



Reactions of the nitrate radical with three carboxylic acids: comparison of the reactivity of the neutral and the anionic form.

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In atmospheric gas phase chemistry, NO_3 is known to be a strong nighttime oxidant, but it can also be taken up into the aqueous phase of clouds and aerosols. Low weight carboxylic acids are hygroscopic and have recently received much attention because of their ubiquity in the tropospheric aqueous phase and their potential effects in cloud formation. The reactions of NO_3 radicals with pyruvic, lactic and glycolic acid and their anions were investigated in aqueous solutions. A strong difference in the rate constants between neutral and anionic form of some carboxylic acids was already observed (Exner *et al.*, 1994).

A laser flash photolysis long path laser absorption (LFP-LPLA) setup was used to investigate the temperature dependencies of these reactions between 278 K and 318 K. The nitrate radical was generated in solution by the mean of peroxydisulfate photolysis at $\lambda = 351$ nm.

The Arrhenius parameters of the investigated reactions will be shown; emphasizing a difference of behaviour of the neutral and the anionic form toward the reaction with NO_3 radical. The observed difference will be discussed in terms of the reaction mechanism involved.