Atmos. Chem. Phys. Discuss.,
https://doi.org/10.5194/acp-2020-717-RC4, 2020

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Ozonolysis of fatty acid monolayers at the air–water interface: organic films may persist at the surface of atmospheric aerosols" *by* Ben Woden et al.

Anonymous Referee #4

Received and published: 9 September 2020

This study investigated the fate of organic-coated aerosols under simulated atmospheric conditions. I think their results could inspire a lot of future researches such as exploring atmospheric oxidation products and kinetics of cooking aerosols using chamber/flow tube under indoor/outdoor environment. This paper has a clear logical structure and is easy to follow. The methods and assumptions are valid and clearly outlined, and the results are well discussed. However, the paper is too long and seems a little wordy. I would recommend shorten it.

However, I have a few suggestions on the following areas:

1) Simulated atmospheric environment: the temperature (<10 °C) in this study is not

Printer-friendly version

Discussion paper

highly atmospheric relevant if considering summer seasons (20∼40 °C). People like to grill in the summer, generating a lot of aerosols coated with fatty acids. I think the condition in this study might be more relevant to winter seasons. Also, this study doesn't include any relative humidity (RH) information. RH can greatly affect aqueous-phase chemical reactions and is important for describing the reaction environment.

2) Section 3.4 Atmospheric Aging Simulation: The authors observed that "yet more oleic was added, and a third ozonolysis reaction carried out", and concluded that the product monolayer is impervious to further ozonolysis. There are other factors that might slow down the reaction rate of ozonolysis. For example, the water surface might already be saturated with the products. Even if you add more reactants, the reactions might not happen without removing previous products in the organic layer. I suggest the authors add more evidence to this conclusion.

Grammar or spelling problems: 1) "3.4 Atmospheric Ageing Simulation", change "age-ing" to "aging"

Interactive comment on Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2020-717, 2020.