

## Facilities

Across the University, we host the NERC Facility for Environmental Nanoparticle Characterisation (FENAC), while other facilities available on campus include the Advanced Mass Spectrometry, X-Ray Diffraction etc.

Within our research, members of the EHS research group also frequently use external facilities, such as Large-Scale Simulation Chambers (EUPHORE, AIDA, LOTASC), cutting-edge analytical facilities such as the NERC 14C Radiocarbon Facility, and Research Aircraft (the NERC FAAM BAe-146 aircraft, and the NASA Global Hawk Unmanned Aerial Vehicle).

Our Facilities for Atmospheric Chemistry and Air Pollution Research include:

### Extensive analytical facilities

A number of GC-MS, GC-FID and GC-ECD analysers; LC-MS systems, two Dionex (Ion Chromatography) analysers, atomic absorption spectrometers, Sunset labs organic / elemental carbon analyser.

### Atmospheric field measurement instrumentation

#### Aerosol

Hi-Volume, Partisol, Digitel and Moudi samplers for PM mass and composition studies; Scanning Mobility Particle Spectrometers (DMA / CPC) for fine aerosol size distribution measurement; APS for coarse aerosol size measurement; Grimm optical particle spectrometers; TSI Aerosol Time-of-Flight Mass Spectrometer (ATOFMS) for online single particle composition measurement.

#### Gas-Phase

Standard monitors for O<sub>3</sub>, NO<sub>x</sub>, CO, CO<sub>2</sub>, SO<sub>2</sub>. Picarro fast CRDS system for CO/CH<sub>4</sub>/N<sub>2</sub>O/H<sub>2</sub>O. A range of handheld / small scale monitors to assess exposure to NO<sub>x</sub>, O<sub>3</sub>, CO, VOCs and a range of PM metrics. We have also developed our own novel instrumentation for the detection of atmospheric halogen species, and to directly measure local chemical in situ ozone production rates.

#### Mobile laboratory

Mobile laboratory for atmospheric field measurements, and two stations for air quality measurements on the University campus (roadside and urban background locations).

### Laboratory atmospheric chemical facilities

These include a laser photolysis / UV absorption spectroscopy system for chemical kinetics; flow tube / electrodynamic balance system for aerosol ageing and optical characterisation; and flow-tube / PERCA system for heterogeneous chemistry studies.

### Atmospheric chemical modelling expertise

Expertise in the development and use of the Master Chemical Mechanism (MCM), the UK Photochemical Trajectory Model (PTM), the ISORROPIA aerosol thermodynamics algorithm, the City-CAT lagrangian tropospheric chemistry model, CRI-Mech, RANS/RAMS nested air pollution models, and coupled chemical-LES capability for the study of street canyon processes.