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**Particle emission from
Gasoline and Diesel vehicles
measured by SMPS and ELPI**

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Section I.C. Engines/Furnaces

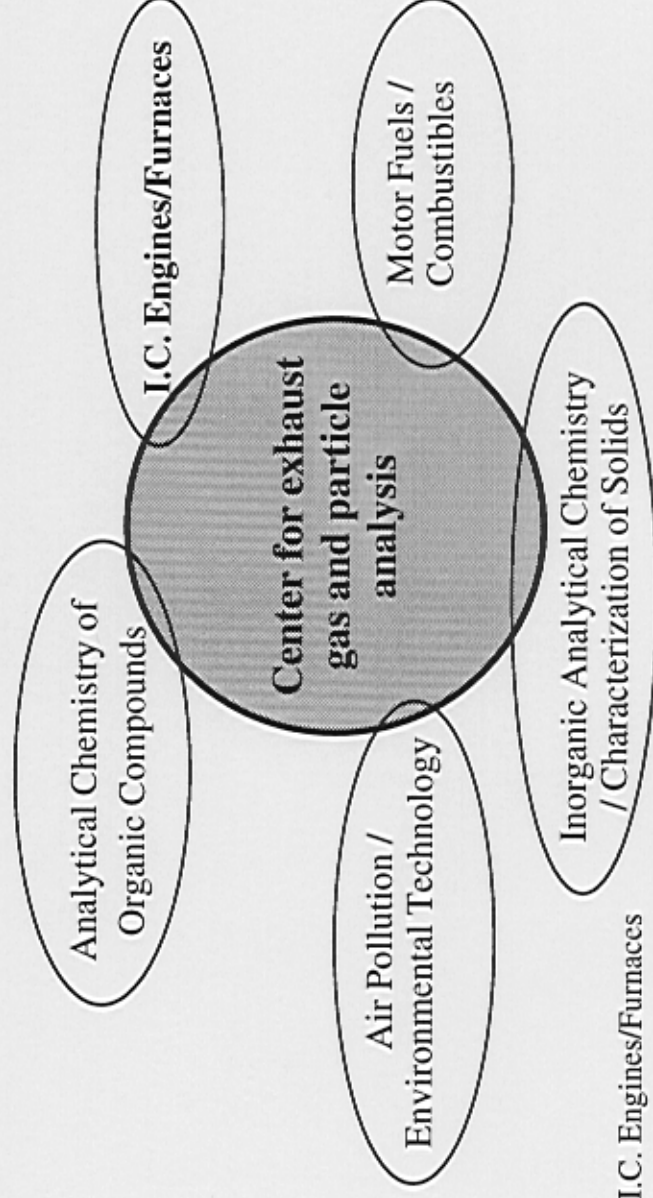
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EMPA Swiss Federal Laboratories for Materials Testing and Research

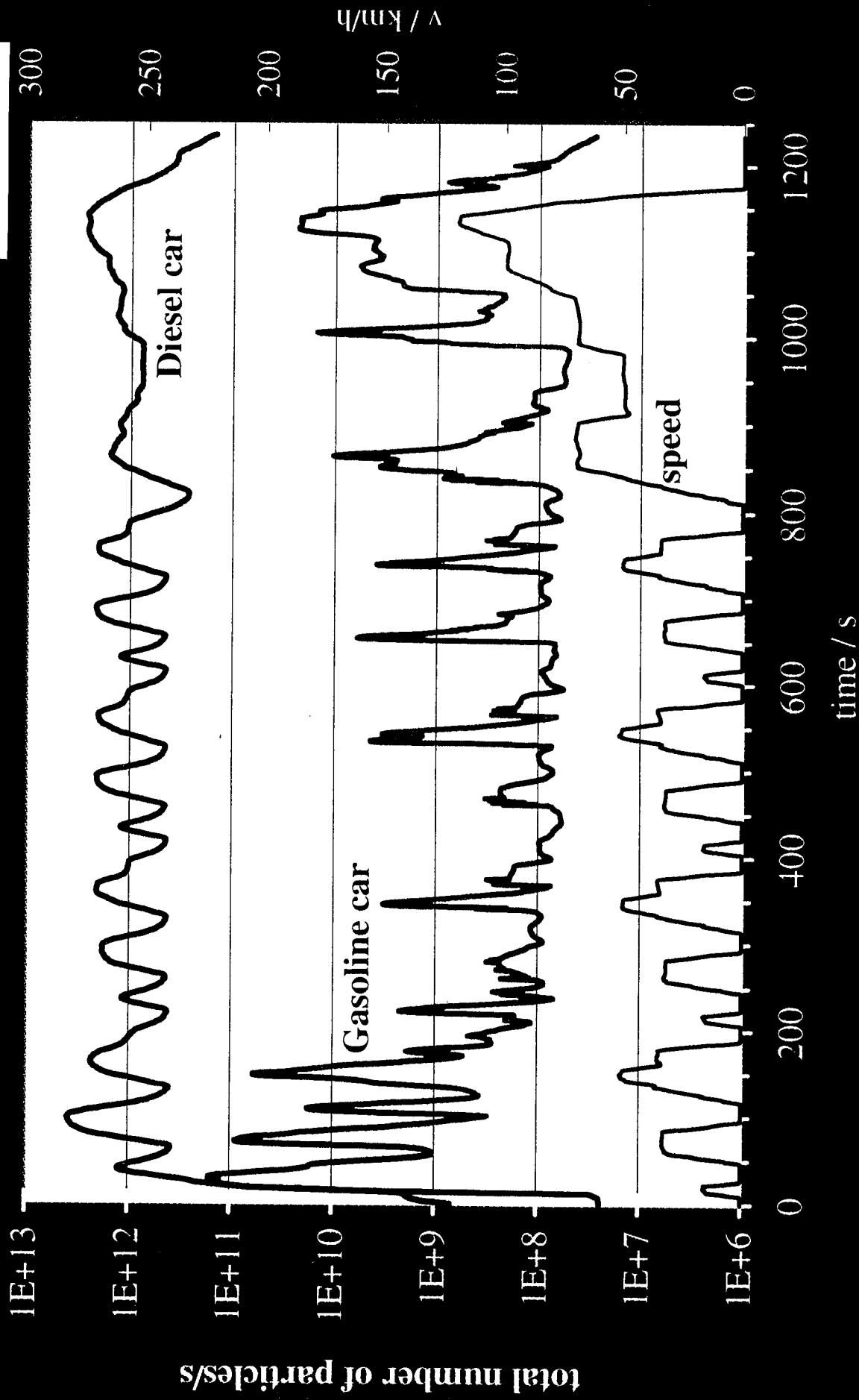
- Research institute within the Swiss Federal Institutes of Technology (ETH)
- About 770 employees
- Activities in four different fields:
 - research and development
 - official tests and consulting
 - collaboration in the preparation of standards and regulations
 - participation in the enforcement of federal ordinances



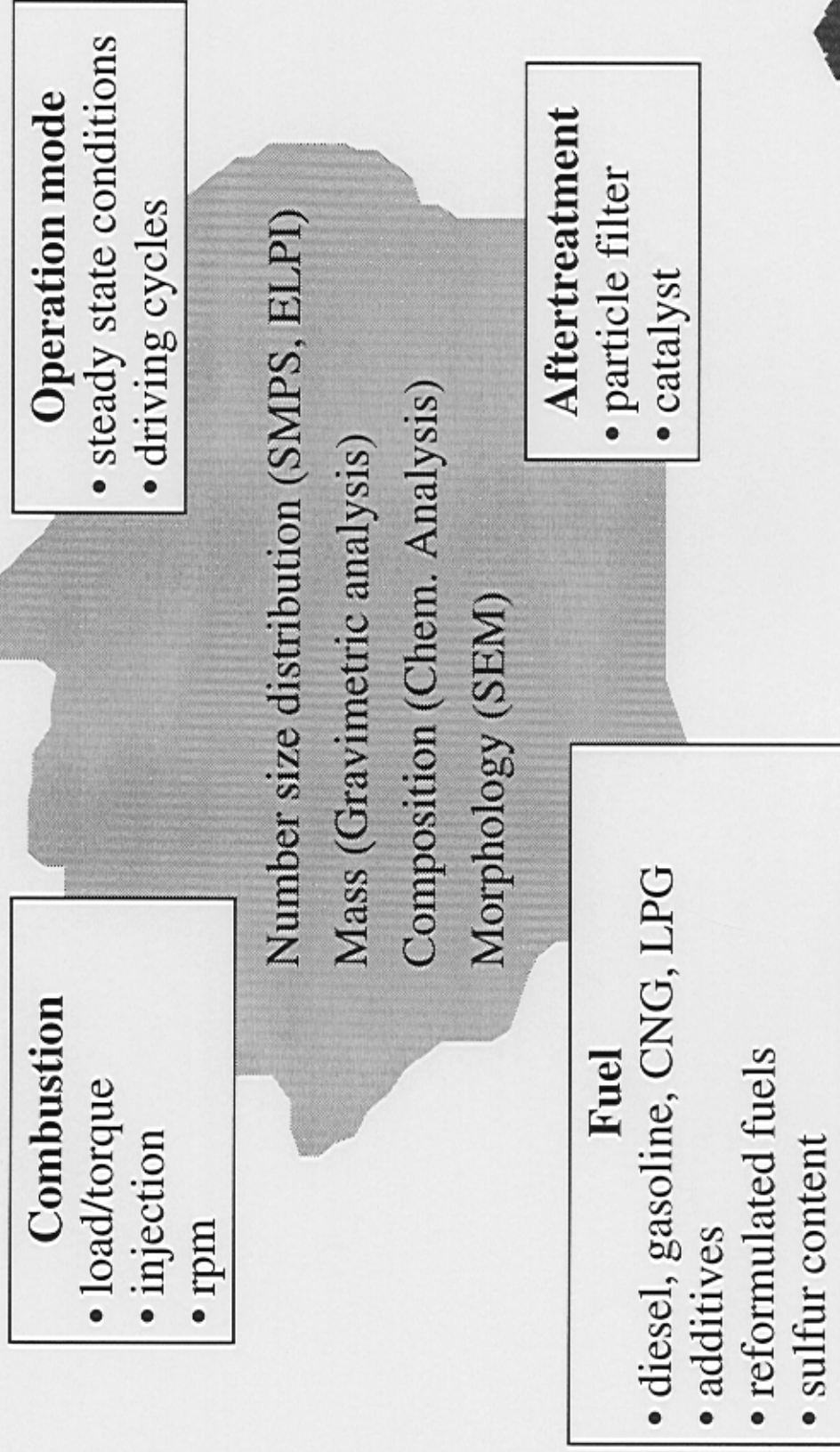
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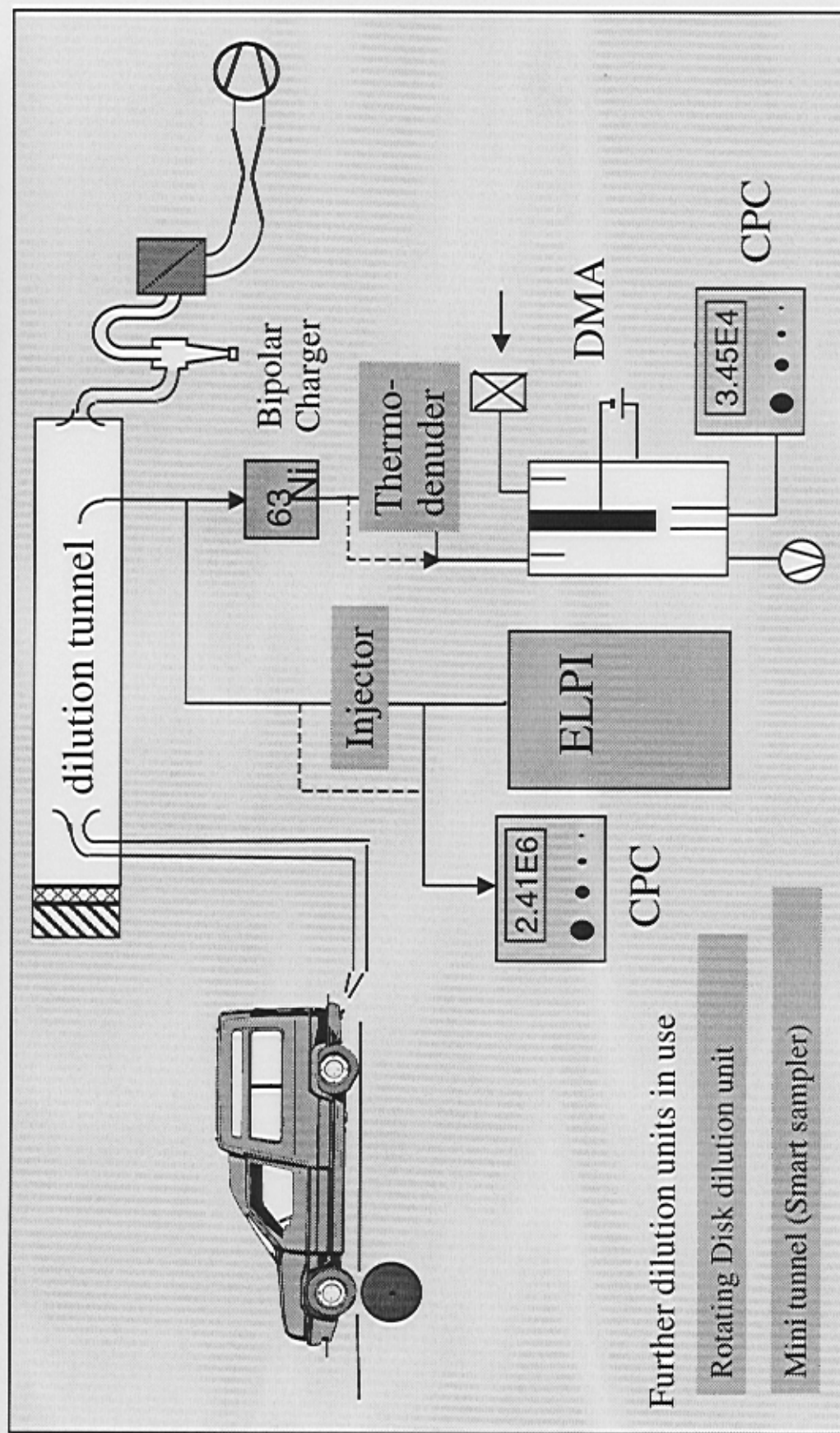
Total Particle Emission During a Driving Cycle



Impact of parameters on particle emission



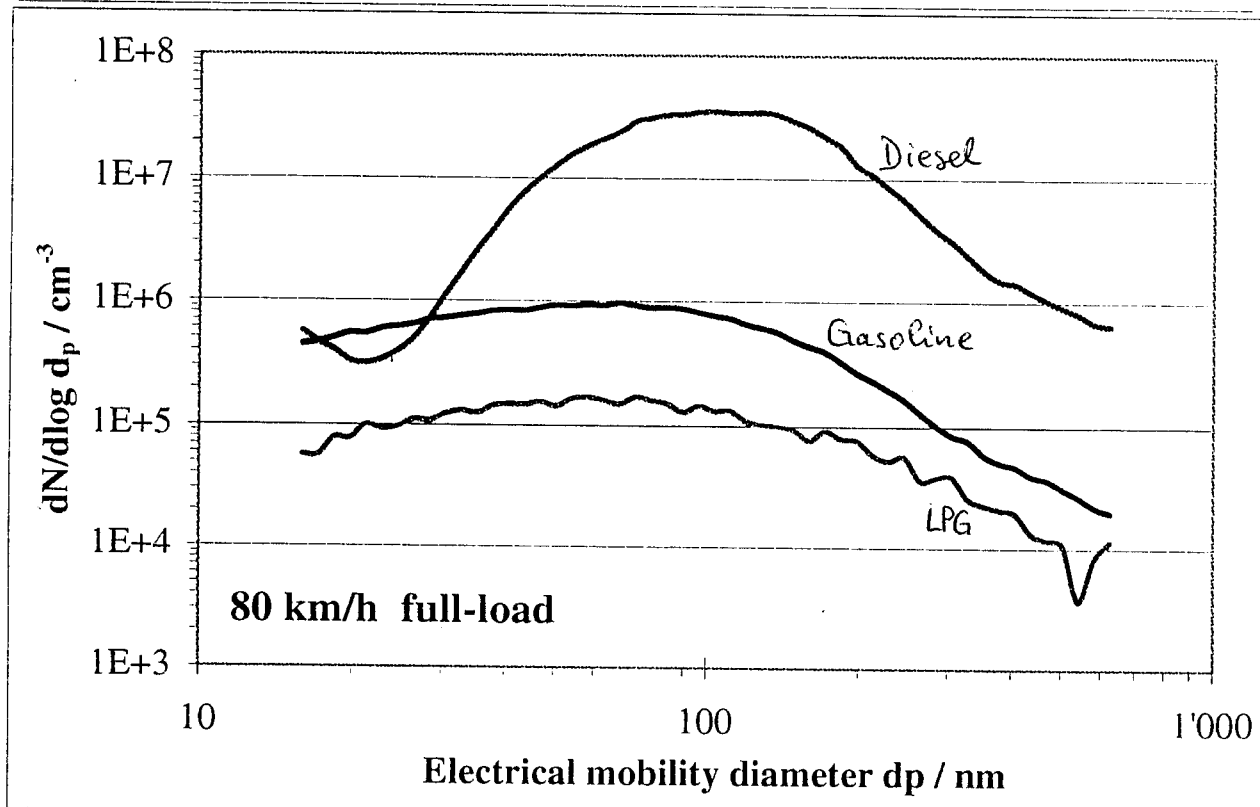
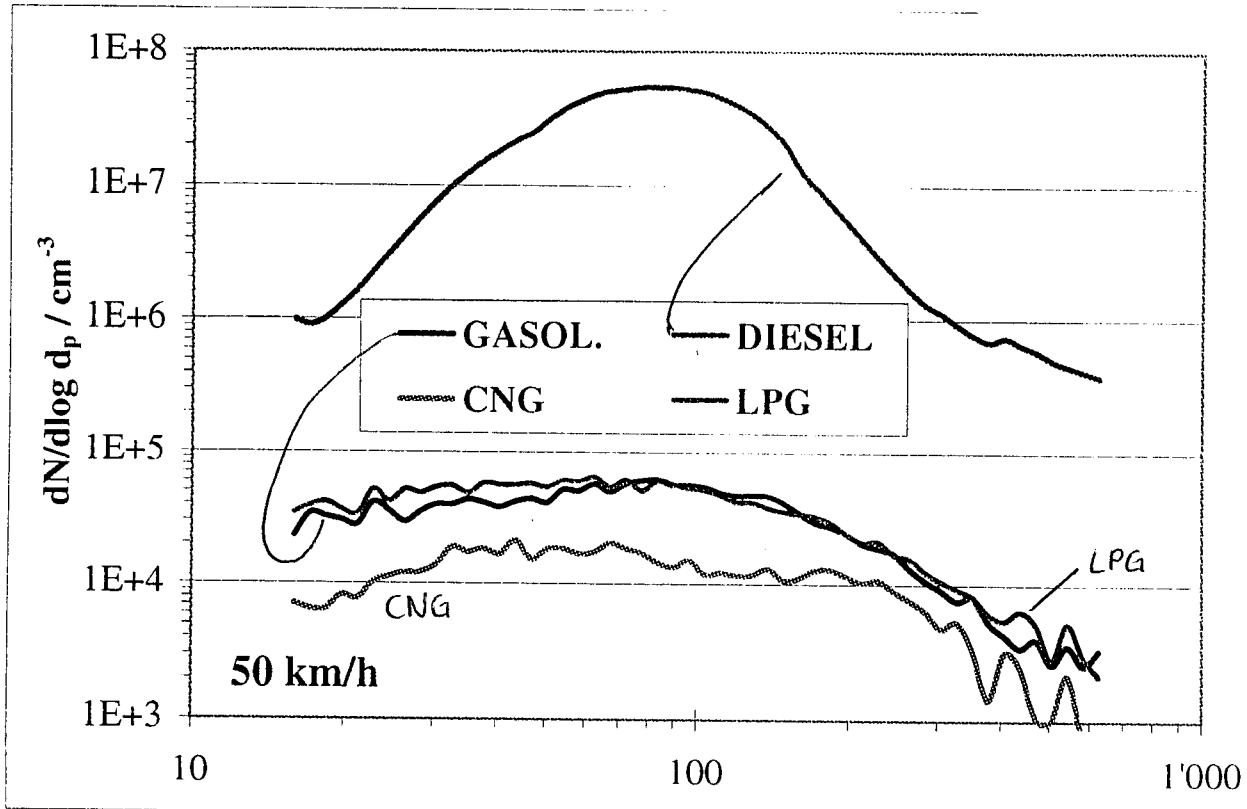
Experimental setup



Number size distributions at constant loads

vehicle type: Renault Express

(Diesel: 1870 cm³, Gasoline, CNG, LPG: 1390 cm³)



Results

Diesel

- high fine particle emission at all driving conditions
- only moderate dependence on load, acceleration and cold start conditions
- reduction of the particle size was observed at measurements with the oxi-cat converter

Gasoline

- significant lower fine particulate emission than the diesel car at all tested driving conditions
- stronger dependence on load, acceleration and cold start conditions
- no clear influence of the TWC on fine particulate was observed
- increased particle emission in number and mass was found for a GDI vehicle

LPG, CNG

- no significant fine particulate emission at constant driving conditions