

Electrostatic Particle Exposure System

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Overview

There exists no accepted commercial method for the exposure of cell cultures to aerosol particles. As such, the invention is a major advancement for the fields of environmental pathology, pollution toxicity, environmental monitoring, air quality, and emission controls. It is unique in its capability to accurately expose cell cultures to aerosol particles in a reproducible fashion. This is done without causing any measurable damage to the cells.

Invention

A system has been developed to quantitatively, accurately, and reproducibly expose cell cultures to controlled masses and/or numbers of aerosol particles. The particles may be deposited either in a mono- or polydisperse fashion. The nominal operating range of particle sizes (diameters) for the existing configuration is ~30 – 900 nm, although operation may be extended to micrometer sized particles readily.

The invention consists of an exposure chamber housing a conducting pedestal for the cell culture dish, an electrostatic cage, and flow controls. In addition there is a particle charging instrument on the front end and a particle counter on the back end. The invention deposits all particles of a selected diameter between 10 nm and 900 nm with one hundred percent efficiency.

Advantages

- Accurately exposes cell cultures to aerosol particles and gases
- No measurable damage to cells
- Multiple cell cultures can be exposed simultaneously

Applications

- Environmental pathology, pollution toxicity, environmental monitoring, air quality, and emissions control

I.P. Status

US Patent # [8,178,341](#)

Learn more about Dr. Petrucci's research at:
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