

C2000 UCC

Unipolar Corona Charger



The C2000 Unipolar Corona Charger (UCC) provides the ability to generate monodisperse aerosols spanning the nano to sub-micron particle size range of 50 nm to 500 nm. This versatile laboratory accessory is a replacement for low-level radioactive neutralizers that are used with a Differential Mobility Analyzer (DMA) for this purpose. The C2000 is free of the regulatory requirements that cannot be avoided using traditional aerosol neutralizers including licensing, employee training, special handling, storage and disposal. In addition, the novel design prevents the corona discharge element from becoming contaminated by the sample aerosol and therefore does not require frequent cleaning or maintenance.

Effects of Multiple Charging

Standard commercial aerosol neutralizers produce a well known equilibrium charge distribution where an increasing number of elemental charges are created in the sample as the individual particle size increases. If a polydisperse aerosol is first neutralized and then fractionated using electrical mobility, the resulting aerosol distribution will be usually be compromised. The number concentration at the desired particle peak will be overstated resulting from the affects of multiple charging of larger particles. Also, additional peaks or nodes will be present in the charged aerosol coming from doubly- and triply-charged particles of the desired peak size (see graphs on page 2).



FEATURES

- The C2000 UCC produces aerosols that contain particles with a single elemental charge over the range of 50 nm to 500 nm
- Replaces conventional Krypton, Polonium, and Americium radiation sources
- Is not subject to mandatory regulatory compliance issues associated with importing, exporting, use, storage and disposal
- The unit is self-contained and portable allowing it to be easily multiple applications or monitoring environments
- Companion product to the Nano-IDTM PMC500 Particle Mobility Classifier

BENEFITS

- Particle size distributions do not require mathematical correction factors or assumptions in data processing
- Produce higher accuracy number concentration monodisperse aerosol
- The active corona element will not become contaminated from the sample aerosol and therefore does not require maintenance or periodic cleaning
- No need for special personnel safety training or record keeping

APPLICATIONS

- Instrument calibration
- Inhalation and toxicology studies – (Bob – can we be a lot more specific here? We should really sell the applications we know about)
- General aerosol science laboratory work
- Particle transportation studies

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specifications

Size range	
Charger type	Unipolar Corona Charger (UPC), non-radioactive source
Size range	5 nm to 500 nm
Aerosol flow rate	0.1 LPM to 0.5 LPM
Particle Concentration, Maximum	$10^x/\text{cm}^3$
Particle size selection	5 Operating ranges selected using a front-panel switch
Aerosol inlet/outlet	2 XX type connectors locted on the device back panel
Corona lifetime	2,000 Hours, nominal, before the need to replace
Dimensions (L x W x H)	nn x nn x nn in (mm x mm x mm cm)
Weight	xx lb (xx kg)
Power	90 – 240 VAC; 50/60 Hz
Temperature range	10 – 40°C
Humidity range	10 – 90% RH non-condensing
Operating pressure	1 Atmosphere
Use	Indoor use only
Installation (over-voltage)	Category II for transient over-voltages per EN61010-1

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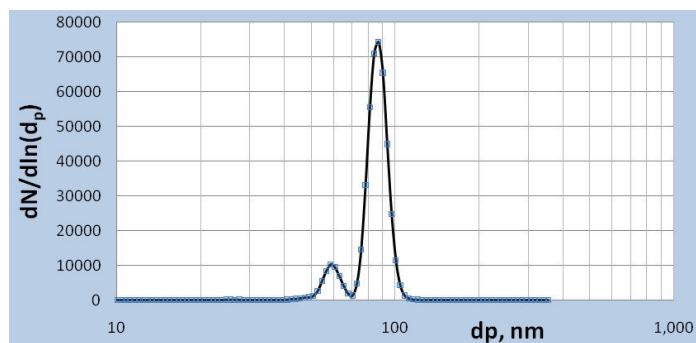


Figure 1. Compromised Cr_2O_3 aerosol distribution produced using a neutralizer. Note the peak is significantly higher than in Figure 2 due to contributions from multiply-charged larger particles. Also, there is a node at 68 nm caused by doubly-charged 100 nm particles.

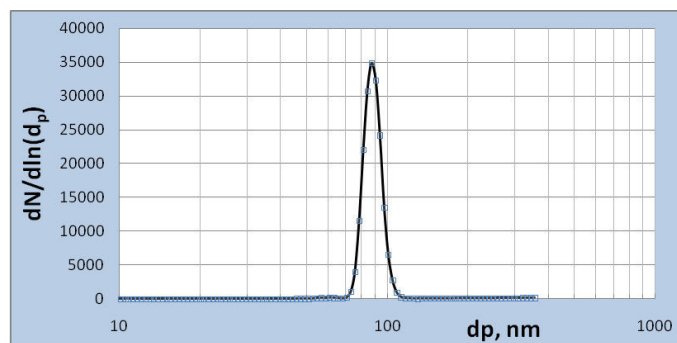


Figure 2. Monodisperse Cr_2O_3 aerosol produced using the C2000 UCC

AUTHORIZED REPRESENTATIVE



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