



Contribution of amino acids and amines to submicron organic aerosol in Mexico City during MILAGRO 2006.

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The Mexico City metropolitan area is one of the most populated areas of the world with a population larger than 18 million. The main sources of particulate matter are fossil fuel burning and biomass burning, whose effects are intensified by the low combustion efficiency due to high altitude and low oxygen concentration (Molina and Molina 2002).

The present study investigates the contribution of amines and amino acids to the organic mass of submicron particulate matter collected in Mexico City during the Megacity Initiative: Local and Global Research Observation (MILAGRO) in March 2006. Organic aerosol composition is investigated by Fourier Transform Infrared Spectrometry (FTIR) (Gilardoni et al. 2007, Maria et al. 2002). Aliphatic saturated C-H, aliphatic unsaturated C=C-H, aromatic C=C-H, organic hydroxyl OH, carbonyl C=O and amine NH groups are identified and quantified. Organic mass (OM) concentration is calculated as sum of the single functional group concentrations. Organic mass to organic carbon ratio (OM/OC) is calculated from FTIR compositional data.

Up to date, studies of nitrogen in atmospheric aerosols focus mainly on inorganic species, while knowledge of organic nitrogen is scarce. Spectral signatures are consistent with carbonyls and amines, but no characteristic peaks for amides or NO₂ were identified.

In the Amazon basin, the higher concentrations of water soluble organic nitrogen during the dry season compared to the wet season suggest that biomass burning is a source

of organic nitrogen species (Mace et al. 2003). The link between reduced organic nitrogen and biomass burning in Mexico City is investigated comparing the trend of amine NH concentration with that of non-soil potassium, used as biomass burning tracer.

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