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Welcome to the Material and Chemical Characterisation Facility (MC²) wiki space

The former University Core Research Facilities of CCAF and MAS have been recently merged and restructured to form the Material and Chemical Characterisation Facility (MC²). These services are available to all researchers at the University of Bath, as well as researchers from other Universities and external companies. The equipment is listed in the pages below.

For further information on availability and costs, please do not hesitate to contact the service managers direct via the individual service pages linked below, or the Head of MC² (Dr Anneke Lubben) by [email](#) or phone 01225 384173 (x4173).

This wiki space is no longer maintained. Please visit our new space: <https://wiki.bath.ac.uk/display/MC2>

Mass Spectrometry

Accurate mass and isotope determination

- ESI and APCI ionisation available, coupled to a time-of-flight (TOF) analyser. LC-MS service also offered.
- Analysis of air-sensitive compounds using a glovebox - mass spectrometer combination
- Analysis of intact and digested protein samples by nanoLC-MS



For Open Access training [click here](#).

NMR Spectroscopy

Determination of structure in solution. Spectrometers ranging from 250-500 MHz are available, and a complete range of modern multinuclear experiments can be run.

Time can be booked on three instruments (click on the link):

- [400 MHz in Chemistry](#)
- [500 MHz in Chemistry](#)
- [500 MHz in Pharmacy](#)

For specific information on NMR in Pharmacy and Pharmacology or Chemistry please click on the links below

[NMR Spectroscopy in Pharmacy and Pharmacology](#)

[NMR Spectroscopy in Chemistry](#)

X-Ray Diffraction

- [X-Ray Powder Diffraction \(XRPD\)](#) - phase diagrams of crystalline powders or crystalline deposits on matrix. Determination whether a sample is crystalline or amorphous.
 - [Single Crystal X-Ray Diffraction](#) - full structural characterisation from a suitable single crystal (i.e. shape of molecule, content of molecule, all geometric data, how molecules pack together, intermolecular forces).
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Thermal analysis and other materials characterisation techniques

- Thermogravimetry coupled with mass spectrometry (TGA) - used to monitor the change of mass as a function of temperature
 - [Differential Scanning Calorimetry \(DSC\)](#) - used to determine endothermic or exothermic physical transformations; widely used to ascertain sample purity and to study polymer curing
 - Microcalorimetry - a technique of DSC suitable to liquids and solids, with high sensitivity
 - Dynamic Mechanical Analysis (DMA) - detects thermal effects based on changes in the modulus
 - Physisorption - measurement of the BET surface area and the pore size distribution
 - Size Exclusion Chromatography (aka GPC) - determination of the molecular mass distribution of a polymer
 - [Elemental Analysis \(CHN\)](#) - determination of mass fractions of carbon, hydrogen and nitrogen within the sample
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The DReaM (Dynamic Reaction Monitoring) Facility

Reaction monitoring of homogeneous processes, using NMR, MS (liquids and headspace), HPLC and UV.