

RISK ASSESSMENT DETAILS

Building:	Physics Research Deck	Room No:	8.408
Lab Name:	Condensed Matter lab 03		
Risk Assessment Title:	Blatan		
Date:	24/05/2011		
Assessed by:	Dr M. ALI (24/05/2011)		
Head Of Group:	Prof. B.J. Hickey (24/05/2011)		
Lab Safety Advisor:	Dr M. ALI		
Description of Activity:	Transport measurements of samples		

Additional Notes / Comments

The cryostat has a superconducting magnet and both liquid Helium and liquid Nitrogen coolants. It can hold up to 100 litres of each cryogen. The superconducting magnet may have a current up to 100 Amps at 8 Tesla. Normal Helium gas boil-off is recovered and does not vent into the room. The Nitrogen boil-off rate is negligible and does vent into the room. Users are required to undertake a safety and training session. The Blatan training will cover the safety aspects, hazards and appropriate precautions highlighted in this risk assessment. All users are required to undertake **basic cryogenic training**, and are required to **read the additional separate Cryogenic Risk assessment**.

Review dates

Date	Reviewed by	Signed

Overall risk rating:

4

Legend

Severity		
5	Very High	Multiple Deaths
4	High	Death, serious injury, permanent disability
3	Moderate	Over 3 days (reportable to HSE)
2	Slight	First Aid treatment
1	Nil	Very Minor

Risk Rating Matrix						
		Severity				
		1	2	3	4	5
Likelihood	1	1	2	3	4	5
	2	2	4	6	8	10
	3	3	6	9	12	15
	4	4	8	12	16	20
	5	5	10	15	20	25

Likelihood	
5	Inevitable
4	Highly Likely
3	Possible
2	Unlikely
1	Remote Possibility

Persons at Risk	
a	Employees
b	Students
c	Clients
d	Contractors
e	Members of the public
f	Work Experience students
g	Other Persons

Risk rating score	Action
1 - 4	Broadly Acceptable No action required
5 - 9	Moderate Reduce risks if reasonably practicable
10 - 15	High Risk Priority Action to be undertaken
16 - 25	Unacceptable Action must be taken IMMEDIATELY

Hazard	Persons at risk	Adverse effects	Existing control measures	Severity	Likelihood	Risk rating	Further Action? + details
Cryogenics - Cold burns Cryogenics - Asphyxiation Cryogenics - Pressure Cryogenics - Dewar failure • Liquid Helium and Nitrogen Transfer	a , b	See "Cryogenics Risk assessment" which is mandatory part of this risk assessment for all users of this instrument.	<ul style="list-style-type: none"> The user is required to undertake the advanced cryogenic training before attempting to transfer cryogenic liquids. See "Cryogenics Risk assessment" which is mandatory part of this risk assessment for all users of this instrument. 	4	1	4	<ul style="list-style-type: none"> Liquid Nitrogen dewars should be kept outside the lab when not in use (corridor).
Cryostat - Cold burns Cryostat - Asphyxiation Cryostat - Pressure	a , b	See "Cryogenics Risk assessment" which is mandatory part of this risk assessment for all users of this instrument.	<ul style="list-style-type: none"> See "Cryogenics Risk assessment" which is mandatory part of this risk assessment for all users of this instrument. All users must have basic cryogenic training. 	4	1	4	
Superconducting Magnet - Asphyxiation - Magnetic Fields	a , b	See "Cryogenics Risk assessment" which is mandatory part of this risk assessment for all users of this instrument.	<ul style="list-style-type: none"> See "Cryogenics Risk assessment" which is mandatory part of this risk assessment for all users of this instrument. All users must have basic cryogenic training. 	4	1	4	
Vacuum pump - Asphyxiation	a, b	See "Cryogenics Risk assessment" which is mandatory part of this risk assessment for all users of this instrument.	<ul style="list-style-type: none"> See "Cryogenics Risk assessment" which is mandatory part of this risk assessment for all users of this instrument. All users must have basic cryogenic training. 	4	1	4	
Cryostat - Cold burns • Loading the sample stick into the cryostat	a , b	(See : Cryogenics - Cold burns) <ul style="list-style-type: none"> The lowering or removal of the sample stick may cause some Helium boil-off. Excessive boil-off is possible if liquid Helium has condensed in the sample space. 	<ul style="list-style-type: none"> All users must have basic cryogenic training. See "Cryogenics Risk assessment" which is mandatory part of this risk assessment for all users of this instrument. Use gloves and goggles provided. To minimise any condensed Helium boil-off at very low sample space temperatures, the sample stick should be lowered in gradually. To avoid Excessive boil-off the sample space temperature should be 10K or greater. 	3	1	3	<ul style="list-style-type: none"> Removal of samples at 10K also minimises the possibility of the sample being blown off by the sudden boil-off of liquid helium.

Superconducting Magnet Power Supply	a , b	<ul style="list-style-type: none"> • Risk of electrocution from large voltage/currents (0 -100 Amps). 	<ul style="list-style-type: none"> • Power supplies are rack mounted and terminals are not accessible by normal users. • Terminals on both the power supply and feedthroughs are covered by insulating boots. 	4	1	4	Normal Users are not authorised to modify any of the electrical wiring between the two items. All faults should be reported to the manager of the system or Lab safety advisor.
Sample Preparation	a, b	<ul style="list-style-type: none"> • Risk of personal injury to fingers/hands in the form of minor cuts from scissors, scalpels, sample edges, etc... • Splash hazard to eyes and drying skin, when cleaning samples with Acetone / Isopropanol. 	<ul style="list-style-type: none"> • Utilise gloves and goggles provided. • Sharps are placed into the sharps box. • Ensure scalpels etc are not left where they could accidentally injure an individual. Leave items in direct view. • Ensure you have read the relevant COSH forms. 	1	2	2	
Platform or Ladder beside cryostat		<ul style="list-style-type: none"> • It is necessary to stand on a platform or ladder while inserting or removing the sample stick. Depending on the fall you could be knocked unconscious. 	<ul style="list-style-type: none"> • Position ladder/platform carefully, fully open and on a level surface. Hold rails or handles where ever possible for stability. • Use approved platform or ladder. 	3	1	3	
Current Sources - electrocution	a, b	<ul style="list-style-type: none"> • Risk of electrocution from large voltages. 	<ul style="list-style-type: none"> • Always minimise current & voltage compliances • Do not disconnect leads while sourcing current or voltage. • Always operate within specifications and limits - part of the training to use Blatan. 	4	1	4	See additional comments below
Insert Change	a, b	<p>(See : Cryogenics - Hazards)</p> <ul style="list-style-type: none"> • See "Cryogenics Risk assessment" which is mandatory part of this risk assessment for all users of this instrument. 	<ul style="list-style-type: none"> • All users must have Advanced cryogenic training, before attempting to change the insert, and must be done in conjunction with John Turton or Phil Cale. 	4	1	4	Insert changes are not permitted out of hours.
Helium 3 insert Use	a, b	<p>(See above : Cryostat - Cold burns Loading the sample stick into the cryostat)</p>	<ul style="list-style-type: none"> • Additional training is required in order to use the Helium 3 Insert. This is provided by an experienced academic or Blatan manager. 	4	1	4	

Out Of hours	a, b	<ul style="list-style-type: none"> Above mentioned Hazards 	<ul style="list-style-type: none"> Allowed as long it does not deviate from standard measurements. 	4	1	4	Any out of hours work must be done in the company of a second individual who is aware of your location.
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Additional references	Additional comments
<ul style="list-style-type: none"> All users are required to undertake basic cryogenic training, and are required to read the additional separate "Cryogenic Risk assessment" which this document refers to. "Cryogenic Risk Assessment" is a mandatory document associated with this risk assessment. Always refer to external documents, such as manuals or operating procedures, where appropriate. 	<ul style="list-style-type: none"> Normal Users are not authorised to modify any CRITICAL aspects of the system electrically or mechanically. All faults should be reported to the manager of the system or Lab safety advisor. Any changes to the system set-up is reflected in the log book. <p>NOTE insert change is NOT permitted out of hours.</p> <ul style="list-style-type: none"> All users must acknowledge that they have read the risk assessment, associated documents and undergone the relevant training prescribed. This can be done via the online CM booking system via your account, where the current up to date risk assessment resides. An electronic signature and date will be logged.