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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 O3, NOx, CO, CO2, SO2. Picarro fast CRDS system for CO/CH4/N2O/H2O. A range of handheld / small scale monitors to assess exposure to NOx, O3, 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 Citty-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.

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