

# Determination of photochemical properties of photosensitizers in tropospheric aqueous solution

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## Abstract

The presence of photosensitizers in the atmospheric particulate phase is an important new field of research of increasing activity and establish a new pathway of secondary organic aerosol (SOA) formation.<sup>1-7</sup> However, kinetic and photochemical data as well as mechanisms of particle-phase reactions involving photosensitizers are still scarce.

In this study, the quantum yields of the excited triplet states of organic photosensitizers like imidazole-2-carboxaldehyde, benzophenone, and 4-benzoylbenzoic acid were determined by laser flash photolysis-laser long path absorption (LFP-LLPA). Spectroscopic studies were carried out using the LFP-LLPA setup to investigate time-resolved absorbance spectra ( $\lambda = 200 - 800$  nm) of the excited triplet state of the photosensitizers as well as to observe their formation at a specific time after the laser pulse ( $t_{\text{delay}} = 100$  ns – 300  $\mu$ s).

The received data will be included into further studies to evaluate the importance of particle-/aqueous-phase chemistry of photosensitizers for atmospheric processes as well as the impact of photosensitized reactions on atmospheric particles possibly contributing to SOA formation.

## References

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