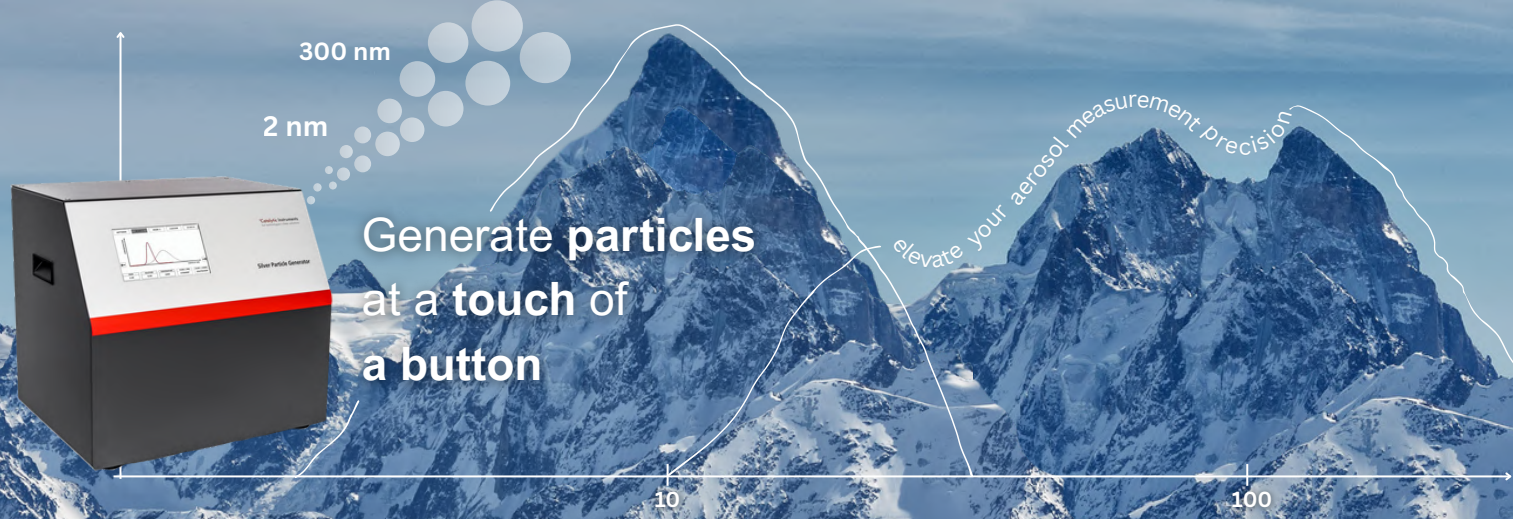
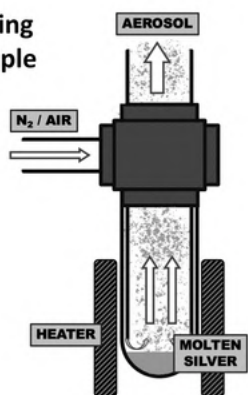




Working Principle

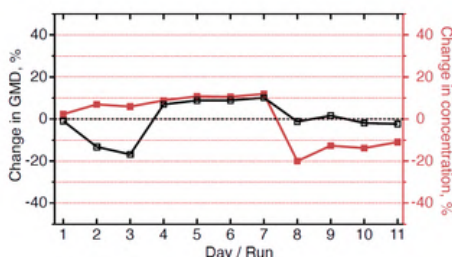
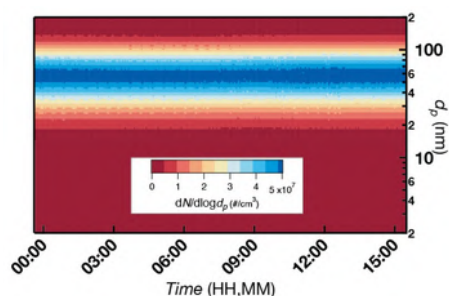


°Silver Particle Generator produces solid silver particles used for calibrating particle counters, emission studies, and air quality research in an easy, fast and reproducible way.

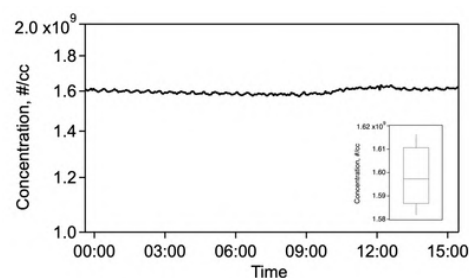
A controllable heating element is used to keep silver in a reservoir at a set temperature. Nitrogen or air, used as carrier gas, transports the evaporated silver upward the tube. As the gas rises it cools leading to homogeneous nucleation of small silver particles. Condensation and coagulation processes lead to further growth of the small silver particles.

By adjusting the temperature and flow parameters, the resulting particle size distribution can be tuned between the smallest (~2nm) and the largest (~300 nm) particle diameters. The GMD can be controlled between ~3 and ~70 nm.

STABILITY

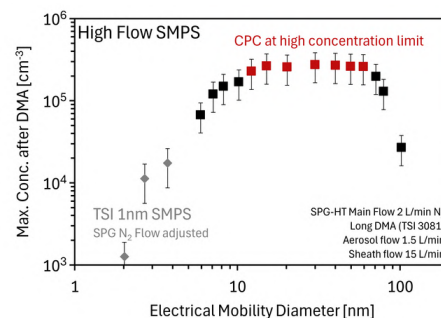
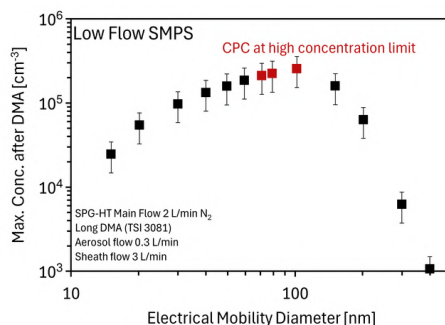
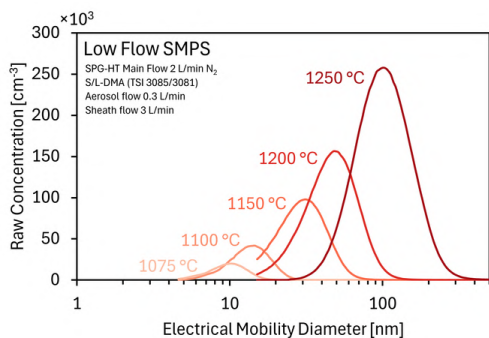


Day-to-day variation is below $\pm 20\%$ for GMD and total concentration.



Total concentration over 15 hours of continuous particle generation varies only by $1\sigma = 1.25\%$.

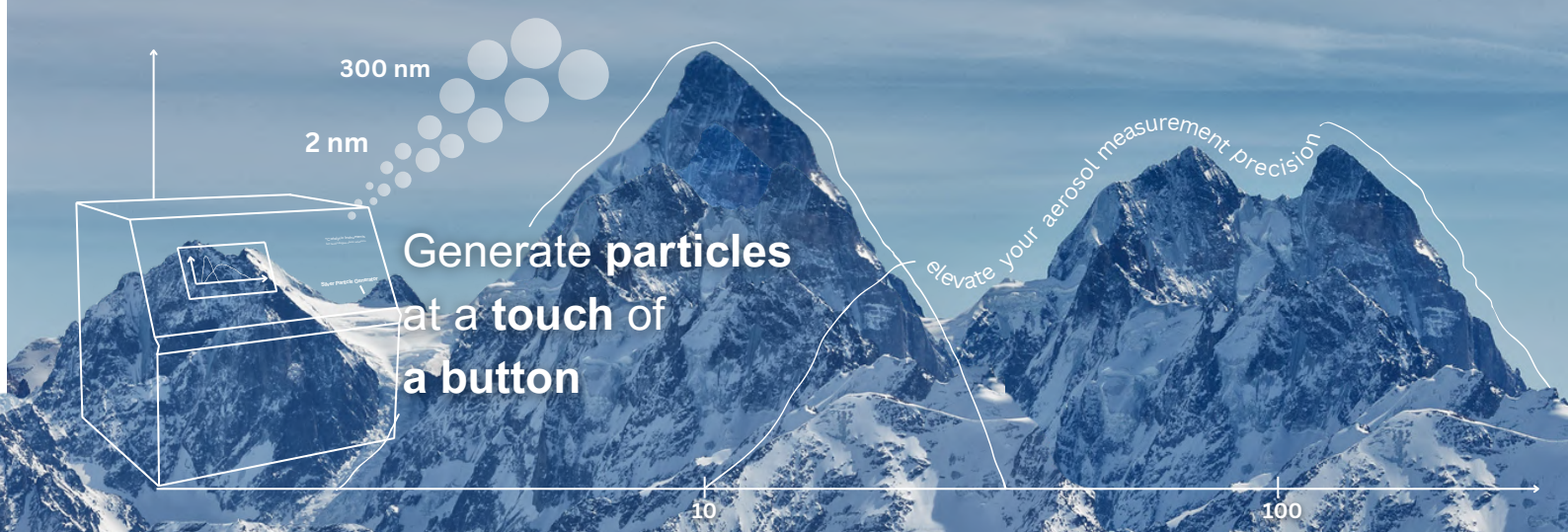
PERFORMANCE RANGE



Depending on setup, high particle concentrations are achieved from 2 to 300 nm after an electrostatic classifier. The particle size distribution can be adjusted by varying the heater temperature.



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POWER AND INPUT

- 100-240 VAC 50/60 Hz
- USB and Ethernet interface

SPECIFICATIONS

- 0 – 25 LPM outlet flow rate range
- Outlet pressure: up to 2 bar (gauge)
- Outlet gas temperature: : max. +30°C above ambient
- Inlet gas: N₂ or air at 25 (± 5) °C ; 1-2 bar (gauge)

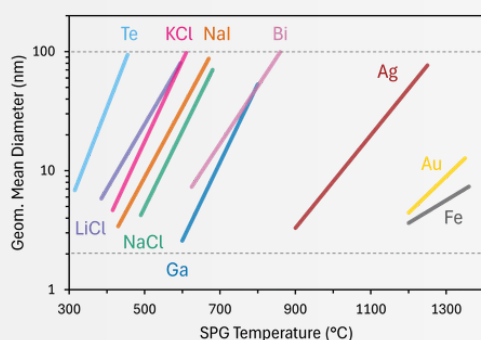
FEATURES AND BENEFITS

- Short warm-up time (< 15 mins)
- Wide particle size range (2 nm – 300 nm*)
- High concentrations (> 1 x 10⁷ #/cm³)
- Remote data logging (USB, LAN)
- Stable and repeatable (±1% GSD + GMD)
- Fast, flexible and easy changes of temperature set point (< 1 Min.) plus two customisable pre-settings (Mode 1: 1000 °C and Mode 2: 1100 °C)

*Particles larger than 200 nm are only achievable with the high temperature version.

APPLICATIONS

- Standardisation and Compliance Testing: (ISO 2789:2015, ISO 15900:2009, EN 16976)
- Nanoparticle Generation and Characterisation
- PCR & VPR validation and PN-PEMS calibrations
- Aerosol Technology
- Advanced Materials Research
- Environmental and Health Impact Studies



Nanoparticle materials generated in the SPG

Geometric mean diameter (GMD) and temperature range for different materials that have been successfully tested in the SPG. The GMD marks the center of the size distribution, while usable particle sizes extend on either side of the GMD. Detailed data for the different salts (LiCl, KCl, NaI, NaCl) can be seen and was taken from Krasa, et al. (2025), <https://doi.org/10.1080/02786826.2025.2487596>.



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