



Reaction of the nitrate radical with dicarboxylic acids: evolution of the reactivity with the pH

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In atmospheric gaseous and aqueous phases, NO_3 radical is known to be a strong nighttime oxidant. NO_3 is especially important for the nighttime oxidation of the organic constituents of aqueous aerosols. In this case, the chemical interaction between this radical and organic acids are of special interest. It has been shown that the reactions between NO_3 and carboxylic acids such as formic, acetic, glycolic, lactic or pyruvic acid exhibit a change in the reactivity between the anionic and the neutral form in the aqueous phase.

However dicarboxylic acids are ubiquitous and their oxidation by NO_3 only partially described. We will here show new data on their oxidation by the nitrate radical. These data will concern dicarboxylic acids, such as malonic, mesoxalic or succinic acids.

These informations have been derived by using an experimental set-up based on laser flash photolysis using a Teflon waveguide as reaction cell was used to investigate NO_3 aqueous phase kinetics. T-dependencies studies were performed in order to know rate constants and activation parameters to figure out which mechanism is responsible of the change of reactivity with the pH. The link between the reactivity of dicarboxylic acids and former measured carboxylic acids will be established.