User of instrument, and other personnel present while radiation source is in use.	V Low
<b>Moveable platform – falls</b>	Brakes to be firmly applied and stability checked before mounting the platform. Overreach or overly strenuous tasks over platform rails to be avoided. Large loads to be lifted with additional aid.	Minor		User	Low
<b>Spillages and trip hazards</b>	Fluid spillages or trailing wiring etc may constitute slip or trip hazards. Labs to be kept tidy and organised, and any spillages or mess to be cleared promptly.	Minor		Any personnel in environment	V Low

**Work should not be carried out until the assessment is completed to a suitable & sufficient level and all required control measures are in place.**

Is assessment suitable and sufficient    Yes

**Risk Assessment Form**

Any further actions required to allow work to commence	
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Approved By	Paul Goddard
Date	8 <sup>th</sup> August 2023

Position	Principal Investigator
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Please print a copy, sign it and keep for your records

	Severity of injury				
Likelihood	Superficial	Minor	Serious	Major	Extreme
Unlikely	Very low	Very low	Low	Low	Moderate
Possible	Very low	Low	Low	Moderate	High
Likely	Low	Low	Moderate	High	Very high
Very likely	Low	Moderate	High	Very high	Very high
Extremely likely	Moderate	High	Very high	Very high	Very high

Overall Risk Rating (highest level found)	Low
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See 'Matrix for risk evaluation' for further guidance.