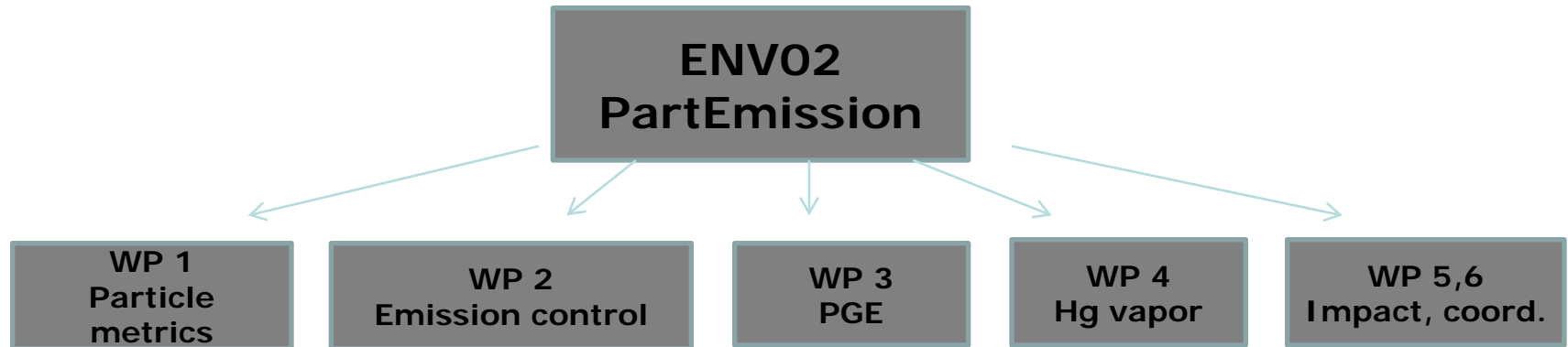




# EUROPEAN METROLOGY RESEARCH PROGRAMME PROGRESS UPDATE

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**Joint Research Centre**

PMP meeting  
DG ENTR Brussels  
16 May 2013



## PartEmission: Emerging requirements for measuring pollutants from automotive exhaust emissions

- **WP 1: Automotive combustion particle metrics**
  - Task 1.1: Generation of automotive combustion calibration aerosols
  - Task 1.2: Number concentration traceability
- **WP 2: Methods for periodic emission control of modern diesel vehicles**
- **WP 3: Quantification of platinum group elements (PGE) in automotive emission**
- **WP 4: Traceability for Hg vapor measurement**
- **WP 5,6: Management and creating impact**

Participants: PTB, JRC, METAS, NPL, MIKES, DFM, VSL, IJS, LNE, BAM



## **Task 1.1 Generation of automotive combustion calibration aerosols**

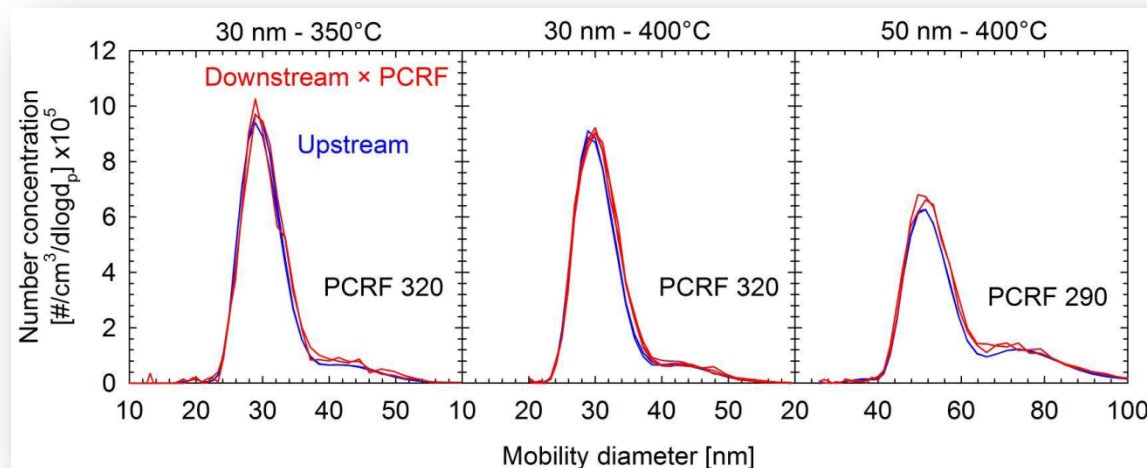
The aim of this task is to generate calibration aerosols with traceable mobility diameters between 23 nm and 100 nm.

## **Task 1.2 Number concentration traceability for combustion particles**

The aim of this task is to establish a standard for combustion particle number concentrations. The resulting calibration protocol and service cover the common measuring range of the CPCs, at least up to  $10^4$  cm<sup>-3</sup> for mobility diameters between 23 nm and 100 nm.

# Thermally stable calibration aerosols

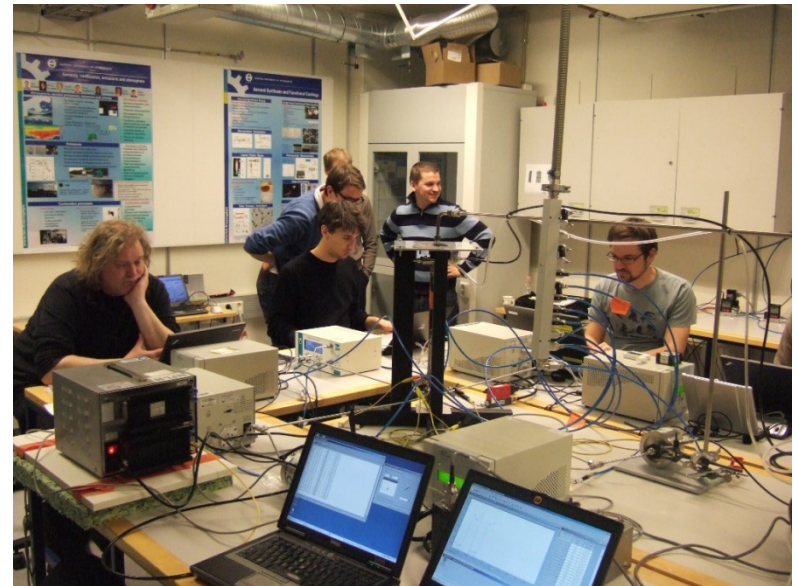
- Thermal stability assessed via comparing size distribution upstream and downstream a VPR
- Graphite spark aerosol (JRC) does not need thermal treatment
- CAST combustion particles (METAS) need thermal treatment to be thermally stable
- Ag aerosol (TROPOS) needs sintering at 600°C for thermal stability



**All investigated aerosol types can be used as calibration aerosol for VPR.**

## Traceability for number concentration

- Validation of electrometers as primary standard for particle number concentration during comparison workshop at Tampere University of Technology in March 2013 →
- Validation of CPCs as secondary standard for number concentration in upcoming comparison workshop at Tropos (Leipzig) in October 2013





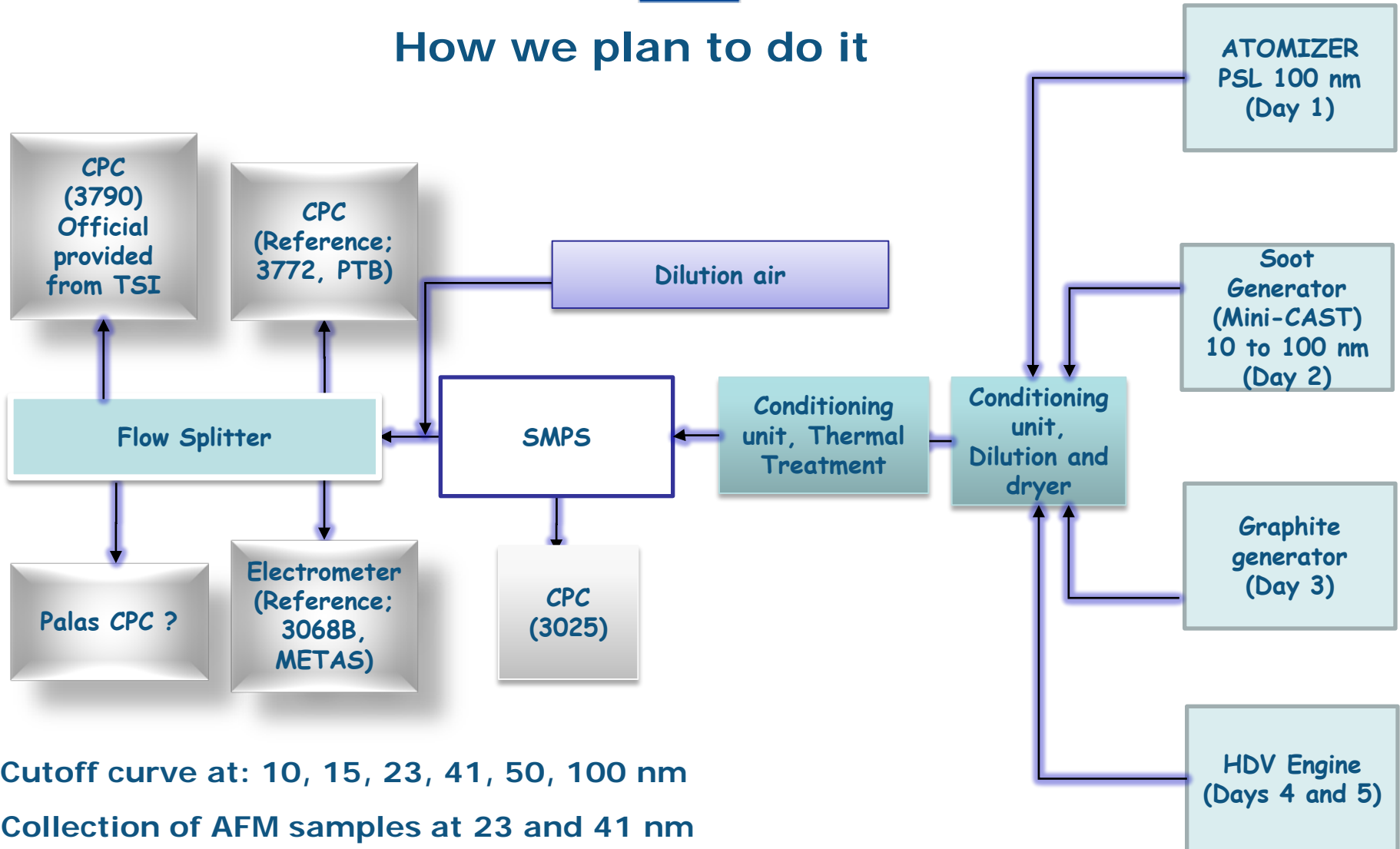
# Defining a soot-like calibration aerosol

Calibration of a CPC should be done with a calibration aerosol that «behaves» similarly as the aerosol the CPC is going to measure.

Which of the available aerosols is closest to diesel exhaust aerosol in the CPC response?

→ Upcoming workshop at JRC end of May 2013

## How we plan to do it



Cutoff curve at: 10, 15, 23, 41, 50, 100 nm

Collection of AFM samples at 23 and 41 nm



# Online-publications

•Calibration and modeling of PMP compliant condensation particle counters

by: Athanasios Mamakos, Barouch Giechaskiel, Yannis Drossinos, Dominique Lesueur, Giorgio Martini, Alois Krasenbrink)

( <http://publications.jrc.ec.europa.eu/repository/handle/111111111/25454>)

•Assessment of pumped mercury vapour adsorption tubes as passive samplers using a micro-exposure chamber

by: Richard J. C. Brown , Melia K. Burdon , Andrew S. Brown and Ki-Hyun Kim

( <http://pubs.rsc.org/en/content/articlelanding/2012/em/c2em30101f/unauth>)

<http://www.ptb.de/emrp/partemission-publications.html>





**Thank you for your attention!**