

<b>Title of project/experiment/activity</b> Use of contact angle measurement set up			
<b>Location of activity</b> Cambridge Graphene Centre : Ink Lab		<b>Start and end dates</b> 24/08/2015 - continuous	
<b>Brief description (or attach procedure/protocol)</b>  The FTA1000 B is a commercially made contact angle measurement set up and will be used in accordance with the manufacturer's instructions after training. A Contact Angle is a method and apparatus for measuring the surface tension of liquids and wetting of surfaces.  Contact angles describe the shape of a fluid drop in contact with a solid. The instrument measures these by imaging the drop on a CCD camera and analyzing the captured images on a computer. Surface and interfacial tensions of fluids can be measured directly from drop shape.			
Hazard	Effect	Control measures	Residual risk
General hazards in lab	Inhalation of solvents Exposure to chemicals harmful to health.	The syringe contain small volumes (<1ml) of water or solvent based ink which is then droplets are dispensed onto the substrate and the solvent is evaporated. (Likelihood: 1, Severity: 1)  The use of various chemicals will be covered in separated risks assessments dealing with the preparation of nanomaterials inks and COSHH forms.  Gloves, eye protection and lab coat must be worn whilst in the laboratory. The Ink Lab rules will be respected.	Low risk
Mechanical: The setup has moving parts leading to potential pinch points.	User may trap fingers. Mechanical damage to equipment Finger piercing	Although it is not sharp care has to be take when using the needle of the syringe. (Likelihood: 1, Severity: 1).	Low risk
Electric shock	Shock to user, damage to equipment	Do not get outer parts of the printer wet. (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:**

Syringe are filled and sealed in the Chemistry Lab. Spillage here can be dealt with using a standard spill kit or clean room wipes.

**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: Syringes are opened and emptied into suitable chlorinated (DCB), or non-chlorinated (all others) waste containers prior to disposal. Syringe emptying is performed under the fume hood in the Chemistry Lab.

In the case of equipment malfunction/failure: shutdown instrument from main switch or directly from plug socket.

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


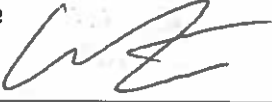


N/A

**Out of hours/Lone working**

N/A

**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.

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<b>Name of Supervisor</b> Prof A.C. Ferrari Email: acf26@cam.ac.uk	<b>Signature</b> 	<b>Date</b> 2/9/16
<b>Local Safety Coordinator</b>	<b>Signature</b> 	<b>Date</b> 2/11/16
<b>Departmental Safety Office</b> IAN SLACK	<b>Signature</b> 	<b>Date</b> 9 NOV 2016