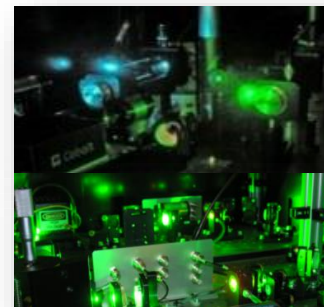


Central Laser Facility

Octopus and *Ultra* Facilities



The Central Laser Facility (CLF) supports users from academia and industry in the areas of imaging (the *Octopus* facility, p2) and ultrafast spectroscopy (the *Ultra* facility, p3).

- Two calls for access per year
- Access typically 1 – 4 weeks
- 100 weeks / year (*Octopus*), 60 weeks / year (*Ultra*)
- Applications peer reviewed by academic access panel
- Successful applications are free at the point of access and supported with travel, accommodation and subsistence in the UK

Details on applying for access can be found here:

<https://www.clf.stfc.ac.uk/Pages/Access-to-Octopus-and-Ultra.aspx>

Octopus and *Ultra* are housed in the Research Complex at Harwell (RCaH).

The CLF is an STFC funded organisation that supports UK academic science and industry with specialised lasers and instrumentation. The CLF is co-located with UK's international synchrotron radiation and neutron facilities, Diamond Light Source and ISIS, at the Rutherford Appleton Laboratory (RAL) on the Harwell Campus.



Science and Technology Facilities Council

Central Laser Facility



Medical Research Council



Engineering and Physical Sciences Research Council

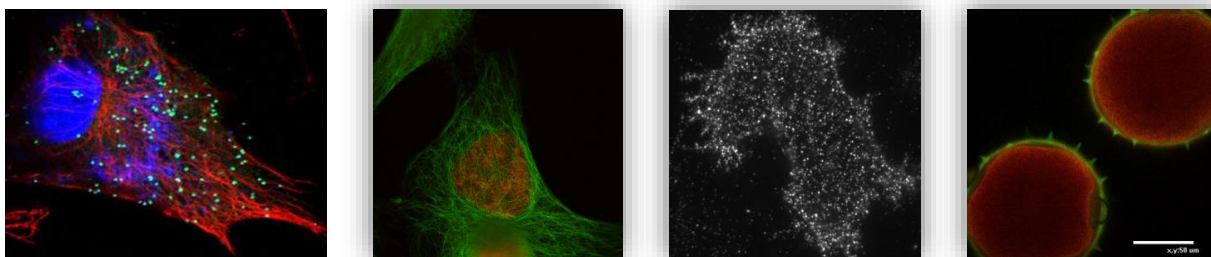


Biotechnology and Biological Sciences Research Council



Natural Environment Research Council





Octopus is a national user facility specialising in supporting UK science and industry with bio-imaging techniques

The Octopus facility supports and develops the latest microscopy techniques to enable successful applicants to perform complex studies in the areas of biological, chemical, environmental and materials science.

Super Resolution Microscopy

STORM/PALM 20 nm max xy resolution	Bruker Vutara SR-350. Max 0.5 Hz. Simultaneous two-colour 3D (biplane) imaging Zeiss Elyra PS1. Low speed. Sequential three-colour 3D (phase ramp) imaging	405, 488, 561, 642, 750 nm
Cryo-STORM 20 nm max xy resolution	FEI CorrSight & custom built microscope with cryo stage	405, 488, 561, 642 nm
Structured illumination 100 nm max xy resolution	Zeiss Elyra PS1. Any dye, low phototoxicity. Sequential three-colour imaging. z-stacks	
STED 50 nm max xy resolution	Leica SP8, 592/775 nm depletion, FLIM, FCS	470-680 nm
MINIFLUX 2D loc. prec. max 1 nm 3D loc. prec. 3 nm xyz	Abberior, 640 nm ex (MINIFLUX) 488, 640 nm ex (confocal)	640 nm

Light Sheet Microscopy

Up to 100 frames/s xy diffraction limited; z up to 0.86 μ m	Leica TCS SP8 DLS; fast 3D reconstruction of μ m-mm translucent samples; in-situ fluorescence imaging; sequential multi-colour detection	470-670 nm
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TIRF/Single Molecule Techniques

TIRF	Single molecule tracking, Single pair FRET, Stoichiometry, Single molecule polarisation	405, 488, 532, 561, 642 nm
FLiMP	ONI microscope- Nanometre molecular separation determination	488, 561, 640 nm

Optical Trapping

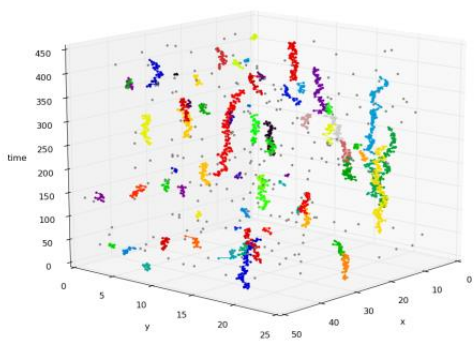
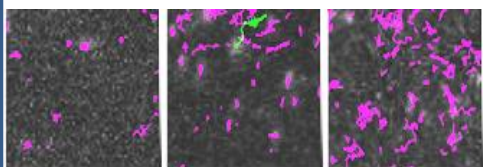
Optical Tweezers	Force Measurement, Raman Spectroscopy, Mie Scattering Spectroscopy, Confocal Microscopy	Wavelengths for trapping and Raman: 488 nm, 514 nm, 532 nm
Aerosol Trapping	FLIM/PLIM, TIRF Multi-colour	700 - 900 nm, 1064 nm, 1090 nm

Lifetime Imaging

Confocal	Fluorescence FLIM 25 ps-50 ns	Wavelengths: 405nm, 488 nm, 543, 561 nm
Multiphoton	Phosphorescence PLIM 100 ns-ms	Fianium, NKT 550 - 980 nm
Widefield	Multi-colour 2-16 channels, Multi-wavelength excitation	76MHz, 200fs

Cryo-electron Microscopy

Zeiss cross beam 550 XL	SEM with focused ion beam milling supporting slice and view mode
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Successful applications are given full support from a team of experienced professional scientists whose sole aim is to deliver high quality and high impact results on every project

A comprehensive range of laser-based imaging techniques and sample handling are supported

Suite of cutting edge, complimentary bio-imaging techniques

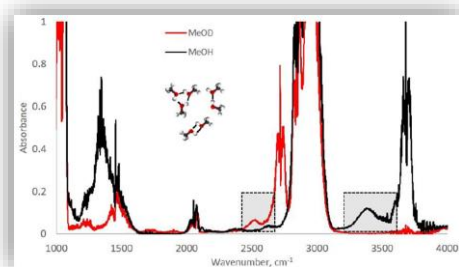
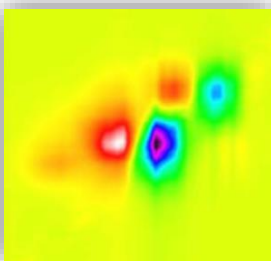
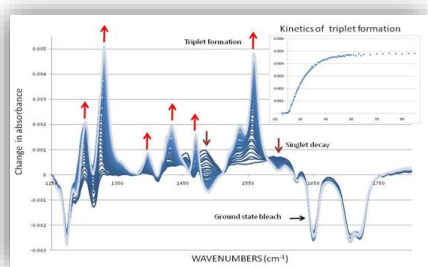
Animal cell culture facilities

Advanced, bespoke image analysis

Chemistry and biological prep labs

Interdisciplinary operations team

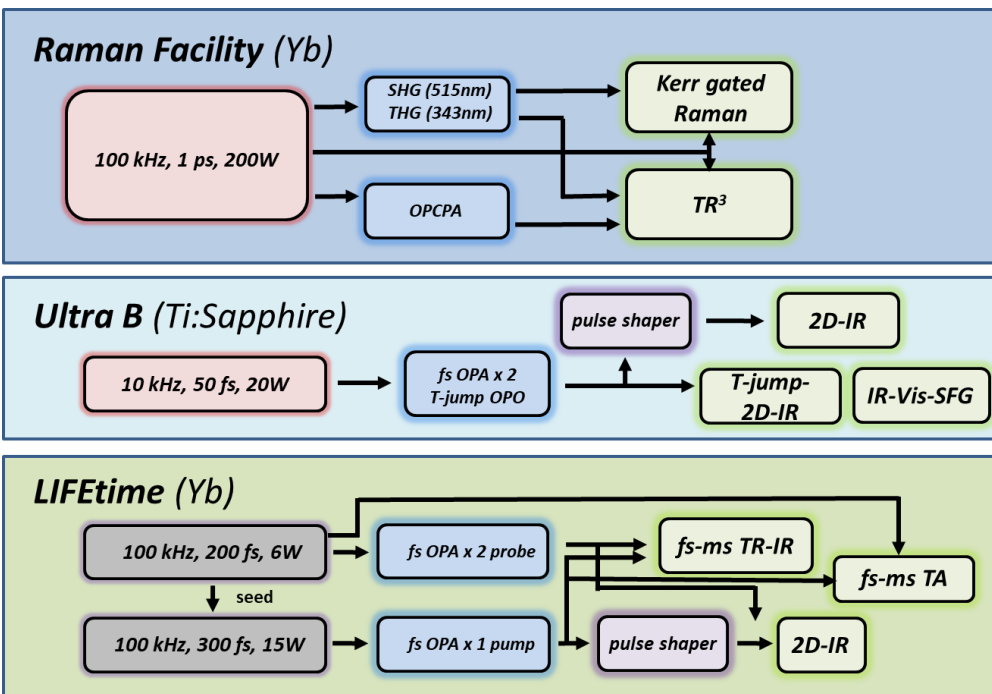
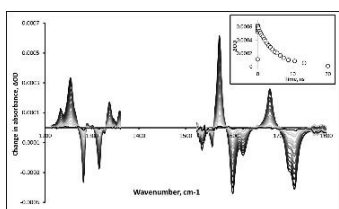
Access to simulation /modelling expertise for interpretation



Ultra is a national user facility specialising in supporting UK science and industry with ultrafast laser spectroscopy



The Ultra facility hosts three unique laser systems, supporting a variety of complementary ultrafast measurements



A comprehensive range of spectrometers, detectors and sample handling are supported

- Multiple probe colours (UV – MIR)
- Multiple probe pulses spanning fs-s delay range in a single measurement
- Interferometry
- Infrared pulse shaping
- Broad bandwidth IR probing (500 cm⁻¹)
- 256 MCT element probe detection + referencing @ 1 – 100 kHz
- High sensitivity spectroscopy CCD
- In-house data acquisition and processing software
- Surfaces, liquids, solids and gases
- Temperature control, 10 - 600 K
- Sample cells for continuous liquid flow, rapid mixing and low volumes
- Labs and support for sample preparation

Successful applications are given full support from a team of experienced professional scientists whose sole aim is to deliver high quality and high impact results on every project