

# Ultrafine Particles at 4 Stations in Europe

## EU-LIFE-Project-UFIPOLNET



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### WHY ULTRAFINE PARTICLES?

- High concentrations of ultrafine particles in ambient air cause heart attacks and premature deaths.
- These ultrafine particles have a diameter of less than 100 nanometers.
- Being so small, they can be inhaled and travel via the blood stream to the inner organs.
- Ultrafine particles are measured regularly in only a few measuring stations in Europe.
- The WHO and the EU Thematic Strategy on Air Pollution asks to evaluate more research on ultrafine particles as indicator of traffic-related air pollution.

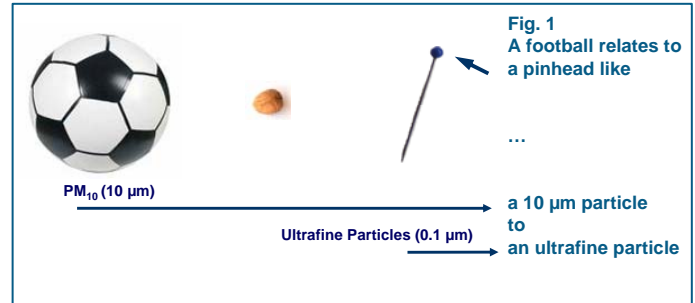


Fig. 1 A football relates to a pinhead like ...



Fig. 2 Dresden: UFP 330, TOPAS (middle) and reference instrument twin-DMPS, IFT (right)

### OBJECTIVES

- Measuring instrument for ultrafine particle size distributions (UFP 330 by TOPAS GmbH)
  - Affordable and easy to use under routine measuring network conditions
  - No butanol or radioactivity
  - 6 different size classes (K1 - K6)
    - >20 | >30 | >50 | >70 | >100 | >200nm
- Measuring activities over 5 years
- Contact with interested groups, like CAFE-Working group and VDI

### MEASURING SITES

- Stockholm: Hornsgatan
- Dresden: Schlesischer Platz
- Prague: Strahovský tunnel
- Augsburg: Friedberger Straße

Three places are near busy roads, whereas the place in Augsburg is an urban background site.



Fig. 3 Measuring sites in Sweden, Germany and Czech Republic

### FIRST RESULTS

- Ongoing measurements since 12-2006 in Dresden, at the other 3 places since 02-2007.
- Same sampling and measuring system at all sites.
- Total Particle number concentration of UFP 330 to NOx in Dresden shows good correlation (29.1.-4.2.07):  $R^2 = 0.83$  (Fig. 4).
- Comparing UFP 330 and reference instrument in the 6 size classes: In general, the correlation for the size classes K2 – K5 is higher than for the largest and smallest one. The result is nearly independent on the concentration.
- Correlation between total number concentration UFP 330 (20 – 500 nm) and DMPS (20 – 400 nm) (24.1.- 15.2.07) is good:  $R^2 = 0.85$ .

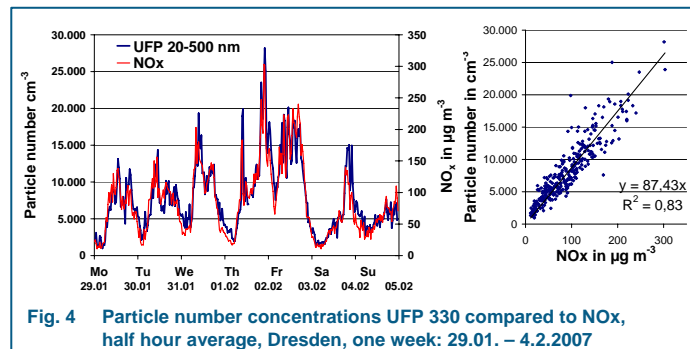


Fig. 4 Particle number concentrations UFP 330 compared to NOx, half hour average, Dresden, one week: 29.01. – 4.2.2007

### PARTNER



### CONTACT

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### CONFERENCE

Ultrafine Particles in Urban Air  
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www.ufipolnet.eu