Aerosol Devices

Spot Sampler

Series 110B aerosol particle collector

Purpose

The Spot Sampler™ aerosol particle collector uses water condensation capture for highly efficient collection of nanometer and micrometer- sized aerosol particles onto a variety of different easy-to-swap sampling surfaces.

Applications:

Bioaerosol Collection
- Viable Capture
- Infectious Disease Transmission
- Genomic Preservation

Semiconductor
- Nano-particle Contamination

Aerosol Chemistry and Physics

Environmental Sampling
- Air Quality
- Health Effects
- Occupational Health
- Climate Studies
- Biomass Burning

And more!

Features

- High particle collection efficiency with no particle bounce
  >95% from 5nm to 2.5µm for dry collection; >90% up to 10µm for liquid collection
- Minimal heating of the airflow minimizes loss of volatile constituents and reduces thermal decomposition
- Gentle impaction into liquid and minimal heating of airflow maintains microorganism viability upon capture
- Uninterrupted, time-resolved sampling from minutes to hours
- Concentrated sample deposition improves analysis sensitivity (LOD/LOQ)
- Automation of sample handling eliminates tedious and time-consuming sample prep

Collection Methods

Sequential Spot Collection Module

- Time-resolved collection onto dry, solid substrate
- 33-well plate made of PEEK® or Aluminum, 5.6mm diameter circular or teardrop wells
- Well plates can interface with PAL700 Autosampler for automated chemical analysis without requiring user extraction or manipulation of sample



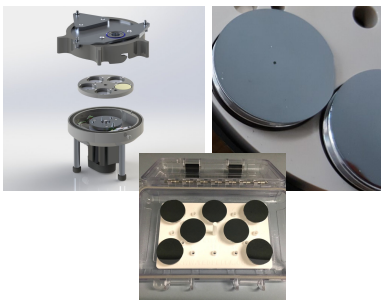

Liquid Sampling Module

- Particle collection into almost any liquid with collection volume from 300uL to 700uL
- Polycarbonate vials are available in ported and non-ported configurations
- Ported option allows a user to draw sample or add liquid media while actively sampling



Scanning Electron Microscope (SEM) Stub Sampling Module

- Time-resolved collection onto dry surface ready to interface with microscopy techniques
- Sample directly onto Standard SEM stubs up to 25mm diameter with up to 1mm thick substrate adhered to it
- Sample kits offered with: Silica and Germanium wafers on 25mm SEM stub, cleanroom packaged



Additional Modules

Inlet Cyclones can be used to select upper size of aerosol entering instrument

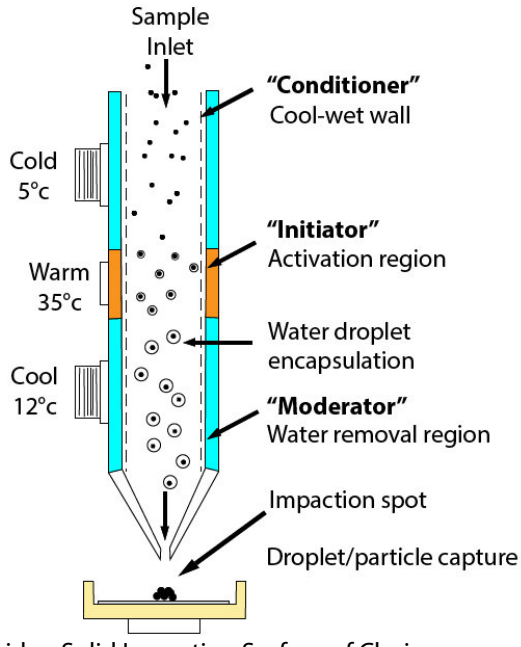
TLC Liquid Level Controller interfaces with Liquid Sampling Module for 24 hour continuous liquid samples

Specifications

Particle Size Range	5nm to > 2.5µm dry collection; 5nm to > 10µm wet collection
Collection Efficiency	>95% for dry collection; >90% for wet collection
Condensing Fluid	Water, distilled or cleaner
Sample Flow Rate	1.2 – 1.5 L/min (user adjustable)
Sampled Aerosol Conditions	Non-corrosive 0 – 40 degrees C
Communications	USB communications output for sampling parameters and instrument status
Environmental Operating Conditions	10 – 35 degrees C, 10 – 95% RH
Dimensions	500 mm (H) x 305 mm (W) x 255 mm (D) (19.5 x 12 x 10 inches)
Weight	6.8 Kg (15 lb) Growth Tube unit; add 1.1 Kg (2.5 lb) for Sequential Spot Collector module; add 1.1 Kg (2.5 lb) for SEM Sequential Collector module; add 0.1 Kg (0.22 lb) for Liquid Spot Collector module
Power Requirements	Power 90-264 VAC/47-63Hz: output voltage is 12.0 VDC and output current is 15A (maximum)

For a complete listing of the Spot Sampler particle collector specifications, please visit our website at https://aerosoldevices.com/products/specifications-spot- sampler/ . PEEK is a registered trademark of Vitrex Manufacturing Limited.
Specifications are subject to change without notice.
Aerosol particle collector technology is licensed from Aerosol Dynamics Inc. with U.S. Patents #6712881, #7736421, #8801838, German Patent #10392241 and Japanese Patent #5908475. Other patents pending. A grant from the National Institutes of Health (1 RC3 ES019081-01) funded the collector development.

How does it work?



Liquid or Solid Impaction Surface of Choice

The Spot Sampler collector uses a patented, three-stage "moderated" condensational system to enlarge aerosol particles and then gently deposit them by inertial impaction.

The initial cold "conditioner" establishes a controlled vapor saturated aerosol stream largely independent of the incoming sample flow conditions. The warm walls of the "initiator provide a region high of partial pressure of water vapor.

Supersaturation occurs in the second region as a result of the difference in the diffusive rates of water vapor and heat transport.

The final cool "moderator" region allows continued droplet growth while reducing the flow temperature and water vapor content.

Sampler may be concentrated as an approximately 1 mm "spot" deposit on a solid substrate, or captured directly into liquid. Droplet growth occurs at temperatures close to ambient (25-30degC) providing robust collection for volatile constituents and microorganisms as small as 5nm in diameter.

Company

Who We Are:
We are a team of engineers and scientists passionate for revolutionizing the science of airborne particle collection and counting for physical, chemical and biological analysis.

Aerosol Devices was formed in 2014 by Ms. Pat Keady and Dr. Susanne Hering, both past Presidents of the American Association for Aerosol Research (AAAR) and leaders in the field with numerous aerosol measurement patents and publications. Handix Scientific Inc. acquired Aerosol Devices in 2022.

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