

Risk Assessment Form

(This is an active document and must be maintained)



UNIVERSITY OF
CAMBRIDGE

Materials Science and Metallurgy

Date: 15th September 2017

Supervisor of Room/Area: **Prof. Serena Best & Prof. Ruth Cameron**

Room or area: **2_018 (CCMM Labs)**
(Describe location)

Name of Assessor(s): **Wayne Skelton-Hough**

Title of Activity / Experiment / Work Area:

Operation of the Micromeritics TriStar 3000 BET Surface area analyser.

Description of Activity / Experiment / Work Area:

Operation of the Micromeritics TriStar 3000 BET Surface area analyzer including the use of liquid nitrogen to cool samples and associated flow prep sample preparation equipment (FlowPrep 060).

SECTION 1: Identify all significant hazards, who or what may be affected by each individual hazard and controls in place to reduce risk to a minimum.

Hazard Description	Hazard to whom or what	Controls in place to reduce risk to a minimum
Electrocution	Person carrying out the procedure	<ul style="list-style-type: none">• Inspect all electrical equipment and power cables before use and do not use any equipment that shown any signs of damage.• Ensure electrical equipment carries an up to date PAT label before using it.
Injury from moving gas bottle	Person carrying out the procedure	<ul style="list-style-type: none">• Helium gas bottles for this equipment are stored in the bottle locker 2_022.• Gas bottles are only to be moved by suitably experienced personnel.• Correct manual lifting and handling techniques to be used when moving bottle.• Use a proper bottle trolley to move the gas cylinder.• Wear protective footwear that conforms to BS EN ISO 20345:2004.

Hazard Description	Hazard to whom or what	Controls in place to reduce risk to a minimum
Cuts from broken glass.	Person carrying out the procedure	<ul style="list-style-type: none"> • Care to be exercised when handling glass sample tubes, particularly when inserting and removing them from the TriStar 3000. • Any broken glass to be cleaned up immediately and disposed of on the broken glass disposal bin.
Cold burns from chilled glassware	Person carrying out the procedure	<ul style="list-style-type: none"> • Always allow sample tubes to warm up to room temperature before attempting to remove them from the TriStar following analysis.
Puncture wound and gas injection.	Person carrying out the procedure	<ul style="list-style-type: none"> • Extreme care to be exercised when handling the gas injector tube.
Burns from hot glassware, aluminum support or flow prep gas injector.	All laboratory users	<ul style="list-style-type: none"> • When removing hot samples from the hot side of the FlowPrep 060, handle tubes by the top only and move the tube, aluminum support and gas injector tube together. • Place all parts in the cold side of the FlowPrep to cool to room temperature before removing aluminum support and gas injector tube.
Asphyxiation	Operator or other lab users	<ul style="list-style-type: none"> • When collecting Liquid nitrogen, transport it using an appropriate container. • DO NOT transfer liquid nitrogen in any passenger lift. Use the goods lift only and do not travel in the lift with the nitrogen as specified in the departmental safety book • In case of spill, evacuate area and allow gas to dissipate.
Cold burns from liquid nitrogen	Operator or other lab users	<ul style="list-style-type: none"> • When handling liquid nitrogen always wear a lab coat, safety glasses and approved gloves. • Always use approved containers to transport liquid nitrogen and decant nitrogen slowly into the vacuum container.

SECTION 2: Emergency Procedures

In the case of cold burns, warm the affected area in a warm water bath, which has a temperature not to exceed 105°F (40°C). Never use dry heat. Seek medical attention as soon as possible. With hot burns, the affected area should be run under cold water for at least 15 mins until pain subsides. If symptoms continue, if the burn area is greater than 1% of the body surface (an area the size of the palm of the hand) or if the burn affects the face, hands, feet or genital area, medical attention must be sought.

If the operator sustains a cut, it should be cleaned out and medical attention sought.

In the case of a liquid nitrogen spill, evacuate the affected area and allow the gas to dissipate.

In order to shut down the equipment in an emergency, shut down the PC in the usual way (*if possible*), switch all electrical equipment off at its main sockets, shut gas bottle valve.

Signature of Assessor(s)		Date: 15/09/17
Signature of Supervisor		Date: 19/9/17

SECTION 3: Review - This assessment must be reviewed every 12 months or earlier if the basis of the original assessment is altered.

Review Date	Reviewed by (Signature)

Review Date	Reviewed by (Signature)

Change log

Change	Date	Updated by	Description
1	14/09/2017	W. Skelton-Hough	Document issued
2	15/09/2017	W. Skelton-Hough	Section 3 of risk assessment added back into document.