

## Ozonolysis of individual shikimic acid particles studied with in situ STXM/NEXAFS

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Atmospheric aerosols are an important focus of environmental research due to their effect on climate and human health. Organic compounds account for a large fraction of total fine aerosol mass (up to 90%). Chemical and optical characteristics of particles can be altered by chemical ageing, which in turn affects their environmental impact.

In this study we therefore investigated the changes in chemical composition and morphology of shikimic acid as an organic particle proxy [1] upon in situ exposure to ozone in presence of humidity. This was achieved by monitoring changes at the C-edge via scanning transmission X-ray microscopy (STXM) and near edge X-ray absorption fine structure (NEXAFS) spectroscopy. Measurements were conducted at the PoLux beamline at Swiss Light Source. We used an environmental micro reactor [2,3], designed specifically for the end station, to enable the investigation in situ.

We observed oxidation of shikimic acid particles in situ during exposure to ozone at different humidities, whereby humidity was found to be a critical factor controlling the rate of the reaction.

[1] P.M. Medeiros et al. Environ. Sci. Technol. 42 (2008)

[2] T. Huthwelker et al. Rev. Sci. Instrum. 81 (2010)

[3] V. Zelenay et al. J. Aerosol Sci. 42 (2011)

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