Geophysical Research Abstracts, Vol. 8, 10380, 2006
SRef-ID: 1607-7962/gra/EGU06-A-10380

Composition and chemistry of tropospheric secondary organic aerosols

T. Hoffmann, J. Warnke, M. Schott and C. Reinnig

Institute of Inorganic and Analytical Chemistry, Johannes Gutenberg-University Mainz, Duesbergweg 10-12, 55128 Mainz, Germany (t.hoffmann@uni-mainz.de)

The formation of secondary organic aerosols (SOA) has been investigated intensively during the last 20 years in numerous field and laboratory studies. Therefore, a general understanding exists about the most important VOC precursors, the underlying gas phase chemistry, the major particle phase products and the basic physico-chemical processes during aerosol formation. During the first years of SOA-research attention was paid just to the rather low volatile and semivolatile oxidation products, which directly contribute to the particle phase by gas-to-particle conversion and which can easily be analysed by standard techniques. More recent studies show that also volatile carbonylic products formed in the gas phase oxidation of organics may contribute over a longer period of time to the SOA mass by the formation of low volatile oligomers. Likewise, the chemistry of peroxides are speculated to be involved in the formation of higher molecular weight compounds. This kind of organic aerosol chemistry result in increased particle mass and a lower volatility of the organic aerosol fraction. Both biogenic and anthropogenic VOCs can serve as precursors for higher molecular weight compound formation. However, still the characterisation and identification of the products is analytically challenging and the mechanisms of their formation unclear. This contribution tries to summarise the current state-of-the-art about composition and chemistry of secondary organic aerosol components.