

Title of project/experiment/activity Use of ultracentrifuges			
Location of activity Cambridge Graphene Centre : Chemistry Lab		Start and end dates 24/08/2015 - continuous	
Brief description (or attach procedure/protocol) An ultracentrifuge creates a high centrifugal force for the separation of particles in a suspension based on differences in size, shape and density. The ultracentrifuge tubes are filled with a dispersion and carefully balanced loaded in opposite positions in the rotor which is then placed on the drive spindle. The centrifuge is then set to run below the maximum safety speed. Ultracentrifuges are located in the Cambridge Graphene Centre Chemistry Lab, and are used daily. All centrifuges in the lab are commercially made systems and will be used in accordance with the manufacturer's instructions.			
Hazard	Effect	Control measures	Residual risk
General hazards in lab	Inhalation of solvents Exposure to chemicals harmful to health	Other lab users will be using solvents with appropriate extraction in place. (Likelihood: 1, Severity: 1) Gloves, eye protection and lab coat must be worn whilst in the laboratory. The Chemistry Lab rules will be respected.	Low risk
Mechanical: the tubes may be broken if not balanced or placed properly in centrifuge, and may damage the centrifuge as well.	Inhalation of solvents Exposure to chemicals harmful to health Mechanical damage to rotor	Tube handling should take place in the solvent fume cupboard Tubes are balanced within ± 50 mg (0.05g) and properly placed in the centrifuge rotor. A careful rotor log should be maintained and rotors will be replaced after age/use expiry. (Likelihood: 1, Severity: 1)	Low risk
Electric shock	Shock to user, damage to equipment	Do not get outer parts of centrifuges wet. Clean up any spillages immediately. (Likelihood: 1, Severity: 1)	Low risk

Personal Protective Equipment required [eye/face protection, respiratory protection, gloves, lab coat etc]

Lab coat, gloves (purple nitrile) and eye protection (safety specs) required in the lab at all times

Emergency Instructions & First Aid

Spillage:

Solvent spillage or water-based dispersion spillage should not be more than 30 mL, and can be dealt by wiping with cleanroom wipes. The wipes disposed into waste bins or should be left to dry (in the case of solvent spillage) in the

solvent fume cupboard prior to disposal into waste bins.

Fire:

In case of fire, the fire alarm should be sounded and fire service called. If safe to do so, the fire may be extinguished using an extinguisher containing carbon dioxide, located in the corridor outside the laboratory.

First aid:

General advice: Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled: If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact: Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact: Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

Any special monitoring required [e.g. hearing test, vibration monitoring, health surveillance]

No

Further control measures required? If yes, list with actions.

Waste Disposal Procedures: Aqueous waste should be disposed in a container separate from solvent waste.

Solvents will be disposed of in suitable chlorinated (e.g. DCB, chloroform), or non-chlorinated (all others) waste containers.

In the case of equipment malfunction/failure: shutdown instrument and chiller from power buttons or directly from plug socket.

Biological/Laser/Radiation Approval [requires relevant Specialist Safety Officer signature and date]

N/A

Out of hours/Lone working

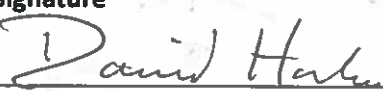

Centrifuges can only be used during working hours.

Department of Engineering – Risk Assessment

Ref No.

Signature to confirm that this is a suitable and sufficient assessment of risk and that stated control measures are in place. This risk assessment should be reviewed if additional risks not covered in this assessment are identified or if there is any reason to indicate that the control measures are insufficient.

Name of Assessor Dr. Stephen Hodge Email: sah211@cam.ac.uk	Signature 	Date 8/8/16
Name of Supervisor Prof A.C. Ferrari Email: acf26@cam.ac.uk	Signature 	Date 2/8/16

Local Safety Coordinator	Signature 	Date 13/4/17
Departmental Safety Office IAN SLACK	Signature 	Date 24 APR 2017

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