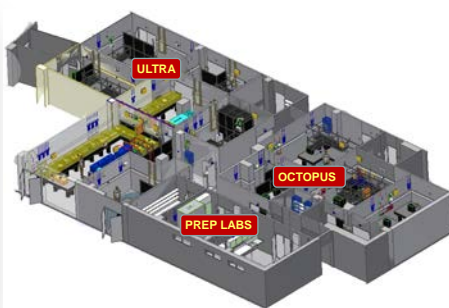


Central Laser Facility

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).

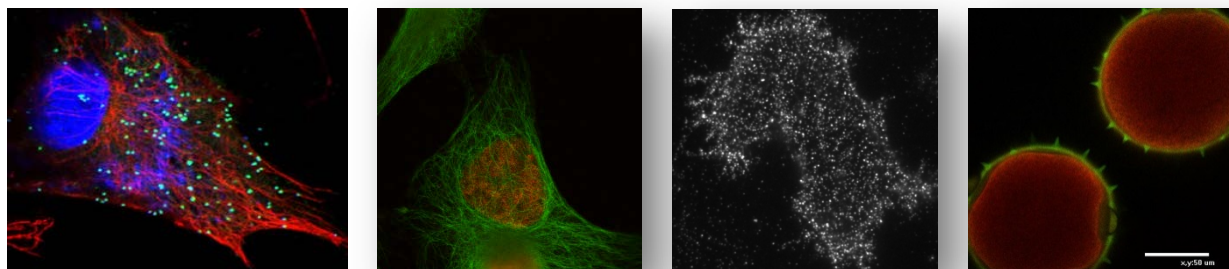
- Two calls for access per year
- Access typically 1 – 4 weeks
- 100 weeks / year (*Octopus*), 60 weeks / year (*Ultra*)
- Applications peer reviewed by academic access panel
- Successful applications are free at the point of access and supported with travel, accommodation and subsistence

Details on applying for access can be found here: <http://www.clf.stfc.ac.uk>

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

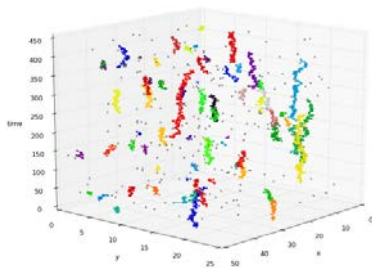
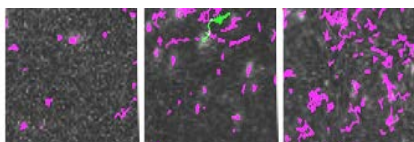
The CLF is an STFC funded organisation that supports UK academic science and industry with specialised lasers and instrumentation. The CLF is co-located with UK's international synchrotron radiation and neutron facilities, Diamond Light Source and ISIS, at the Rutherford Appleton Laboratory (RAL) on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





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

Structured illumination
100 nm max xy resolution

STED
50 nm max xy resolution

Bruker Vutara SR-350. Max 0.5 Hz.
Simultaneous two-colour 3D (bipplane) imaging
405, 488, 561, 642, 750 nm

Zeiss Elyra PS1. Low speed.
Sequential three-colour 3D (phase ramp) imaging
405, 488, 561, 642 nm

Zeiss Elyra PS1. Any dye, low phototoxicity.
Sequential four-colour imaging. Z-stacks

Leica SP8. 592/660/775 nm depletion, 3D, FLIM, FCS
470-680 nm

TIRF/Single Molecule Techniques

TIRF → Single molecule tracking, Single pair FRET, Nanometre separation, Stoichiometry, Single molecule polarisation
405, 488, 532, 561, 642 nm

ALEX → Accurate single molecule FRET spectroscopy
532, 642 nm

Optical Trapping

Optical Tweezers → Force Measurement, Raman Spectroscopy, Mie Scattering Spectroscopy

Aerosol Trapping → Confocal Microscopy, FLIM/PLIM, TIRF Multi-colour

Wavelengths for trapping and Raman
488 nm, 514 nm, 532 nm, 700 – 900 nm, 1064 nm, 1090 nm

Lifetime Imaging

Confocal → Fluorescence FLIM 25 ps-50 ns

Multiphoton → Phosphorescence PLIM 100 ns-ms, Multi-colour 2-16 channels, Multi-wavelength excitation

Widefield →

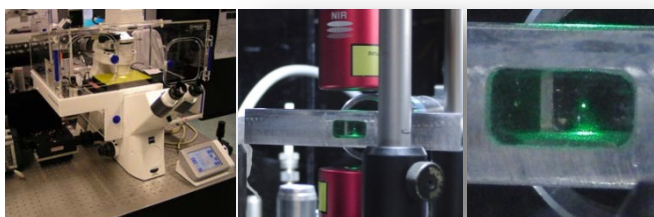
Wavelengths
405nm, 488 nm, 543, 561 nm, Fianium, NKT 550 – 980 nm, 76MHz, 200fs

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

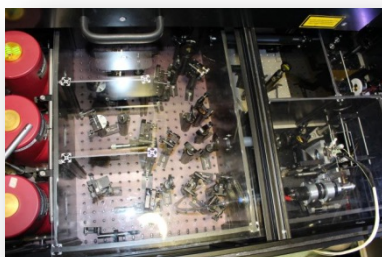


Chemistry and biological prep labs

Interdisciplinary operations team

Access to simulation /modelling expertise for interpretation

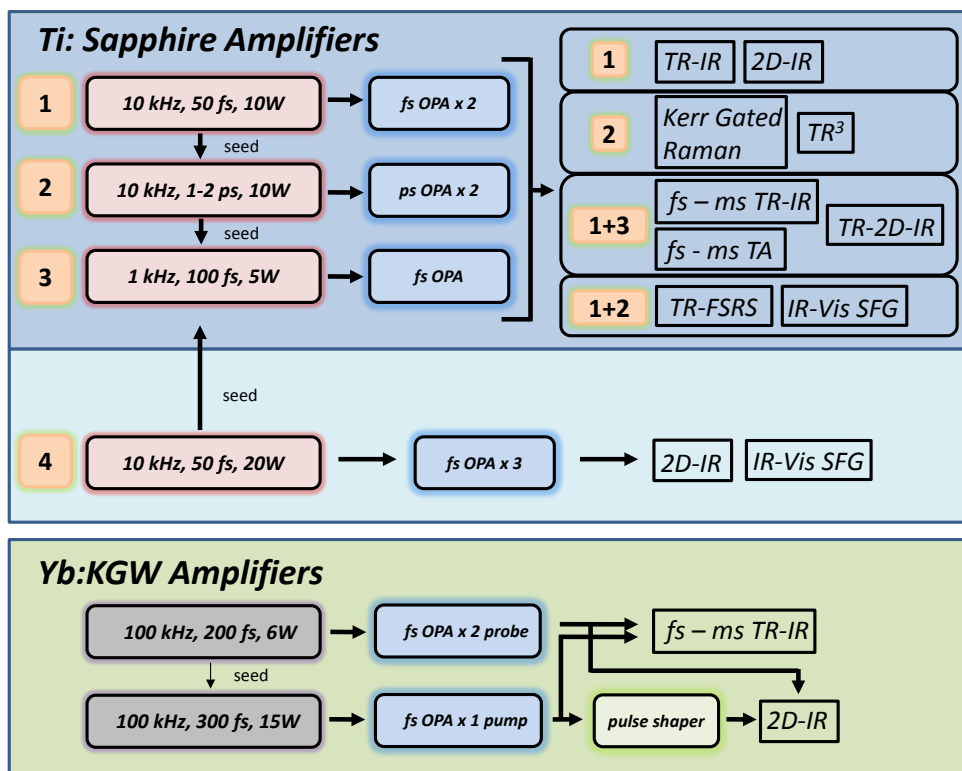
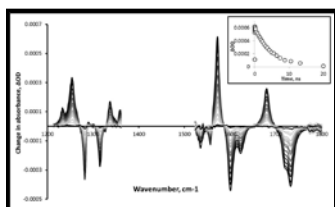
Successful applications are given full support from a team of experienced professional scientists whose sole aim is to deliver high quality and high impact results on every project



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

Multiple probe pulses spanning fs-s delay range in a single measurement

Interferometry

Infrared pulse shaping

Simultaneous TR-IR and TA

Broad bandwidth probing (500 cm⁻¹)

256 MCT element probe detection + referencing @ 1 – 100 kHz

High sensitivity CCD spectroscopy cameras

In-house data acquisition and processing software

Spectroscopy on liquids solids and gases

Full temperature control, 10 - 800 K

Sample cells for continuous liquid flow, rapid mixing and low volumes

Chemistry labs and support for sample preparation