

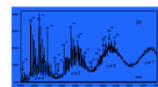


Understanding, Measuring and Regulating Sub-23 nm Particle Emissions from Direct Injection Engines Including Real Driving Conditions

Technologies for low emission light duty powertrains (GV-02-2016)
(Grant Agreement Number: 724136)

A Presentation to the PMP Group – Oct 2016

Partners:



SEADM

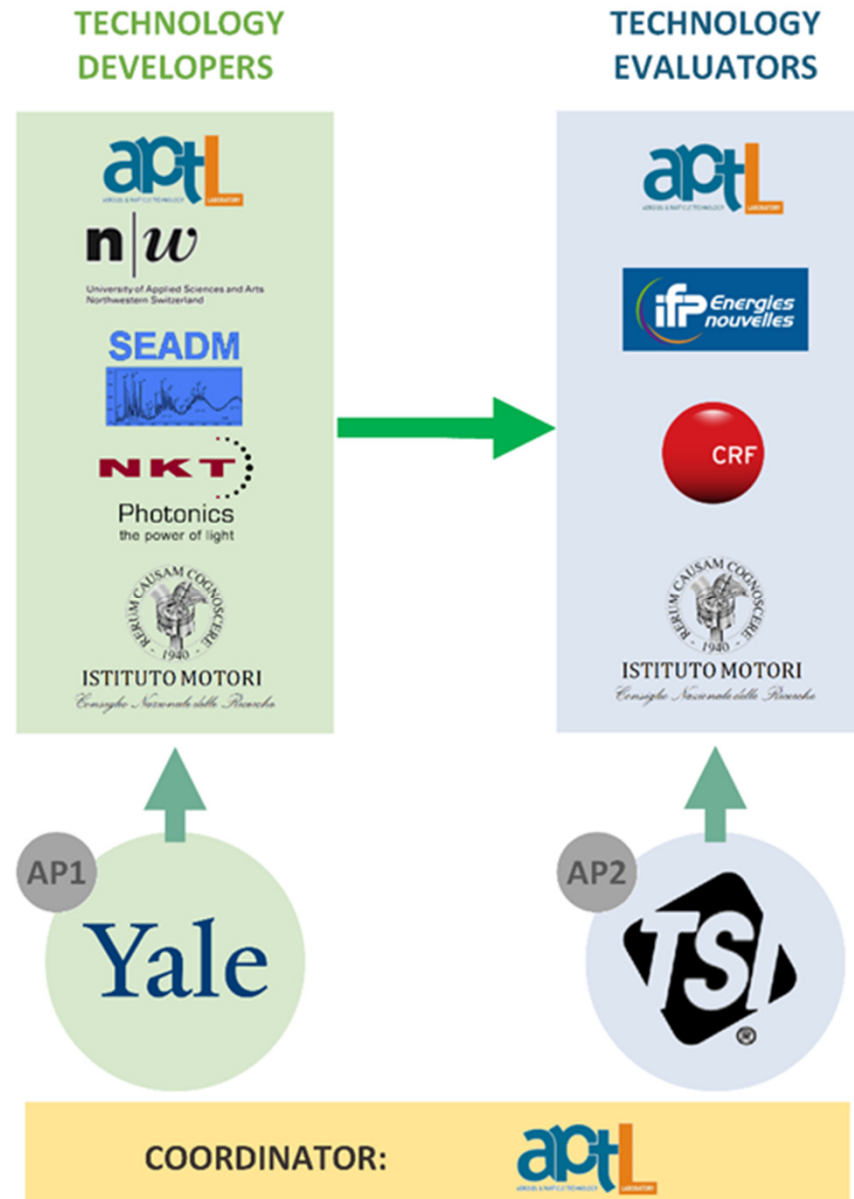


Associated Partners:

Yale



The SUREAL-23 Consortium

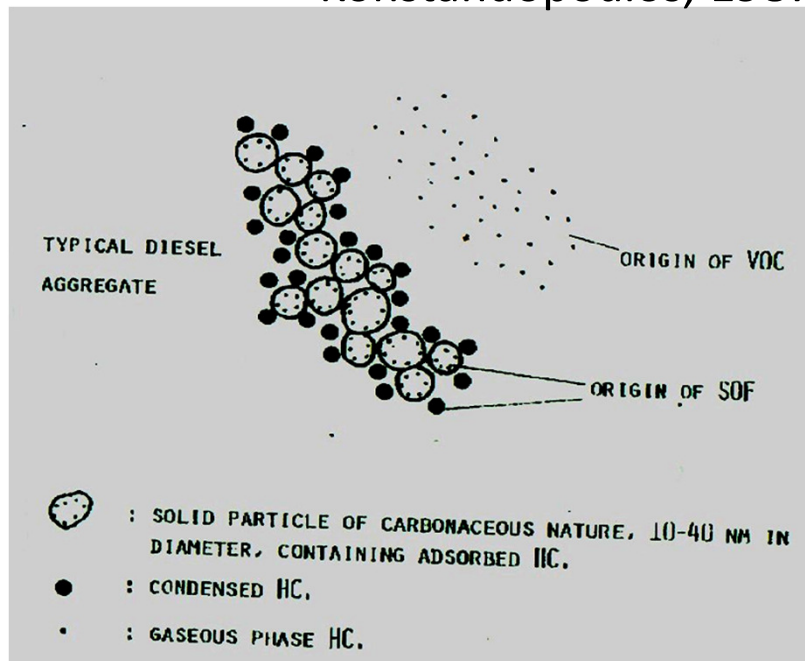


The Nature of Particulate Emissions...

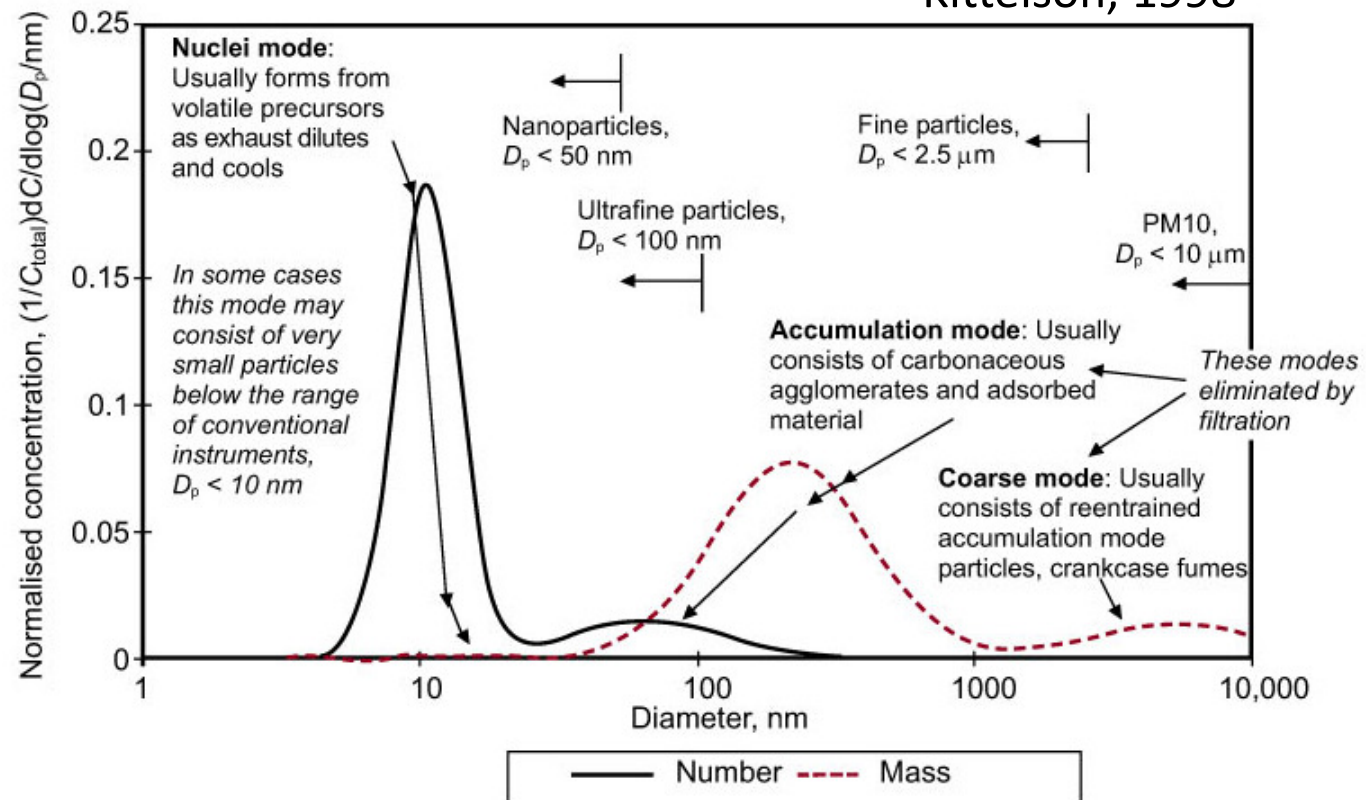
...but what number of particles are really present under any conditions, and how the number varies, we have at present very little idea.

(John Aitken, read before the Royal Society of Edinburgh, 1888)

Konstandopoulos, 1987



Kittelson, 1998





Objectives

- **to complement and extend** existing instrumentation by introducing size distribution and composition characterization of the exhaust aerosol, especially for particles below 23 nm
- **to characterize** in detail the nature of the particulate emissions which potentially evade current emission control technology and regulations
- **to support** future emissions compliance through technical developments in real driving emissions measurement
- **to contribute** to future definitions of particulate emissions limits for “Super Low Emission Vehicles”



The SUREAL-23 Innovations

- **size and composition analysis** methods suitable for transient engine emissions
- novel **instrumentation** for measuring aerosol particles **below 23 nm**, providing backward compatibility with established PN measurement technology
- **alleviation** of problematic exhaust sampling requirements
- **integration** of the most suitable components of the extended sub-23 nm measurement toolset into PEMS and verification of their measurement capability in **real driving conditions**



SUREAL-23 Pursues Actively

- Networking with **stakeholders in Europe** (PMP, ACEA/EUCAR, CLEPA, EARPA, CONCAWE, state and municipal organizations,)
- Networking with **related activities in the World**: USA (EPA, CARB, HEI, SWRI,...) JAPAN (AICE,...)
- Networking with **other EU projects**, especially with those of the “Technologies for low emission light duty powertrains” (GV-02-2016) Call
- Editing **special publications** (special issue of Emission Control Science and Technology is under planning)



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