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## Mineral dust and iron oxide particles studied under oxidizing and acidic conditions

*Thursday, 15 September 2011 14:13 (2 minutes)*

Metal oxides as a common part of mineral dust have an important role in the heterogeneous reactions of dust particles in the presence of ozone or acidic gases. Furthermore, mineral dust particles serve as a primary external iron source to the open ocean and the bioavailability of iron from these particles is highly dependent on the oxidation state of the metal [1,2]. In the present study we have investigated both pure and nitric acid treated iron oxide particles by Scanning transmission X-ray microscopy and Near edge X-ray absorption fine structure (NEXAFS) techniques to observe changes in morphology and functional groups of pure Fe(III)-, Fe(II,III)- and mineral dust particles. In order to follow the chemical and morphological changes in situ, particles were measured in the environmental micro reactor after exposure to ozone and nitrogen oxides [3]. Characteristic features corresponding to different oxidation states of iron were monitored by following changes at oxygen K- and iron L-edges.

[1] Duce R. A. et al. *Limnol. Oceanogr.* 36 (1991)

[2] P. Falkowski et al. *Science* 281 (1998)

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

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