



KANOMAX
The Ultimate Measurements

NanoAerosol Generator

Model 3250

NanoAerosol Generator Model 3250 is a new nebulizer that produces droplets with a peak diameter < 550 nm in diameter. Developed by Kanomax FMT, Inc. and CT Associates Inc. (CTA), the NanoAerosol Generator offers the following advantages over existing nebulizer technology:

- Produces significantly smaller droplets minimizing the influence of non-volatile residue
- Aerosolizes primary particles with reduced potential for agglomerate artifacts
- Uses pressurized sample delivery for high-purity and low-volume consumption
- Includes an integral heater and dilution air to evaporate droplets and lower the dew point eliminating the need for a separate desiccator
- Extends operation time with a highly stable output sample solvent does not evaporate over long term operation maintaining a stable solution concentration and thereby, a more stable generated particle size
- Displays nebulizer operating status on a color touch-screen panel



How It Works

Using a traditional nebulizer to create an aerosol of colloidal particles often results in interference from any non-volatile residue present in the sample. After droplet evaporation, non-volatile residue creates particles of residue regardless of whether the droplets contain colloidal particles or not. When there is a particle in a droplet, non-volatile residue forms a coating on the particle. This coating is problematic when you aerosolize small particles (<30 nm) or those where the surface properties are of concern (such as in toxicology studies) because it changes the surface properties of the particles. The NanoAerosol Generator mitigates non-volatile coating by minimizing the size of the nebulized droplet, thereby reducing the influence of non-volatile residue on the final aerosol properties (shown in Figure 1).

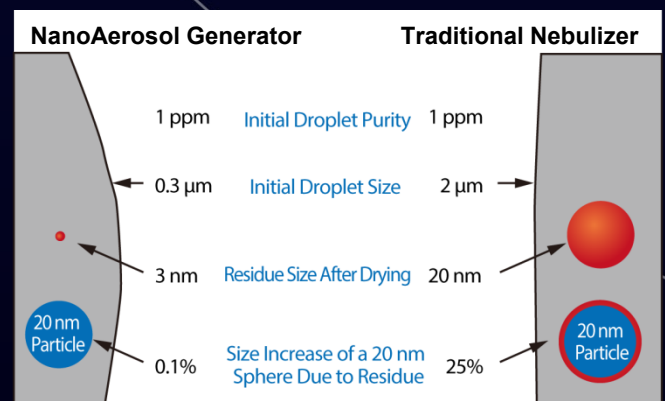


Figure 1. NanoAerosol Generator minimizing non-volatile residue particle coating

How It Works

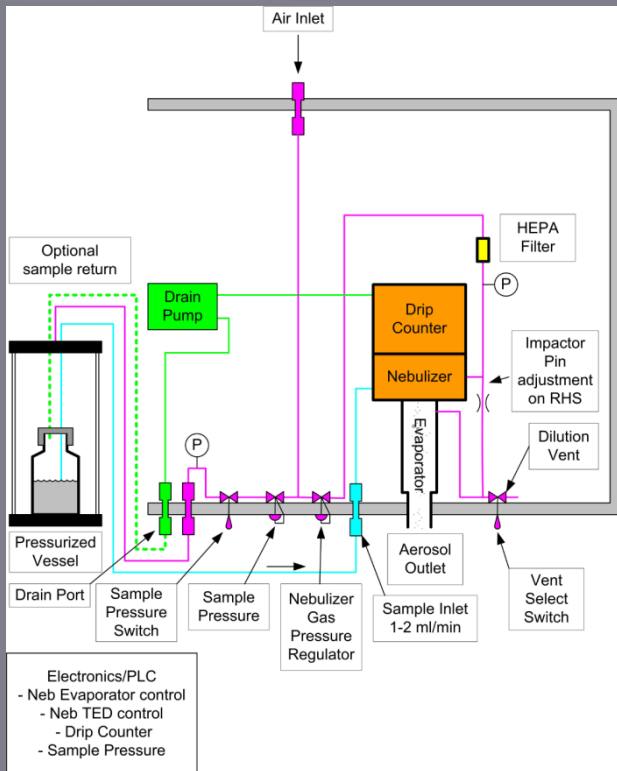


Figure 2. Schematic diagram illustrating the flow and internal components of the Nanoparticle Nebulizer

Bibliography:

Oberreit D. "A Nanoparticle Nebulizer for Generation of Aerosolized Colloid Particles with Reduced Influence by Non-volatile Residue." Poster Presented at 2014 AAAR Conference, Orlando, FL.

Patent Info:

Patent numbers 8,272,253 and 8,573,034 have been issued to CTA and licensed by FMT. Patent number 7,852,465 has been issued to FMT.

Specifications

Droplet peak diameter	< 1.0 μm (nominal 0.5 μm)
Droplet dN/dLogDp > 10μm	< Peak dN/dLogDp $\times 10^{-5}$
Inspection volume rate	0.2 ~ 1.0 $\mu\text{L}/\text{min}$
Nebulizer flow rate	0.5 ~ 3.0 mL/min
Response time to concentration change	< 90 seconds
Sample pressure	12 ~ 18 psi
Compressed air flow rate / pressure	3.5 std L/min clean dry air or nitrogen 345 ~ 414 kPa
Wetted surfaces	PFA Teflon [®] , PTFE, sapphire, 316 L, stainless steel, PEEK
Ambient temperature range	15 ~ 35 $^{\circ}\text{C}$
Ambient relative humidity range	0 ~ 85 % non-condensing
Dimensions (WHD) / Weight	Nebulizer : 23 cm \times 23 cm \times 23 cm / 6 kg Sample reservoir : 13 cm Dia. \times 23 cm / 1.3 kg (excluding projection)
Power	Universal 100 ~ 230 VAC 50 / 60 Hz, 90 W max
Output	USB Flash Drive
Internal storage	Micro SD
Sample inlet	$\frac{1}{4}$ ~ 28 fitting
Waste outlet	$\frac{1}{4}$ ~ 28 fitting
Compressed air inlet	$\frac{1}{4}$ inch SS Swagelok [®]
Display	3.5 inch TFT Color, touch panel

Specifications subject to change without notice.



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