# ADSORPTION RESEARCH AT THE SCHOOL OF ENGINEERING

# **Adsorption Laboratory**

**EQUIPMENT** @ the School of Engineering



#### **1** Quantachrome PoreMaster 33 – Mercury Porosimeter

- Achieves a maximum pressure of 33,000 psia for the study of pores in the range from >950 micron to 0.0064 micron pore diameter.
- Provides pore size, pore volume, bulk and apparent density, porosity, particle size and related properties.
- High-pressure ports operate in continuous scanning or stepwise pressurization modes.
- Obtains complete intrusion and extrusion data in as little as 10 minutes.



NIVA



#### Quantachrome AutoTap and Ultrapycnometer

- For bulk and skeletal density measurements.
- Determines the bulk volume of irregularly shaped biomaterials using free-flowing granular or powdered medium.
- Provides accurate information on open and closed percent porosity, non-destructively, using dry gas.

# 3

2

### Quantachrome Autosorb-iQ-C

- For BET surface and volumetric adsorption isotherm system
- Can tackle any pore size, surface area or catalyst characterization problem.
- Has a combined chemisorption physisorption manometric analyzer that features built-in degassing stations and an optional second physisorption port.





#### Quantachrome Porometer 3G zh

- Uses liquid expulsion to measure pore size distributions through pores.
- Generates gas permeability information from the pressure and flow rate data.
- The pressure capability of up to 500 psi allows pore sizes from 500  $\mu$ m to as small as 18nm to be measured.
- Can characterize the widest variety of materials.

For more information, please contact: s.brandani@ed.ac.uk

www.eng.ed.ac.uk/carboncapture





#### Setaram Sensys Evo TG/DSC

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- For gravimetric and calorimetric measurements (equilibrium and kinetic).
- High precision and wide temperature range (-120 to 830 °C).
- The sample and reference sensors are composed of 120 thermocouples mounted in a cylinder surrounding the measurement zone.

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• The two cylinders can measure up to 94% of all heat exchanged with the sample/reference

## Two Zero-Length Column systems

- Rapidly ranks the capacity of adsorbents using small quantities of sample (<15 mg).
- Tests the influence of water, SO<sub>x</sub> and NO<sub>x</sub> in carbon capture applications.





# NATIONAL INSTRUMENTS

#### **National Instruments Compact Rio**

- Built upon the LabVIEW graphical system design programming platform.
- Performs advanced signal processing, frequency analysis, and digital signal processing.







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9 Mixture gas dosing system
• Provides accurate dosing of vapours

# Dual Piston Pressure Swing Adsorption / Vacuum Swing Adsorption System

- Operates at up to one cycle per second.
- Can provide direct evidence of the ability of a given adsorbent to separate a binary mixture.



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