

Influence of O₂ on the photochemistry of sulfur organic species – Matrix isolation experiment

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Phytoplankton are known to produce series of CH₃OC(O)(CH₂)_nSH compounds which contribute to the organic sulfur cycle in marine environments [1]. Volatile sulfur organic compounds are highly reactive and play an important role in atmospheric chemistry [2]; however, their photoreactivity is still sparsely investigated. Matrix-isolation technique is a powerful technique to investigate full chemical process since it provides detection of reactive intermediates of mainly unimolecular mechanisms [3].

In this presentation, we will show the study carried out on a long carbon-chain S-rich compound i.e. S-allyl thiopropionate (S-ATP, CH₂CHCH₂SC(O)CH₂CH₃), isolated in argon matrix, when exposed to UV-Vis light and molecular oxygen. Several species of atmospheric interest such as CO, OCS or ethane were evidenced from irradiation of S-ATP. Transitional formation of methyl ketene CH₃-CH=C=O was also evidenced by its C=C=O stretching mode. Three main pathways are proposed, in agreement with the literature [4]. The impact of the presence of O₂ on the photolysis mechanisms and the nature of the products was also investigated.

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