

Title of project/experiment/activity Atomic Force Microscopy			
Location of activity EEDB Annexe, Ground floor, Atomic Force Microscopy Laboratory		Start and end dates 10/6/2016 – open-ended	
Brief description (or attach procedure/protocol) Atomic Force Microscopy is used for general sample surface characterization. The sample is placed on a motorized stage. The sample surface is scanned by an oscillating tip. A laser (633nm) is reflected from cantilever and the position of the reflected laser beam is monitored by a photodiode. The cantilever is deflected due to its interaction with the surface, which will in turn be reflected in a change in the reflected laser beam on the photodiode. Different sample properties such as conductivity and well as surface potential differences can be mapped with special modules and tips as well.			
Hazard	Effect	Control measures	Residual risk
Pinch point	Skin damage, bruises	The motorized stage can move in x-y direction. The movements of all axes are slow, but are capable of exerting high forces. Users should wait for the stage movement to finish before loading and unloading samples to avoid their hand being caught. Users should be careful when closing and opening hood of the AFM to not hit their head.	Low risk
Low power laser, Class 2M, 1mW max. power, 650-695 nm	eye damage	Low power laser is pointing downwards without any diffuse reflections. Users should not try to stare directly into the laser for long time or view laser through optics. Position where laser light is emitted is indicated on the scanner head by safety signs.	Low risk
Electrical shock	Shock to user	The internal electronics of the microscope, controllers, and peripheral equipment feature high-voltage components. All are no user-serviceable parts and can only be serviced by Bruker. Users should not attempt any system repairs.	Low risk
Personal Protective Equipment required [eye/face protection, respiratory protection, gloves, lab coat etc] No general personal protective equipment is required. Some samples might require wearing gloves.			
Emergency Instructions & First Aid Fire: In case of fire, the fire alarm should be activated and fire service called. Evacuate the building.			
Any special monitoring required [e.g. hearing test, vibration monitoring, health surveillance] N/A			
Further control measures required? If yes, list with actions. N/A			

Department of Engineering – Risk Assessment

Ref No.

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


Signature of Departmental Laser Officer:


Date:

Out of hours/Lone working

Out of hours working must be authorized according to Engineering Department regulation.

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 Anna Ott Email: ako24@cam.ac.uk	Signature 	Date 9.6.2016
Name of Supervisor Prof. A.C. Ferrari Email: acf26@cam.ac.uk	Signature	Date

Local Safety Coordinator	Signature 	Date 1/11/16
Departmental Safety Office	Signature	Date

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Approved by *Fco. Max. Avast*
 (Dr. Yury Alaverdgen)