

EXPLORE  
what we can do

## OUR MISSION

'Successfully linking Research,  
Education and Practice to meet  
your challenges and needs.'



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### TEAM

**Dr Robert Batchelor** Director  
**Dr Nathalie Marini** Environmental Science Projects Manager  
**Dr Stuart Black** Associate Professor, Radioactive and stable isotopes  
**Dr Lawrence Harwood** Director of the Chemical Analysis Facility  
**Dr Peter Harris** Manager of the EMLab  
**Dr Tom Sizmur** Potentially toxic elements  
**Dr Geoff Warren** Soil and water biogeochemistry  
**Kevin Williams** Environmental Archaeological Technician  
**Dr Kevin White** UAV, Remote sensing and Geomorphologist

## Interested in a career in Environmental Science?

Why not consider studying at Reading University where Quest funded internships,  
funded dissertation placements and career opportunities are available.

[www.reading.ac.uk](http://www.reading.ac.uk)

Further details are available from:  
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**QUEST**  
QUATERNARY SCIENTIFIC



# STATE OF THE ART

Environmental  
science services

[www.reading.ac.uk/quest](http://www.reading.ac.uk/quest)

# SCIENCE THAT WORKS FOR YOU

**Quest** is a well-established commercial enterprise within the School of Archaeology, Geography and Environmental Science (SAGES) at the University of Reading.

We provide an expert environmental and archaeological science service to environmental consultancies, government organisations and archaeological companies. Since 1996, the business

has expanded to include a network of specialist and technical staff that service all aspects of environmental science and archaeological science contract work.

## FACILITIES AND ANALYTICAL SERVICES

Excellent geochemistry laboratories with facilities for inorganic quantitative mineralogical and elemental determinations. The facilities available are: AAS; XRD; XRF (Lab and portable); ICP-OES; ICP-MS; as well as organic determinations GC, HPLC, GC/MS; GC-C-IRMS.

World-class facilities for the analysis of inorganic and organic compounds for bulk and compound specific stable isotope composition ( $\delta^{2}\text{H}$ ,  $\delta^{13}\text{C}$ ,  $\delta^{18}\text{O}$ ,  $\delta^{15}\text{N}$ ), as well as bulk organic samples, carbonates and liquids. Analysis of radiogenic isotopes ( $^{210}\text{Pb}$ ,  $\text{Pb}$  isotopes,  $\text{U}$ -series) is also available.

Equipment for measurement of nitrate, ammonia, phosphate, chloride and carbon in soils, sediments and water.

World class laboratory facilities for the analysis of pollen, diatoms, insects, waterlogged wood, seeds, charcoal, charred seeds, Ostracoda and Foraminifera, Mollusca, phytoliths, fungal spores and testate amoebae.

Dedicated sedimentology and soil science laboratories for sediment description, soil micromorphology, particle size analysis, and the determination of magnetic susceptibility, porosity, grain density and peat humification, phosphate, organic matter, inorganic carbon, total organic carbon, dissolved organic carbon and cation exchange capacity.

Links to the University's on-site Chemical Analysis Facility which boasts a state of the art instrument suite offering NMR spectroscopy, mass spectrometry, optical spectroscopy and thermal analysis.

Access to the comprehensive facilities and expertise of the on-site Electron Microscopy Laboratory (EMLab) providing electron microscopy (SEM, TEM), X-ray microanalysis (EDX, WDX) and visible light and IR microscopy.

Computing and computer graphics suite supporting PC systems, ArcGIS geographical information systems (GIS), Rockworks (for sub-surface deposit modelling), Erdas Imagine landscape analysis and visualisation, and remote sensing, including high-resolution photogrammetric surveys using unmanned aerial vehicles.

Geochronology laboratories offering tephrochronology and dendrochronology facilities and strong links with external radiocarbon,  $^{210}\text{Pb}$ ,  $\text{U}$ -series, OSL and T-L dating laboratories.

## EXPERIENCE

Members of the Quest team have been involved in a wide range of projects, both in the UK and abroad. The projects have involved a diverse range of analyses on a variety of materials based within the following themes:

### Soil and vegetation

Elemental analysis of soils, plants, fertilisers and organic amendments, as well as extensive experience of carbon fractionation, sequential extraction of potentially toxic elements, bioavailability/bioaccessibility assessment of PAHs, batch sorption isotherms, and soil microbial community fingerprinting.

Full characterisation of soil fertility and crop health including soil nutrient availability, water release curves, particle size distribution, soil biological health ( $\text{CO}_2$  burst, enzyme assays), micronutrient analysis of soils and plants, cation exchange capacity, leaf chlorophyll content, greenhouse gas release and geomorphological mapping using remote sensing observations.

### Minerals, metals and waste

Comprehensive chemical analysis of a range of minerals and metals drawing on the geochemical experience within the School, including polluted soil and sediments, modern and archaeological coins, mineral deposits and minewater from abandoned mine sites.

Physical and chemical analysis of biochars, anaerobic digestates, composts and sludges prior to land application including nutritive value, potential for contamination, physical structure, and effects on soil health.

### Water

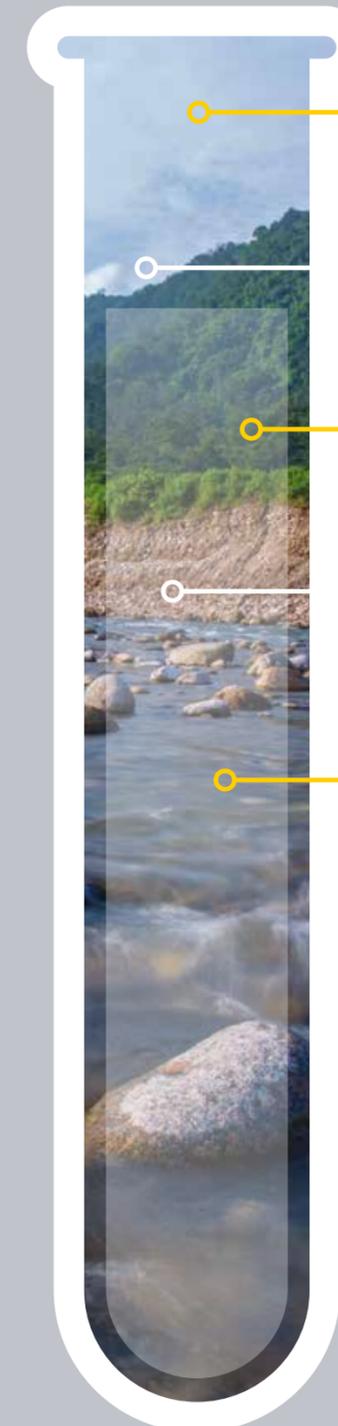
Analysis of water samples for a full suite of organic, inorganic and isotopic chemical properties including dissolved organic carbon, nitrate, phosphate, and bespoke analysis of trace contaminants (e.g. Metaldehyde) in surface water, groundwater and brackish water.

Assimilation and modelling of high-frequency water flow/quality data for catchment-based and individual flow modelling for forecasting floods, droughts and environmental impacts. Land surface modelling of soil-vegetation-atmosphere micrometeorological and hydrological data to predict water stress on canopy exchange.

### Geochemical analysis

Full analysis and dating of a variety of organic samples from plants (e.g. seeds, pollen grains, diatoms) and animals (e.g. hair, fur, feathers, fish scales) for elemental composition, stable and reactive isotopes, and microscale morphology using electron microscopy.

Full analysis of inorganic materials (e.g. water, soil, rock samples, flints) for elemental fingerprinting, mineralogical characterisation, elemental speciation, and isotopic composition.



**Remote sensing data** captured by Unmanned Aerial Vehicles can be used to study geomorphological and environmental processes.



**Gas** measurements can be made in the laboratory and the field to analyse the fluxes of greenhouse gasses from land to the atmosphere.



**Vegetation** can be analysed to determine the concentrations of nutrients or pollutants in plant tissues and assess crop health.



**Soils and sediments** can be characterised to identify pollutants, assess soil biological health, chemical fertility, physical structure and water release characteristics.



**Water** can be subjected to a wide range of laboratory chemical analysis to characterise nutrient and pollutant loadings or monitored *in-situ* using high frequency analysis platforms.