

Title of project/experiment/activity			
Use of Langmuir-Blodgett machine to make membranes			
Location of activity Cambridge Graphene Centre : ink Lab		Start and end dates 2015/11-continuous	
Brief description (or attach procedure/protocol)			
<p>A Langmuir–Blodgett trough is used to compress monolayers of nanomaterials or molecules on the surface of a given subphase (usually water) and measures surface phenomena due to this compression. It can also be used to deposit single or multiple monolayers of nanomaterial or molecules on a solid substrate by pulling the substrate out of liquid at a controlled speed.</p> <p>The formation of the monolayer on the liquid subphase is done <i>in situ</i>.</p> <p>The Langmuir-Blodgett system is a commercially made system and will be used in accordance with the manufacturer’s instructions.</p>			
Hazard	Effect	Control measures	Residual risk
Exposure to chemicals: Solvents, surfactants.	Hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (permeator).	Lab coat, gloves, eye protection and mask required during experiment	Low risk
Electrical shock	AC voltage may constitute electric shock hazard.	Examine the machine before experiment. If find any breakage or exposure of connecting wires, Do not operate the machine till problems being fixed	Low risk
Personal Protective Equipment required [eye/face protection, respiratory protection, gloves, lab coat etc]			
Gloves, Mask, Glasses.			
Emergency Instructions & First Aid			
<p>Spillage: Spillage can be handled using a standard spill kit available in the ink lab.</p> <p>Fire: When using ethanol, Isopropyl alcohol and other common solvents that could be flammable. 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.</p>			

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. Consult a physician.

In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed

Never give anything by mouth to an unconscious person. Rinse mouth with water. 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.

No

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


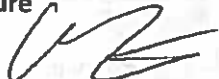
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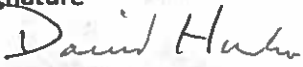

Out of hours/Lone working

Out of hours/lone working permitted if authorised by Supervisor. *Require permission from Head of Division.*

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 Panagiotis Karagiannidis Email: pk412@cam.ac.uk	Signature 	Date 31/8/2016
Name of Supervisor Prof A.C. Ferrari Email: acf26@cam.ac.uk	Signature 	Date 2/9/16

Local Safety Coordinator	Signature 	Date 2/11/16
Departmental Safety Office IAN SLACK	Signature 	Date 9 NOV 2016