

Black Carbon Particle Calibration Facility

Ultrafine and Nanoparticles from 300 to 10 Nanometers

Southwest Research Institute® (SwRI®) has launched a particle calibration facility using dry soot particles produced by a propane flame based on the miniCAST technology coupled with an SwRI-patented catalytic stripper.

Specifications

This calibration facility is located at Southwest Research Institute in San Antonio, Texas, and is capable of producing:

- Particle mass concentrations ranging from $5 \mu\text{g}/\text{m}^3$ to $80 \text{mg}/\text{m}^3$, with less than 5% coefficient of variation
- Particle number concentrations ranging from $10 \text{part.}/\text{cm}^3$ to $5 \times 10^7 \text{part.}/\text{cm}^3$, with less than 5% coefficient of variation
- Particle size distributions with geometric number mean diameters ranging from 15 nm to 120 nm
- Flow rates up to 50 standard liters per minute

Instrumentation

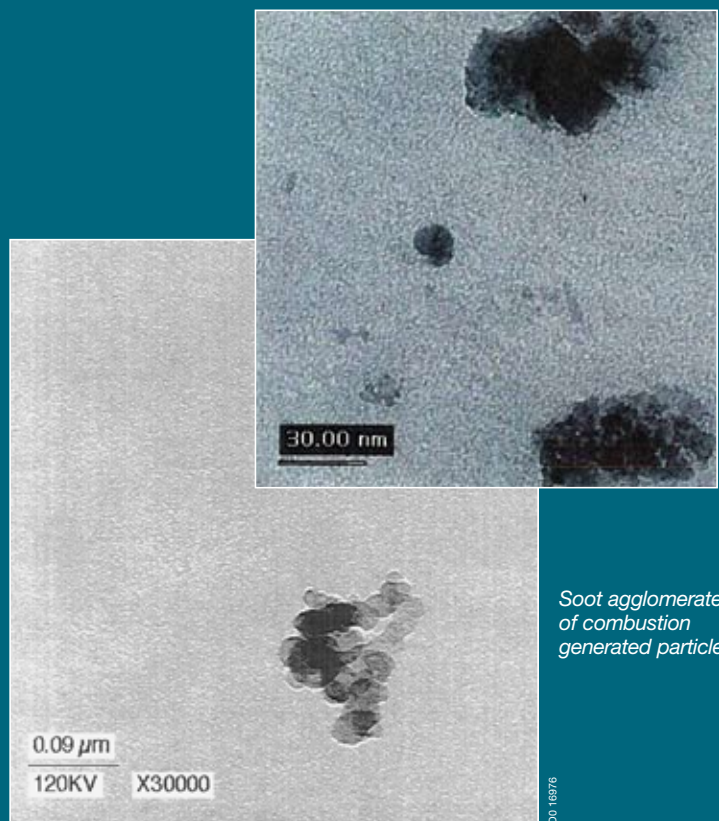
This facility is supported with state-of-the-art instrumentation such as:

- TSI scanning mobility particle sizer
- TSI engine exhaust particle sizer
- TSI electrometer
- TSI condensation particle counters
- AVL micro-soot sensor
- Sunset Laboratory semi-continuous organic carbon/elemental carbon, with traceable elemental carbon capability

Capabilities

This facility is suitable for:

- Calibration and verification of solid particle measurement systems in compliance with Euro 5,6 and Euro VI regulations
- Particle instrument and dilution systems calibrations and performance checks
- Research and development on small-scale particle filters (filters can be evaluated at temperatures ranging from 25°C to 400°C)
- Particle inhalation studies
- Fundamental research on the effect of black carbon on global warming



Particle generation system with the catalytic stripper technology

Quality Accomplishments

The Office of Automotive Engineering (OAE) at SwRI is certified to ISO 9001:2008, "Quality Management Systems – Requirements," accredited to ISO/IEC 17025:2005, "General Requirements for the Competence of Testing and Calibration Laboratories," and certified to ISO 14001:2004, "Environmental Management Systems." The OAE has also achieved Ford Tier 1 status for providing engineering services and the Engine, Emissions and Vehicle Research Division has received the Ford Q1 Quality Award. In addition, the Petroleum Products Research Department is a Nuclear Procurement Issues Committee (NUPIC)-approved laboratory and the Fuels and Lubricants Research Division has maintained its status as an American Chemistry Council (ACC)-approved laboratory.

**We welcome your inquiries.
For additional information,
please contact:**

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Southwest Research Institute is an independent, nonprofit, applied engineering and physical sciences research and development organization using multidisciplinary approaches to problem solving. The Institute occupies 1,200 acres in San Antonio, Texas, and provides more than 2 million square feet of laboratories, test facilities, workshops and offices for more than 3,200 employees who perform contract work for industry and government clients.



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