

# Risk Assessment Summary Report/Print (landscape)



<b>Reference</b>	3488	<b>Description of Space or Activity/Task or Equipment</b>	Use of the Bruker E580 Pulsed EPR spectrometer in Millburn house room G78, Including use of cryogenic cooling. This assessment covers Cryostats CF935 and ESR900/910. it Covers Equipment operation in CW Pulsed and RS modes. The spectrometer can operate in X-Band (9.5GHz) and Q-Band (34 GHz)
<b>Assessment Date</b>	06/09/2024	<b>Publish To Portal</b>	No
<b>Assessor Name</b>	Ben Breeze	<b>Risk Assessment Title</b>	Bruker E580 EPR spectrometer Including Cryogenic Work
<b>Assessment Team Members</b>	Ben Green	<b>Review Date</b>	No Review Set
<b>Role / Space / Project Reference</b>		<b>Current Risk Level (1=Very Low, 2=Low, 3=Moderate, 4=High, 5=Very High)</b>	3
<b>Department</b>	Use the search function above or double click here for org chart -> Academic Faculties -> Faculty of Science, Engineering and Medicine -> Research Technology Platforms - RTPs -> Spectroscopy Research Technology Platform - RTP	<b>Final Risk Level (1=Very Low, 2=Low, 3=Moderate, 4=High, 5=Very High)</b>	3
<b>Location Details</b>	Central Campus-Millburn House-Ground Floor-G78 - (01.005.000.051) Spectroscopy RTP Laboratory Millburn House G78	<b>Risk Assessment Number</b>	0

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<b>Risk Assessment Category</b>	Equipment	<b>Additional Information</b>	<p>Users are responsible for having performed a risk assessment for their samples which must be logged at:  <a href="https://warwick.ac.uk/research/rtp/spectroscopy/Safety/Sample">https://warwick.ac.uk/research/rtp/spectroscopy/Safety/Sample</a>                  When booking all users will provide a reference to the risk assessment for the sample used.                  Bookings are restricted to trained users who are recorded in the px-epr-users web group.                  this is a review and transefor to new system: old records:                  Version Date Reviewer Comments                  1 05/01/18 Ben Breeze Re reviewed when Equipment was brought under RTP Control                  2 25/01/19 Ben Breeze Reviewed after change of location. No changes                  3 08/09/21 Ben Breeze Scheduled Review Updated Format minor changes to cryogenics procedure.</p>
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<b>Date Record Created</b>	06/09/2024		
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<b>Hazard Type &amp; Hazard Description</b>	<b>Who may be at Risk? &amp; How May Person(s) Be Harmed</b>	<b>Existing Control Measures</b>	<b>L</b>	<b>S</b>	<b>R</b>	<b>Where current risk is M, H or VH, what additional Control Measures are required?</b>	<b>L</b>	<b>S</b>	<b>R</b>
Work Environment Resticted or blocked access or egress. rear of instrument is not easy to access	Laboratory Worker Staff Student trips falls	Eng - Adequate lighting in place. Admin - Awareness training provided.	Minor	Possible	Low		Minor	Possible	Low
Equipment/Plant Contact with equipment causing cuts, abrasion, bruising. Contact with rotating mechanical parts (Friction).	Laboratory Worker Staff Student Cuts Bruises	Eng/Admin - Access is restricted to authorised personnel. Admin - Associated equipment installed by competent persons. Admin - Awareness training provided. Admin - Controls are suitably located and identified. Admin - Information, instruction, supervision & training.	Minor	Possible	Low		Minor	Possible	Low

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<p>Hand Tools / Powered tools</p> <p>broken glassware Contact with sharp blade (cuts).</p>	<p>Laboratory Worker Staff Student</p> <p>Cuts from broken quartz</p>	<p>Admin - Defective equipment taken out of use. Admin - Information, instruction, supervision &amp; training. PPE - Personal Protective Equipment (PPE) is issued and worn (gloves goggles). Take care, dispose of sharps and broken glass in the approved receptacles provided.</p>	<p>Serious</p>	<p>Unlikely</p>	<p>Low</p>		<p>Serious</p>	<p>Unlikely</p>	<p>Low</p>
<p>Equipment/Plant</p> <p>Explosion/implosion of cryostat/vacuum system</p>	<p>Laboratory Worker Staff Student</p> <p>Cuts from Shards of Glass Metal possibly to eyes</p>	<p>Eng - Automatic pressure release valves in place</p> <p>Eng/Admin - Access is restricted to authorised personnel. Admin - Awareness training provided. Admin - Good levels of housekeeping maintained with clean as you go policy in place. Admin - Information, instruction, supervision &amp; training.</p>	<p>Major</p>	<p>Unlikely</p>	<p>Low</p>		<p>Major</p>	<p>Unlikely</p>	<p>Low</p>

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<p>Substances Cryogenics</p> <p>Contact with substances stored at hazardous temperature. Contact or interaction with dangerous substances. Eye exposure to hazardous substance. Skin exposure to hazardous substance.</p>	<p>Laboratory Worker Staff Student</p> <p>Contact resulting in cryogenic Burns</p>	<p>Admin - Awareness training provided. Admin - Information, instruction, supervision &amp; training. Admin - General ventilation used. Admin - Safe System of Work (SSoW) established and trained out. Admin - Storage in accordance with substance requirement. Admin - University policy &amp; procedure guidance followed. PPE - Personal Protective Equipment (PPE) is issued and worn (specify). Admin - Awareness training provided. Admin - Information, instruction, supervision &amp; training. Admin - General ventilation used. Admin - Safe System of Work (SSoW) established and trained out. Admin - Storage in accordance with substance requirement. Admin - University policy &amp; procedure guidance followed. PPE - Personal Protective Equipment (PPE) is issued and worn (specify).</p>	<p>Major</p>	<p>Unlikely</p>	<p>Low</p>		<p>Major</p>	<p>Unlikely</p>	<p>Low</p>
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<p>Substances Cryogenics</p> <p>Inhalation exposure to hazardous substance. Contact with substances stored at hazardous temperature. Inhalation exposure to hazardous substance.</p>	<p>Laboratory Worker Staff Student</p> <p>Inhalation or ingestion causing loss of consciousness, and or Death</p>	<p>Eng - oxygen depletion sensors throughout lab Admin - Awareness training provided. Admin - Information, instruction, supervision &amp; training. Admin - General ventilation used. Admin - Safe System of Work (SSoW) established and trained out. Admin - Storage in accordance with substance requirement. Admin - University policy &amp; procedure guidance followed. PPE - Personal Protective Equipment (PPE) is issued and worn (specify).</p>	<p>Extreme</p>	<p>Unlikely</p>	<p>Moderate</p>		<p>Extreme</p>	<p>Unlikely</p>	<p>Moderate</p>
<p>NIR Electromagnetic Fields (EMF) High Magnetic Fields upto 1.2T</p>	<p>Laboratory Worker Staff Student</p> <p>Interference with medical Devices</p>	<p>Eng/Admin - Access is restricted to authorised personnel. Admin - Awareness training provided.</p>	<p>Serious</p>	<p>Unlikely</p>	<p>Low</p>		<p>Serious</p>	<p>Unlikely</p>	<p>Low</p>
<p>NIR Electromagnetic Fields (EMF) High Magnetic Field. upto 1.2T</p>	<p>Laboratory Worker Staff Student</p> <p>Bruising, from objects caught in field</p>	<p>Admin - Awareness training provided. Admin - Safe System of Work (SSoW) established and trained out.</p>	<p>Minor</p>	<p>Possible</p>	<p>Low</p>		<p>Minor</p>	<p>Possible</p>	<p>Low</p>

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<p>NIR Electromagnetic Fields (EMF) Exposure to electromagnetic fields (sensory/thermal effects) near to action levels (ALs) or exposure limit values (ELVs)</p> <p>Microwave source Q-Band (0.15 W maximum at 34 Ghz)</p>	<p>Laboratory Worker Staff Student</p> <p>Burns to Skin and/or Eyes</p>	<p>Eng/Admin - Access is restricted to authorised personnel.</p> <p>Eng - Specific guarding in place to reduce exposure.</p> <p>Admin - Safe System of Work (SSoW) established and trained out.</p> <p>Eng - Microwaves are contained with the system under normal operation</p> <p>Eng/Admin - Microwave guides not to be tampered with by untrained personell</p> <p>Admin - All microwave sources to be turned off prior to maintenance/modification</p> <p>Admin - Awareness training provided.</p> <p>Admin - Information, instruction, supervision &amp; training.</p>	<p>Serious</p>	<p>Unlikely</p>	<p>Low</p>		<p>Serious</p>	<p>Unlikely</p>	<p>Low</p>
<p>NIR Electromagnetic Fields (EMF) Exposure to electromagnetic fields (sensory/thermal effects) near to action levels (ALs) or exposure limit values (ELVs)</p> <p>Microwave source X-Band (1000 W maximum at 9.8 Ghz)</p>	<p>Laboratory Worker Staff Student</p> <p>Burns to Skin and/or Eyes</p>	<p>Eng/Admin - Access is restricted to authorised personnel.</p> <p>Eng - Specific guarding in place to reduce exposure.</p> <p>Admin - Safe System of Work (SSoW) established and trained out.</p> <p>Eng - Microwaves are contained with the system under normal operation</p> <p>Eng/Admin - Microwave guides not to be tampered with by untrained personell</p> <p>Admin - All microwave sources to be turned off prior to maintenance/modification</p> <p>Admin - Awareness training provided.</p> <p>Admin - Information, instruction, supervision &amp; training.</p>	<p>Serious</p>	<p>Unlikely</p>	<p>Low</p>		<p>Serious</p>	<p>Unlikely</p>	<p>Low</p>

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<p>Electricity Water leak from Cooling System</p>	<p>Laboratory Worker Staff Student Leak from from cooling water near electric equipment causing electrification and burns</p>	<p>Eng - Flood Sensors in place to shut off water supply in event of leak in local system Eng - Pressure drop sensors in place on recirculation units to stop water flow in event of major leak in system Admin - Visual checks completed before use. Eng - Cables and leads are appropriately insulated.</p>	<p>Major</p>	<p>Unlikely</p>	<p>Low</p>		<p>Major</p>	<p>Unlikely</p>	<p>Low</p>
<p>Work Environment Water leak from Cooling system</p>	<p>Laboratory Worker Staff Student Leak from from cooling water may cause: Slips/Falls</p>	<p>Eng - Flood Sensors in place to shut off water supply in event of leak in local system Eng - Pressure drop sensors in place on recirculation units to stop water flow in event of major leak in system Admin - Visual checks completed before use.</p>	<p>Minor</p>	<p>Unlikely</p>	<p>Very Low</p>		<p>Minor</p>	<p>Unlikely</p>	<p>Very Low</p>
<p>Electricity Contact with live 3 phase electrical supply and live wires.</p>	<p>Laboratory Worker Staff Student Electric Shock and/or burns</p>	<p>Eng - Cables and leads are appropriately insulated. Eng - Fixed guarding is in place preventing access. Eng - Electrical equipment is suitably fused and earthed. Admin - Information, instruction, supervision &amp; training. Admin - All fixed wire electrical installations are tested as per regime. Admin - Associated electrical equipment installed by competent persons. Admin - Safe System of Work (SSoW) established and trained out.</p>	<p>Major</p>	<p>Unlikely</p>	<p>Low</p>		<p>Major</p>	<p>Unlikely</p>	<p>Low</p>

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Electricity Contact with live electrics.	Laboratory Worker Staff Student Electric Shock and/or burns	Eng - Cables and leads are appropriately insulated. Eng - Fixed guarding is in place preventing access. Admin - Awareness training provided. Admin - Portable Appliance Testing (PAT) conducted as per regime. Admin - Safe System of Work (SSoW) established and trained out. Admin - Visual checks completed before use.	Major	Unlikely	Low		Major	Unlikely	Low
<b>Assessment Conclusion</b>	Existent system that has been safely operating for years, This update is effectively a review with minor changes. subject to sample RA								