

Particle Magnifier and Particle Counter for Particles in a Flow

A novel method for the magnification of nanoparticles unlocks the possibility of quantifying their concentration immediately after being generated. Measurement results can be improved significantly by making sampling procedures redundant enabling disengaging mechanisms of particle generation and reliable regulatory particle emission measurement.

BACKGROUND

Particulate air pollution causes severe adverse health effects and is major contributor to climate change. To regulate and reduce the anthropogenic emissions of particulate matter it is essential to acquire a deep understanding of the related generation processes of the particles. The insights on these processes are often obscured by uncertainty introducing sampling and conditioning processes required for detection of particles utilizing state-of-the-art instrumentation.

TECHNOLOGY

We offer a novel technology for the magnification of nanoparticles in a flow that enables the immediate detection of these particles at elevated temperatures. Volatile compounds and carrier gas molecules are exchanged with a working fluid through a porous membrane at elevated temperatures. The working fluid-rich aerosol is subsequently cooled to induce condensation of the working fluid on the particles. The condensational growth of the particles enables optically detecting them.

ADVANTAGES

The offered technology makes tedious sampling procedures such as dilution and conditioning completely redundant. Avoiding these sampling procedures significantly improves the quality of particle number measurements and consequently allows to acquire new insights on the mechanisms that are involved in their generation and reliable regulatory measurements.

- Particle number measurement at elevated temperatures
- Avoiding sampling procedures
- Direct measurement of particle number
- Reduced measurement uncertainty

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KEYWORDS:

Particle number emission,
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Avoiding Dilution

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COOPERATION OPTIONS:

DEVELOPMENT STATUS:

Proof of Principle,
Prototype

STATUS OF PATENTS:

Pending

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