1.246 Application of multi-dimensional mass spectrometry methods for the characterization of urban PM2.5 samples in Chengdu, China.

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Abstract:

Qualitative and quantitative characterization of anthropogenic and biogenic secondary organic aerosols (SOA) were performed for PM2.5 samples collected in Chengdu, China. The samples contained a series of nitro-aromatic compounds and organosulfates, indicating a strong influence of anthropogenic emissions on SOA formation. In particular, organosulfates detected at the site contained a number of highly oxygenated organosulfates with carbon number smaller than eight and oxygen number greater than seven. In this study, we used a travelling wave ion mobility spectrometer coupled to mass spectrometer was used to obtain structural information of highly oxygenated organosulfates. The use of a large polarizable drift gas (CO_2) enabled us to separate small isobaric isomer compounds. The fraction of organosulfates in the PM2.5 was estimated by the subtraction of inorganic sulfur compounds determined by IC from the total sulfur amount determined by ICP-MS. In addition, GC x GC/TOMFS was used to obtain information about the precursors for highly oxygenated organosulfate compounds.