**Risk Assessment Form – RA-** **VairableTemperatureRaman\_V1.1**

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| --- | --- | --- | --- | --- | --- | --- |
| Title of Assessment | Variable Temperature Raman/Photoluminescence | | | Date of assessment | | 05/01/2018 |
|  |  |  | | Date of review | | 11/02/2019 |
| Department | Physics | | | Date for review | | 11/02/2020 |
|  |  |  | |  | |  |
| Descriptions of Activities | Raman or Photoluminescence measurements conducted at variable temperature using the Linkam Scientific THMS600 or TS1500 | | | | | |
|  |  | |  | |  | |
| Name of those working to this assessment | Trained variable temperature users | | Any others who may be affected by this assessment | | People in Millburn house | |
| Assessment carried out by | Ben Breeze | |  | | | |
|  |  | |  | | | |

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| --- | --- |
| Additional information | These experiment is designed to be used in conjunction with other spectrometers (Renisahw inVia or Horiba LabRam) and the appropriate risk assessments should also be followed prior to use. This document only deals with the additional hazards posed by the addition of the variable temperature stage and as must be used alongside the relevant spectrometer Risk Assessment. |

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| **Foreseeable Significant Hazard** | **Hazard Risk** | **Existing control measures** | **Controlled residual risk** | **Further Action** where risk remains moderate/high | **By whom & when** | **Controlled Risk Level** |
| **Compressed Gas leak** | Asphyxiation | Read all relevant safety data sheets, University and Departmental Safety regulations and guidance, and pass any required safety tests.  All experiments must be conducted in a lab with oxygen sensors | (Extreme, Unlikely)  Moderate | None | Ben Breeze  29/11/2017 | Moderate |
| **Cryogenics** | Inhalation or ingestion causing loss of consciousness, asphyxiation or Burns. | Read all relevant safety data sheets, University and Departmental Safety regulations and guidance, and pass any required safety tests. | (Major, Unlikely)  Low | none | Ben Breeze  04/01/18 | Low |
| **Main electricity.** | Electric shock or burns. | Users are not to tamper with the equipment. All equipment must have an in date Pat test. | (Major, Unlikely)  Low | none | Ben Breeze  29/11/2017 | Low |
| **Obstructed walkways** | Slip, Fall | Do not block walkways, be aware of risk | (Minor, Possible)  Low | none | Ben Breeze  29/11/2017 | Low |
| **Laser Light** | Light affecting eye | Interlocks are overridden so the system is no longer Class one. With the stage in place it is impossible to get your eye in the path of laser beam. The beam is also very divergent after the focal point, See attached table for safe nominal optical hazard Distances for the different Excitation wavelengths.  During setup up, the Lasers must not be turned on until the stage is in place. Once the laser is turned on. All reflective surfaces should be removed from the enclosure and appropriate eye protection should be worn.  After the probe is in place laser must be kept below 1mW using the built in ND filters.  During normal operation a fabric cover will be placed over the enclosure to block all light from escaping.  Laser warning lights should be illuminated to alert other lab users and the experiment should not be left unattended with the laser in operation. | (Major, Possible)  Moderate | none | Ben Breeze  29/11/2017 | Moderate |
| **Explosion/implosion of cryostat/vacuum system** | Cuts from shards of glass/metal | Use of vacuum systems prohibited unless user is trained in the safe operation of the vacuum pumps. Safety valves are to be used and checked regularly. | (Major, Unlikely)  Low | none | Ben Breeze  04/01/18 | Low |
| **High temperature surfaces** | Burns | The stage must not be operated at high temperature without tis lid in place. The outer case of the stage is water cooled to limit the temperature. | (Major, Unlikely)  Low | none | Ben Breeze  04/01/18 | Low |
| **Water leak** | Electric shock and or burns and slips | Water cooling pipes/fitting should be inspected for leaks.  Lab flooding procedure (c.f. general risk assessment) should be followed. | (Major, Unlikely)  Low | None | Ben Breeze  04/01/2018 | 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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Any further actions required to allow work to commence | |  | | |
|  | |  |  |  |
| Approved By | Ben Breeze |  | Position | RTP - Manager |
| Date | 05/01/018 |  |  |  |

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** | **Overall Risk Rating** (highest level found) | Moderate |
| Extremely likely | **Moderate** | **High** | **Very high** | **Very high** | **Very high** |

*See ‘Matrix for risk evaluation’ for further guidance.*

Safe working distance for common experimental setup:

