



Secondary Organic Aerosol Formation in the SAPHIR Chamber

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The secondary organic aerosol (SOA) formation through oxidation of α -pinene was investigated in the SAPHIR chamber of the Forschungszentrum Jülich. α -pinene, which is one of the most abundant monoterpenes emitted by vegetation, is widely used in laboratory studies of the formation of secondary organic aerosols. Recently the use of OH scavengers and their influence on reaction mechanisms and SOA yields has been discussed. We investigated the formation of SOA in the reaction of 10 ppb α -pinene with OH, Ozone and NO₃ respectively. α -pinene was measured with a proton transfer mass spectrometer (PTR-MS), OH and NO₃ were measured by differential optical absorption spectroscopy (DOAS). The aerosol chemical composition and size distributions were measured with an aerosol mass spectrometer and a SMPS, respectively. The direct measurements of the OH formed during the ozonolysis of α -pinene allow a quantification of the contribution of OH initiated α -pinene degradation to the formation of SOA. Measured OH concentrations will be compared to modelled OH concentrations. The relative importance of the investigated oxidation pathways in day and night time chemistry of α -pinene will be discussed.