

Ultrahigh resolution mass spectrometric characterization of organic aerosol from European and Chinese cities

Kai Wang (1), Ru-Jin Huang (2), and Thorsten Hoffmann (1)

(1) Institute of Inorganic and Analytical Chemistry, Johannes Gutenberg University of Mainz, Mainz, Germany, (2) Key Lab of Aerosol Chemistry & Physics, Institute of Earth Environment, Chinese Academy of Sciences, Xi'an, China

Organic aerosol constitutes a substantial fraction (20-90%) of submicrometer aerosol mass, playing an important role in air quality and human health. Over the past few years, ultra-high resolution mass spectrometry (UHRMS) has been applied to elucidate the chemical composition of ambient aerosols. However, most of the UHRMS studies used direct infusion without prior separation by liquid chromatography, which may cause the loss of individual compound information and interference problems. In the present study, urban ambient aerosol with particle diameter $< 2.5 \mu\text{m}$ was collected in Mainz, Germany and Beijing, China, respectively. Two pretreatment procedures were applied to extract the organic compounds from the filter samples: One method uses a mixture of acetonitrile and water, the other uses pure water and prepared for the extraction of humic-like substances. The extracts were analyzed by ultra-high-performance liquid chromatography coupled with an Orbitrap mass spectrometer in both negative and the positive modes. The effects of pretreatment procedures on the characterization of organic aerosol and the city-wise difference in chemical composition of organic aerosol will be discussed in detail.