

# MACAULAY SCIENTIFIC CONSULTING LTD



Serving your analytical needs

# Independence, Quality and Value



## Assured Analytical Excellence provided by:

- Access to extensive resources
- Multidisciplinary
- Highly qualified personnel
- Data interpretation
- Innovative and flexible
- Ability to undertake Research and Development work
- State of the art instrumentation
- Independent un-biased approach
- Flexible working ethos

# Independence, Quality and Value

- **ISO17025 accreditation**

Covers 50 different analytical techniques

- **ISO9001 accreditation**

- **Involved in the preparation of new EU Certified Reference Materials**

- **Inter-laboratory trials**



# Oil & Gas Industry :

- Crude oils and waxes
- Produced Waters
- Potable Waters
- Drilling Fluids
- Drill Cuttings and Wastes
- Production Chemicals...



## Characterisation:

- Metals/Steels
- Polymers/Plastics/Rubbers
- Rocks
- Cements...



## Identification:

- Scales
- Corrosion Products
- Problem deposits
- Contaminants...



# Local Authorities, Waste Managers, Environmental Consultants and Engineers

- Soils
- Marine and river sediments
- Potable waters
- Effluents and wastes...

## Example:

Nitrate and toxic heavy metals monitored in groundwater near landfill



## Example:

Persistent organic pollutants such as PAHs and PCBs may be identified and quantified in river and marine sediments

# Other Industrial Sectors

- Natural Resources
- Building and Construction
- Food & Drink
- Metallurgy
- Materials
- Cosmetics
- Manufacturing
- Engineering
- Pharmaceutical



# Infrared spectroscopy

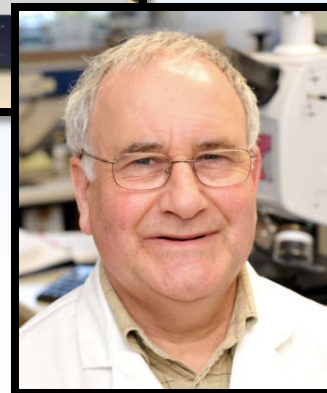
## FTIR, FIR, NIR & IR



**Identification and quantification of:**

- Solids
- Liquids
- Organic
- Inorganic

**Can analyse very small samples. Typically <1mg**



# Organic Analysis

## GC, GC-MS & HPLC

Identification and quantification of:

- Biologically derived organics
  - PLFA, pigments, amino acids...
- Petroleum hydrocarbons
- Refined oils
- Organic contaminants
  - PAH's, PCB's,  
PBDE's, POP's,  
EDC's...

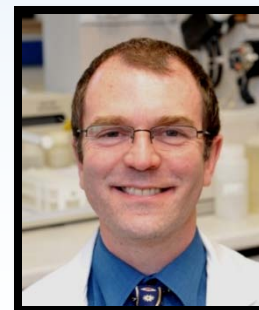


# Inorganic Analysis

ICP-OES, ICP-MS, Colourmetric,  
Ion Chromatography - Dionex & TOC

Identification and quantification  
of the inorganic components in:

- Waters
- Inorganic deposits,
- Scales
- Corrosion products
- Mud & Soil extracts...



# Inorganic Isotope Analysis

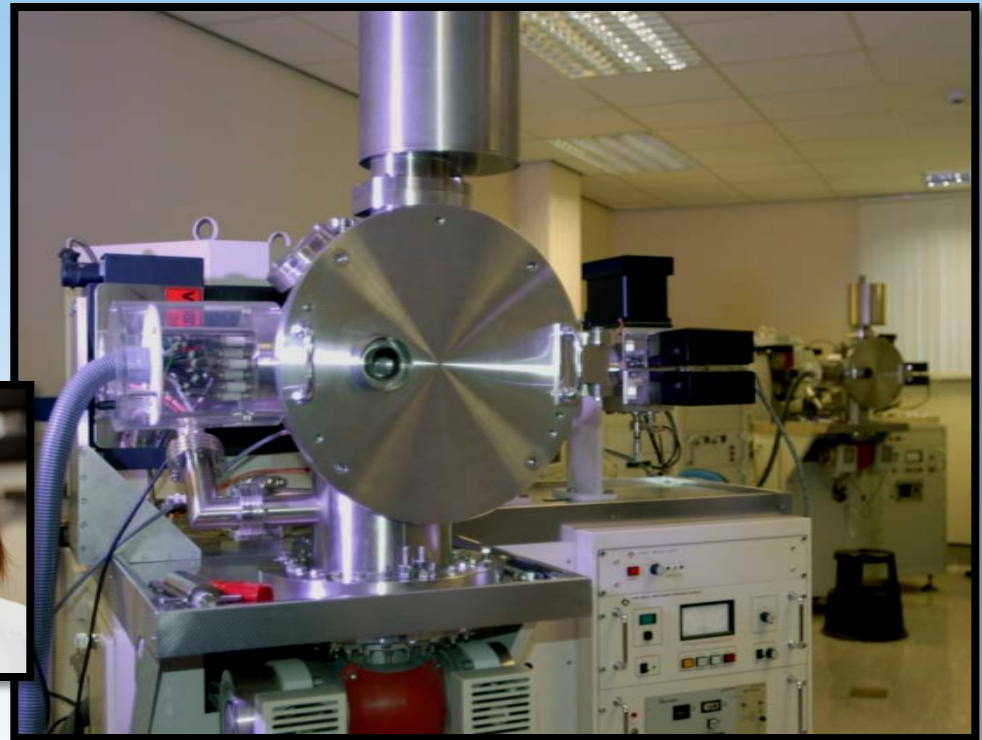
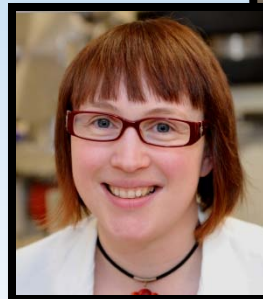
## Thermal Ionisation Mass Spectrometry

Analysis of Sr and Nd-Sm isotopes from:

- Rocks
- Waters
- Drill cuttings

For:

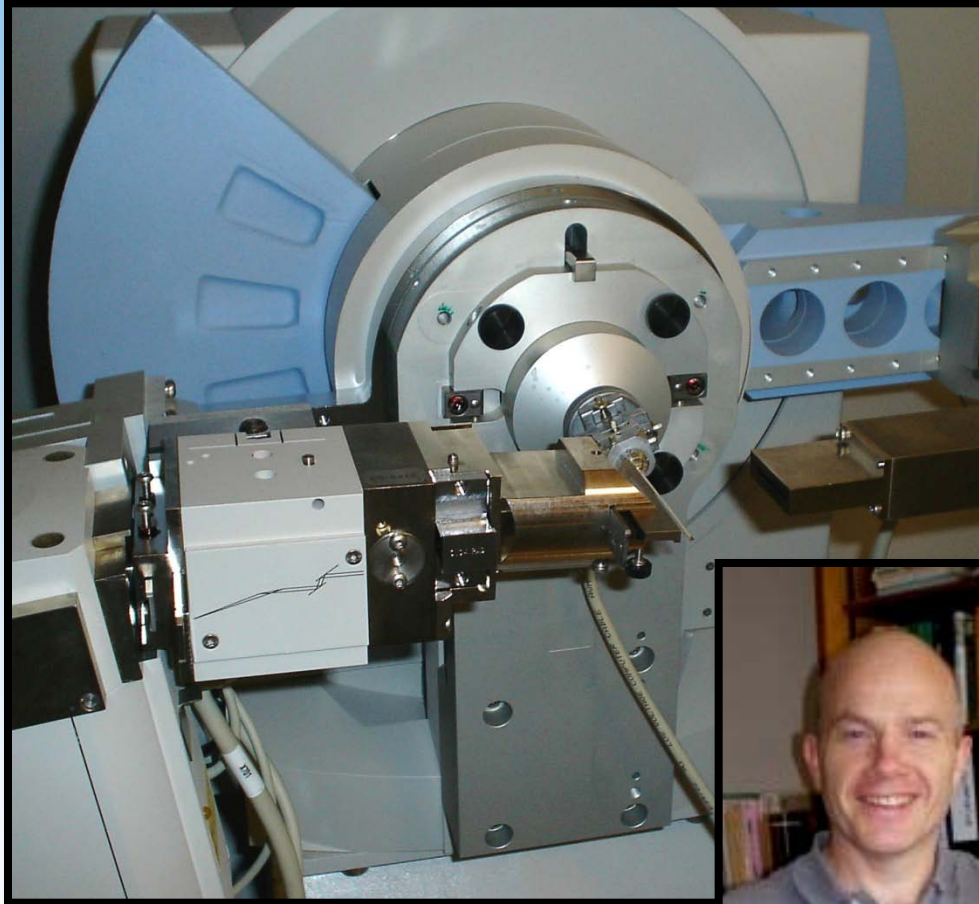
- Stratigraphy
- Connectivity
- Dating
- Provenance studies...



Working in conjunction with ISOTOPIC



# X-Ray Powder Diffraction Analysis



Identification of solids through their crystalline structures.

Can be used for proportional quantification.

For example:

- clays
- rocks
- soils
- drilling muds
- corrosion products
- cements ...

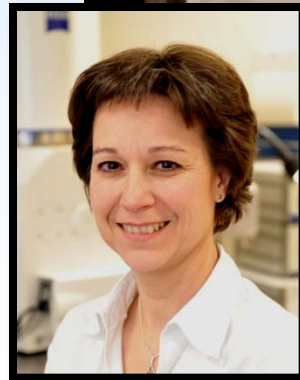


# Electron Microscope Analysis

## Scanning Electron Microscopy and Energy Dispersive Spectroscopy

Analyses both morphology and composition of:

- Biological materials
- Geological materials
- Fibres
- Powders
- Filters
- Dust
- Oilfield materials...

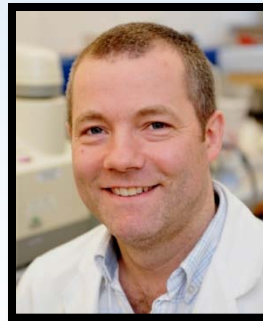


# Soil & Sediment Analysis



## Analysis of Soils & Sediments

- Organic composition
- Inorganic composition
  - e.g. exchangeable cations
  - elemental composition
  - fertility
  - pH...
- Physical Properties
  - e.g. Particle size...



# Isotope Analysis

## Isotope Ratio Mass Spectrometry

### Light Isotope Analysis:

- Carbon,  $\delta\text{C}$
- Nitrogen,  $\delta\text{N}$
- Oxygen,  $\delta\text{O}$
- Hydrogen

### Samples:

- Soils
- Plant material
- Gases
- Aqueous samples...



# Contact Us

**Bill Donald,**  
Commercial Manager  
Tel: 01224 395103  
Email:



b.donald@macaulay.ac.uk

**Andy Midwood,**  
Head of Analytical Group  
Tel: 01224 395112  
Email:



a.midwood@macaulay.ac.uk

**Or visit our web-site at:**

**<http://www.macaulay.ac.uk/analytical>**