

Use of the Cambustion CPMA to provide a mass monodisperse aerosol

Introduction

The Cambustion Centrifugal Particle Mass Analyzer (CPMA) is an aerosol classification instrument, which allows selection of pre-charged ultrafine aerosol particles *directly according to their mass:charge ratio*.



It may be considered an equivalent instrument for particle mass to the Differential Mobility Analyzer (DMA), which allows selection of particles according to their electrical mobility (drag:charge ratio).

The CPMA is used with an external pre-charger, which may be of the radioactive, X-ray or corona types.

The CPMA uses a balance between electrostatic and centrifugal forces to select particles of a given mass:charge ratio.

Novel features ensure a higher throughput of particles of the selected mass:charge ratio, compared with earlier instruments such as the Kanomax Aerosol Particle Mass analyzer (APM).

The CPMA principle is described in detail in this animation:

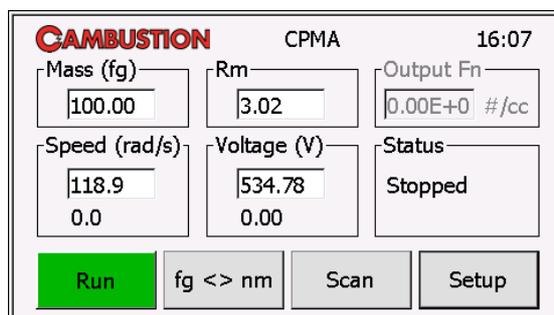
<http://www.cambustion.com/products/cpma/animation>

Monodisperse Aerosol by Mass

Combined with a charger or neutraliser, the CPMA can select monodisperse aerosol by mass:charge.

Charged particles entering the classifier will only exit the classifier if they are of the desired mass:charge ratio.

The CPMA user interface allows the user to input the mass setpoint and resolution as required on the touchscreen. The required voltage and speed are calculated, and the CPMA will stabilise at these setpoints when instructed to Run.



For accurate resolution, the sample flow should be measured and entered. (An optional Aerosol Flowmeter accessory allows this to be automated).

The CPMA is suitable for use in extended duration experiments- capable of running for days at a time. This allows provision of mass selected aerosol to other experiments, which may be slow in nature.

The CPMA also features a variety of remote control and monitoring options, allowing remote sequencing and automatic control of more complex experiments.

Further Reading

CPMA: www.cambustion.com/products/cpma

UDAC: www.cambustion.com/products/udac

Publications <http://www.cambustion.com/publications/pubinst/CPMA>