

# LAPAZ - A New Approach to a Primary Standard for Particle Number Concentration



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## Latex Aerosol Generator

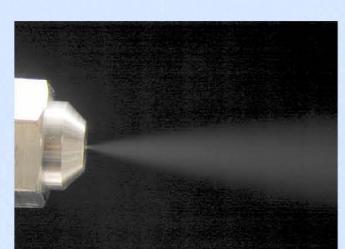
- Dispersion of certified Latex spheres
- Spheres diameters: 100 nm to 900 nm (to be enlarged)
- Concentration defined by dilution and liquid supply
- Homogenisation of an aerosol flow up to 50 l/min



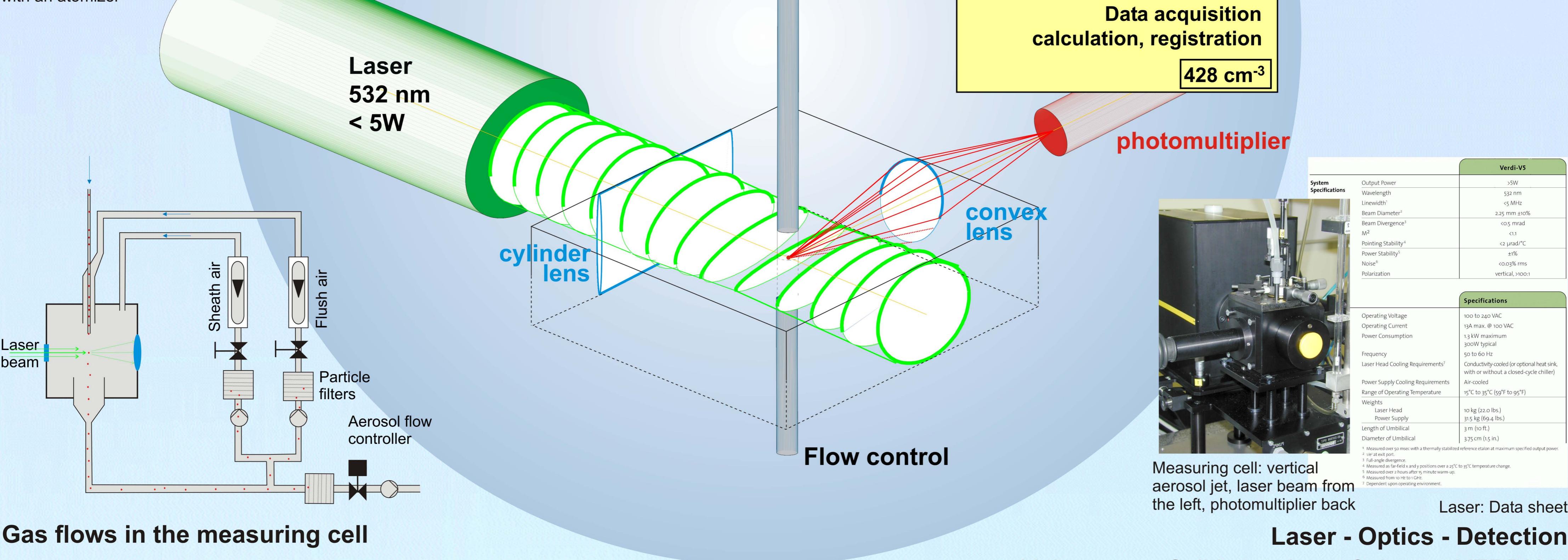
Homogenizer: Diameter 30 cm; Length 5 m



Supply of diluted suspension with Latex spheres to atomizer



Spray of suspension with an atomizer



## Gas flows in the measuring cell

- Aerosol flow: 16 ml/h (controlled with mass flow controller)
- Sheath air flow: 3 l/min (controlled with needle valve)
- Flush air flow: 6 l/min (controlled with needle valve)
- Free aerosol jet: diameter 0.1 mm, length ca. 10 mm

**Calibration of following applications:**  
Clean room particles  
Exhaust particles  
Ambient air particles

**Uncertainties (coverage factor  $k = 2$ )**  
< 10 % for diameters 100 to 900 nm  
< 15 % for concentrations < 1000 1/ml

## Laser - Optics - Detection

- Light source: Solid state laser Coherent VERDI V5
- Beam collimation: horizontal 0.7 mm, vertical < 0.3 mm
  - Detection angle: 90°, Opening ca. 45° (convex lens)
  - Photomultiplier: Hamahatsu R1450, with ca. 450 V

