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Nanoparticle analysis of Traffic Immission

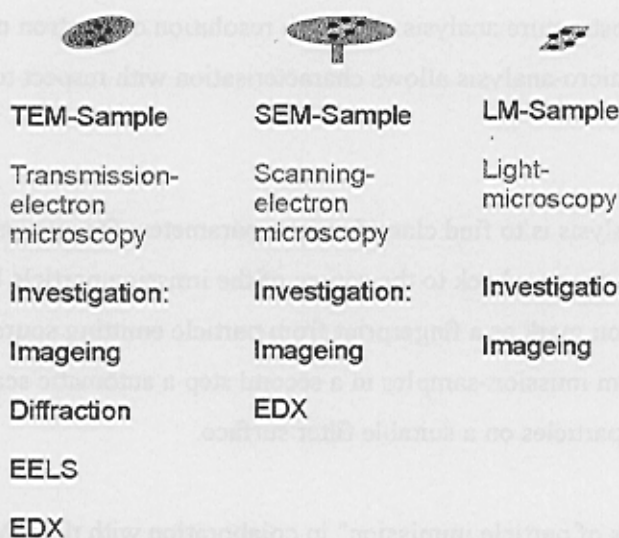
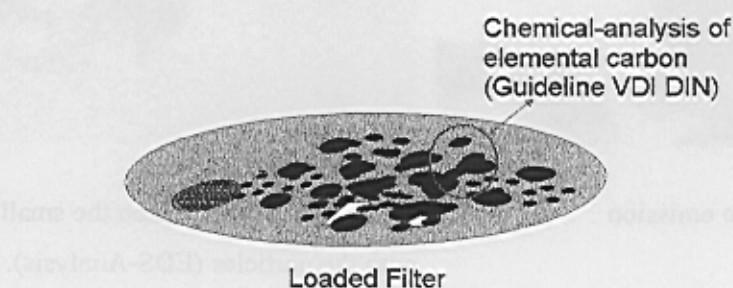
Nanoparticle analysis of traffic immission

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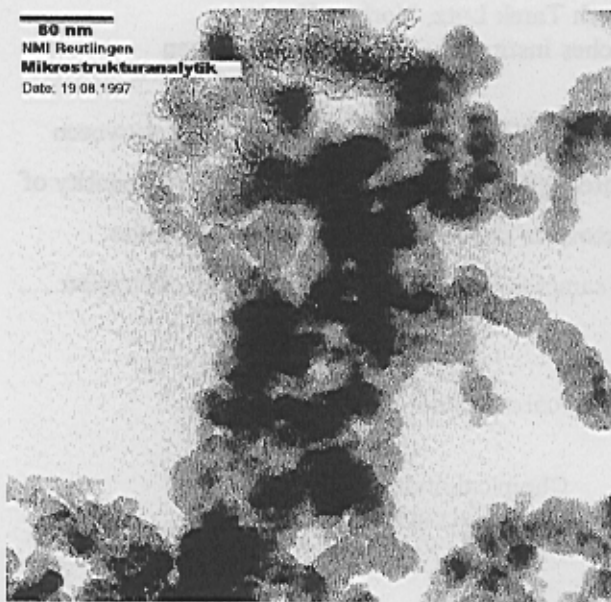
Naturwissenschaftliches und Medizinisches Institut der Universität Tübingen

The conventional soot measurements according to german VDI guidelines cannot discern between particles from different sources. Conventional measurements provide data only on amount quantity of particles but no information about source, microstructure an physicochemical properties of the particles. Besides that, it is known that conventional samples are affected by pollen, tire aberration.....

Preparation strategies and analytical methods

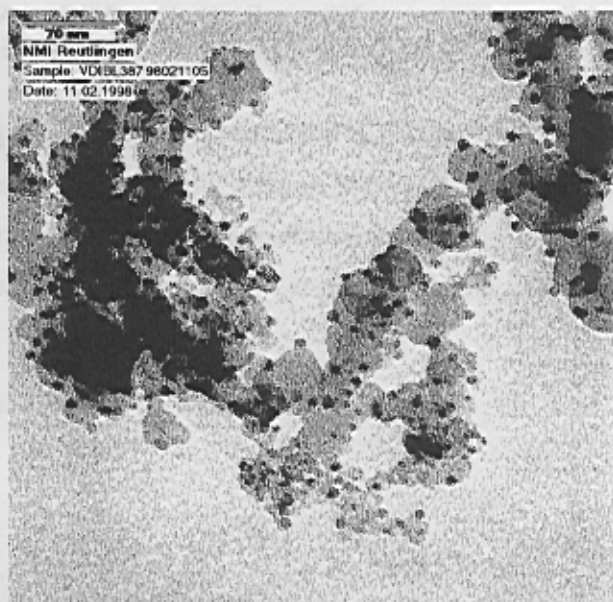


Sketch of sample paths to the different analytical methods.



TEM-micrographs

Particle from diesel-engine emission



Particle from Immission.

Sulfur was identified on the small black grains onto the particles (EDS-Analysis).

A more specific technique is microstructure analysis. The high resolution of electron microscopy (EM) in combination with X-ray micro-analysis allows characterisation with respect to morphology and chemical properties.

The goal of qualitative particle analysis is to find classification parameters for nanoparticles.

In a first step it is proposed to find the way back to the source of the immission particle by means of characteristic features (identification mark as a fingerprint from particle emitting sources).

To get semiquantitative results from immission-samples in a second step a automatic scanning system with motor stage is used to detect particles on a suitable filter surface.

A two year lasting project "sources of particle immission" in coloboration with the UMEG in Karlsruhe (has the operating authority of immission-measurement net in BadenWürttemberg) begins in Oktober 99.)

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