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The potential of a particle filter considering a highly frequented road

Soot particles mainly emitted by Diesel motors are of great concern, since they are known to cause human health diseases. These particles normally show diameters of about 50 to 300 nm. Therefore, soot particles belong to the aerosols in the accumulation mode, which exhibit a relatively long residence time of a few days up to several weeks in the atmosphere. If all diesel vehicles would be equipped by particle filters, the emissions of these soot aerosols could almost be eliminated. In dependence on the filtration efficiency of particulate filters certified according to VERT (an acronym for improvement of the air in tunnel construction) soot emissions in the accumulation mode could be lowered by up to 99 %. A particle filter obligation results only in a small reduction regarding the conventional PM10 measurements, because the mass fraction of these aerosols is relatively small compared to the abrasion and resuspension particles produced by traffic. Within the framework of a new study, a field campaign will be performed at an urban main road regulated by traffic lights (disturbed traffic flow during most of the day) in Zurich. The aim of this project consists in the investigation of the effects which would result concerning the air quality, if all diesel vehicles would be equipped by particle filters. Based on this assumption statements on the concentration of characteristic aerosol parameters (particle number, size distribution) at the side of a city road shall be made. First results of this field campaign will be presented at the conference.

Short C.V.

David Imhof studied Geography at the University of Basel. In 2005 he finished his PhD thesis on "Roadside measurements of aerosol parameters and determination of emission factors for different vehicle categories" which he performed in the Laboratory of Atmospheric Chemistry at the Paul Scherrer Institute (PSI), Switzerland.

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