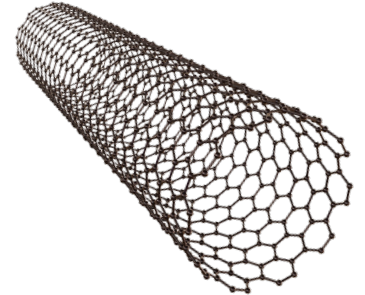


# Combustion

## Instruments for aerosol measurement & conditioning



material characterisation

filtration efficiency

air quality

workplace exposure

ice nuclei      PPE testing

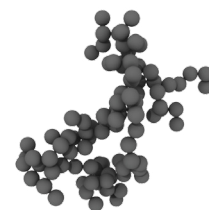
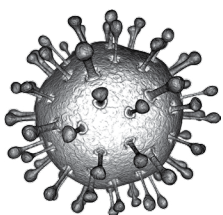
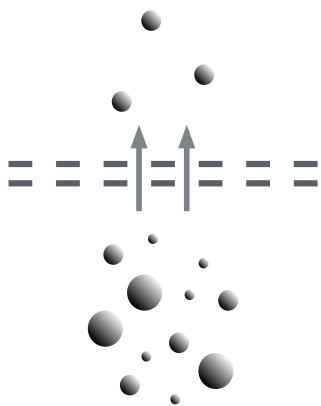
atmospheric aerosols

instrument calibration

bioaerosols

indoor aerosols

inhalation & drug delivery



## Measurement consultancy

experimental design

data collection, analysis & interpretation

# AF10 Aerosol Flowmeter

Measure gas flow rates, even when the gas contains aerosol particles



Wide range of measurable flows (0.1 – 10 lpm)

Self-cleaning via integrated brush

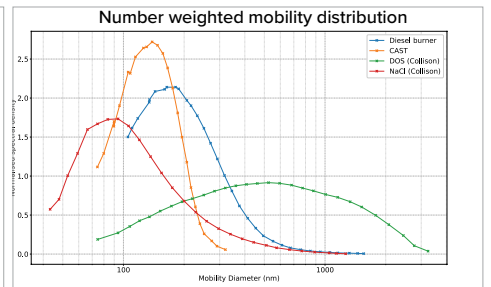
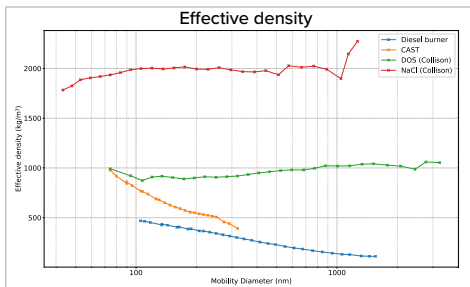
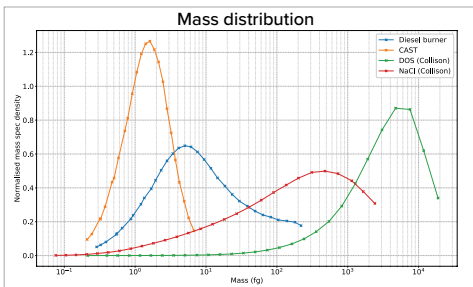
Plug&Play: fully automatic temperature and pressure correction & touch screen user interface

Standalone operation, with support for interfacing and remote connections

# Mass & Mobility Aerosol Spectrometer

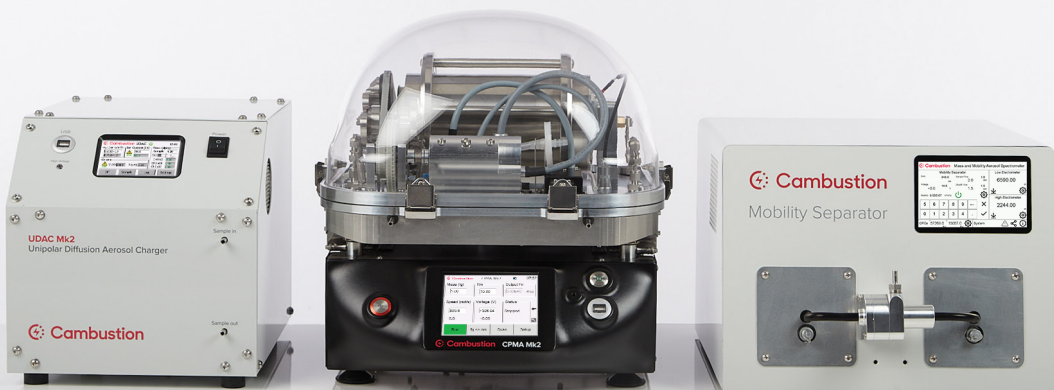
Measure mass, mobility, concentration and charge state in a single scan

Obtain density, mass-mobility exponent or fractal dimension, without assumptions



For the characterisation of:

Combustion agglomerates  
Nanomaterials for batteries and specialty applications  
Carbon Black & flame pyrolysis production  
... between ~ 50 nm – 3 µm



## Measurement

# Aerodynamic Aerosol Classifier



Wide range aerosol classifier: 25 nm to  $>5\ \mu\text{m}$  *aerodynamic diameter*

No charging – so not limited by charging efficiency or multiple charging artefacts

### Applications:

Alternative to DMA, in particular when a truly monodisperse aerosol is required (calibration aerosols, size-resolved filtration studies,...)

Measure effective density / shape factor when combined with a DMA or CPMA

Configure as a variable impactor: only transmit particles smaller than the setpoint

# Centrifugal Particle Mass Analyser Mk2



Classification by mass: charge ratio with single charge range 0.2 ag – 1,050 fg

### Applications:

As part of the CERMS aerosol mass standard

As part of the M<sup>2</sup>AS to characterise particles between  $\sim 50\ \text{nm}$  –  $3\ \mu\text{m}$

Semi-volatile particle characterisation with DMA

Black carbon studies thanks to the direct interface with the SP2 by DMT

# DMS500 Mk2 Fast Aerosol Mobility Sizer

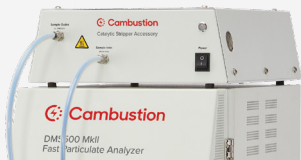
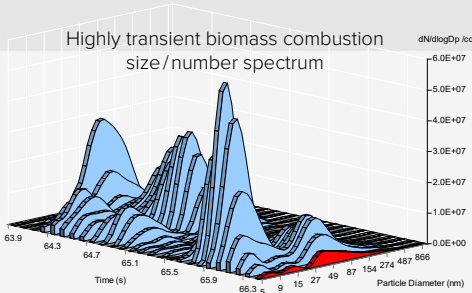
Ideal for rapidly-changing aerosols from ambient and high concentration sources

Widest size range (5 nm – 2.5 μm) and concentration range (9 orders)

Class-leading 200 ms  $T_{10-90\%}$  @ 10 Hz

## Applications:

- Indoor Air Quality & Occupational Monitoring (e.g., wood stoves, cooking)
- Ambient, Roadside & Air Quality
- Combustibles & E-cigarettes
- Raw Engine Exhaust and Stack Sampling



Optional Catalytic Stripper Accessory to remove volatile particles

# Smoking & Vaping Machine

Quality Control / Research & Development applications

Reproduce standard & custom smoking / vaping profiles

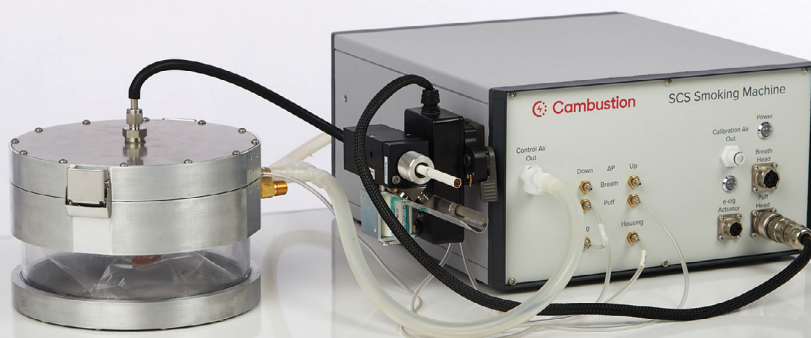
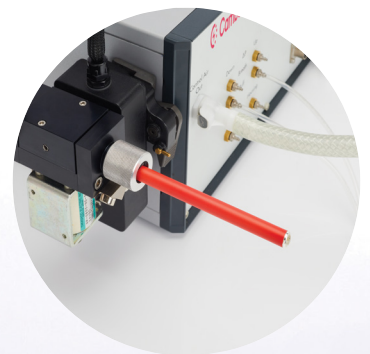
Provide aerosol to real-time instruments

Measure resistance-to-draw including with lit products

Collect for chemical analysis (HPLC, GCMS,...)

on filters, sorbent tubes, cold traps & impingers

using the lung accessory for complete vapour & aerosol capture in bags – even puff-by-puff



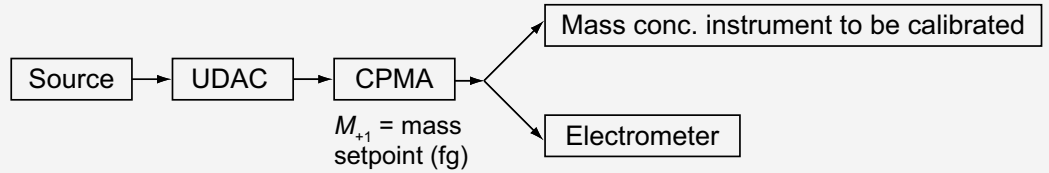
# Unipolar Diffusion Aerosol Charger Mk2

Highly charges the aerosol using a controlled corona discharge

Applications:

as part of the M<sup>2</sup>AS mass and mobility spectrometer

as part of the CERMS aerosol mass standard



$$m_{\text{total}} = \text{mass setpoint} \times \text{indicated electrometer concentration} + \text{zero charge correction}$$

# Electrostatic Precipitator

Removes charged aerosol particles

Selectable  $d_{50}$

Integrated variable voltage supply



# Diffusion Dryer

Compatible with both silica gel and activated carbon

Sized for compatibility with a range of common aerosol generators and experiments

Online Python model to estimate drying rate based on input conditions



# Portable PSL Aerosol Calibration Kit

Standalone system

Generates and dries PSL aerosol across a range of sizes

Ultrasonic nebulizer for maximum concentration



## Connect to the experts

Cambustion's unique instrumentation is used by academic, industrial and government customers in over 30 countries worldwide. Since 1987, our scientists and engineers have steadily developed new concepts and instruments, and continue to work closely with our customers to expand their experimental horizons.

Explore our range of aerosol products:

### Measurement



Classification by aerodynamic diameter



Classification by mass:charge ratio



Fast, wide-range mobility size distributions



Simultaneous mass, mobility and density distributions



Flow rate measurement of aerosol-laden gas



Smoking & vaping machine

### Conditioning



Switchable-polarity unipolar corona charger



Electrostatic precipitator



Portable PSL aerosol generator



Diffusion dryer

Local agents / distributors:

China: [li.qiang@cambustion.com](mailto:li.qiang@cambustion.com)

France: [arnaud@lvmaisr.fr](mailto:arnaud@lvmaisr.fr)

Germany & Austria: [office@ms4.info](mailto:office@ms4.info)

India: [info@tesscorn.com](mailto:info@tesscorn.com)



To learn more, visit:

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