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Aerosol Mass Spectrometric Investigations of the formation of SOA from NO_3 + Isoprene, Limonene, and β-Pinene Reactions

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We present aerosol mass spectrometric (AMS) results of NO_3 oxidation experiments in the atmospheric simulation chamber at Research Centre Juelich. Three volatile organic compounds (VOCs) of biogenic origin, isoprene, limonene and β-pinene, reacted separately with NO_3 at atmospheric relevant conditions. Initial VOC concentrations were between 10 ppb and 15 ppb and the NO_3 concentrations did not exceed 100 ppb. Aerosol particle mass yields ranged from 10% for isoprene to $\sim$50% for β-pinene. We identify significant fractions of the produced SOA as organic nitrate compounds. The comparison of AMS results to results from Thermal Dissociation – Laser Induced Fluorescence (TD-LIF) shows a high correlation of aerosol particle mass evolution with gas phase organic nitrate formation. We will present specific mass spectrometric features of the SOA formed by NO_3 oxidation of monoterpenes with focus on high resolution mass spectral results. Furthermore, we will discuss the atmospheric relevance of NO_3 initiated SOA formation from biogenic VOC.