# Influence of $O_2$ on the photochemistry of sulfur organic species – Matrix isolation experiment

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Phytoplankton are known to produce series of $CH_3OC(O)(CH_2)_nSH$ 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, $CH_2CHCH_2SC(O)CH_2CH_3$), 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 $CH_3$-CH=C=O was also evidenced by its C=C=O stretching mode. Three main pathways are proposed, in agreement with the litterature [4]. The impact of the presence of $O_2$ on the photolysis mechanisms and the nature of the products was also investigated.

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