

# UPTAKE OF NITRIC ACID, DINITROGEN PENTOXIDE, OZONE AND THE NITRATE RADICAL ON A SINGLE LIQUID DROP

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A novel technique for the investigation of uptake processes on gas-liquid interfaces will be presented. It allows the generation and analysis of single liquid drops inside a flow tube reactor. The in situ analysis of the drop is performed by broad band UV-VIS absorption spectroscopy.

Using this set-up the uptake of nitric acid and dinitrogen pentoxide on pure water was measured by monitoring the occurrence of the nitrate band centered at a wavelength of 300 nm. The uptake of ozone on NaI solutions of various concentrations was followed by the formation of the triiodide ion which is a product of the oxidation of iodide by ozone. Using aqueous solutions of the dye Alizarin Red S, the uptake of the nitrate radical could be quantified.

In order to extract information on fundamental parameters, e.g. the mass accommodation coefficients ( $\alpha$ ) of the species, a computer model is applied. It solves the diffusion equation for the transport of gas phase species to the interface numerically. The result is a separation of the influence of this process on the rate of the overall uptake process.

The mass accommodation coefficients  $\alpha > 0.03$ ,  $\alpha = 0.011$  and  $\alpha > 0.02$  were obtained for nitric acid, dinitrogen pentoxide and ozone, respectively.