Contribution ID: **13** Type: **Poster**

Trace elements in PM10, PM2.5 and PM1.0 aerosols

Friday, 16 September 2011 13:39 (2 minutes)

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Ambient aerosol samples were taken in several megacities (e.g. Paris, Los Angeles) with a Rotating Drum Impactor (RDI). The RDI sampled aerosol particles with a volumetric flow of 16.6 l min-1 (1 m3 h-1) and particle size segregation in the ranges of 10-2.5 µm, 2.5-1.0 µm and 1.0 to approximately 0.1 µm (Richard et al. 2010). Sampling time was 2 hours. Subsequently, the elemental composition was analyzed using synchrotron radiation induced X-ray fluorescence spectrometry (SR-XRF) at the X05DA beamline (elements with Z = 13-30; Al-Zn) at the Swiss Light Source and at the beamline L (elements with Z = 24-82; Cr-Pb) at HASYLAB at DESY. Raw counts per element were calibrated using external reference standards on thin foils measured with the same beamline setup (Bukowiecki et al. 2005 and Richard et al. 2010). The elemental composition of aerosols is used to identify the spatial and temporal variability of emission sources in megacities.

Bukowiecki et al. Environ. Sci. Technol. 39, 5754-5762 (2005).
Richard et al. Atmos. Meas. Tech. 3, 1473-1485 (2010).

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Advancing Quantitative Chemical Imaging

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Session Classification: Poster session II and lunch

Track Classification: Poster Session II (Friday)