



Photosensitized reactions as a source of halogen in the marine boundary layer

A. Jammoul, S. Dumas, B. D'anna and C. George

CNRS, UMR5256, Institut de recherches sur la catalyse et l'environnement de Lyon,
Villeurbanne; F-69626, France (adla.jammoul@ircelyon.univ-lyon1.fr / FAX: +33 472448438)

The chemical composition of organic matter in natural sea surface films reveal the presence of a complex mixture of molecules, the sea surface microlayers are composed of proteins, fatty acids and humic-type materials. The benzophenone was chosen as a model type of unsaturated molecules found in the ocean and sea surface microlayer.

The interactions between triplet benzophenone and halide species X^- have been studied by laser flash photolysis in aqueous solutions. The decay of the triplet state of benzophenone was followed at three different wavelengths 525, 370 and 345 nm. Triplet lifetimes measurements gave the interactions rate constants, Kq ($M^{-1}.S^{-1}$) close to diffusion controlled for iodide ($\sim 8 \times 10^9$), somewhat less for bromide ($\sim 3 \times 10^8$) and very low for chloride ($< 10^6$). In the presence of a halide, the triplet is quenched, and leads to the formation of a new species with a transient absorption at 355nm and a lifetime much longer than the one of triplet state of benzophenone. It appears that these interactions as possibly a new source of halogen in the atmosphere.