

Particulate Matter in the Atmosphere

One of the major ecological issues of the modern era is atmospheric pollution with particulate matter (PM). The atmosphere, in connection with the rest of the Earth's other geospheres (hydrosphere, lithosphere, biosphere), forms a stable and yet dynamic ecological environment for the planet.

The development of civilization leads to changes in the balance between this stability and dynamism, shifting the impact from a local scale to regional and even to global ones.

In the case of the atmosphere, one such impact is the increase in the concentration of anthropogenic particulate matter in it, that is particularly evident in anthropogenic landscapes, especially in large urban areas, where the constant monitoring of PM's in the air, now recognized as a key air quality parameter, has become a pressing issue of agenda. The theoretical part of this work provides a general overview of the nature of microparticles, their origin and pathways of migration, as well as their impact on ecology - affecting both the living and non-living nature.

The experimental part of the work aims to demonstrate the predicted differences in the quantity of microparticles in the air within a single megapolis, between a densely populated urban area under intense anthropogenic influence and a recreational zone.

In addition, the study compares data obtained using a scientific-grade GRIMM laser aerosol spectrometer with data obtained by a low-cost, easily accessible sensor operating on a similar principle: Laser PM Sensor, Model: SDS011.

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Session Classification: Parallel Session B: Chemistry topics & Interviews