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Title: **Investigating the Oxidation of Organic Films on Cloud Droplets**

The climatic effects of the organic components of atmospheric aerosol are poorly understood and have been highlighted by the Intergovmental Panel on Climate Change as an area of low scientific understanding. All cloud droplets must nucleate on aerosol by taking water vapour from the atmosphere. Cloud formation is of climatic importance as clouds increase the Earths albedo, cooling the atmosphere. Atmospheric particles have been shown to contain organic molecules which concentrate at the air-water interface in the form of a film [1]. Atmospheric chemical oxidation of this film may cause the hygroscopic effects of the film change during cloud condensation nuclei formation. Drizzle production can be suppressed and cloud albedo increased by the reaction of the films to OH radical [2]. Using a Langmuir Trough with a subphase of H_2O_2 under a 254 nm lamp we have recently been investigating a proxy for the reaction of hydroxyl radical with stearic acid. Initial results show the decay of film on the surface of the trough is accelerated. Further studies using the SURF neutron reflectometer on stearic acid films shows that products forming from the reaction could further alter the surface tension of the film and therefore could affect the properties of a cloud droplet coated in an organic film. The lower the surface tension of the film the larger a cloud droplet can grow increasing the lifetime of the cloud in the atmosphere.

1. Donaldson D.J. and Vaida V. **The Influence of Organic Films at the Air-Aqueous Boundary on Atmospheric Processes**

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2. King M.D., Thompson K.C, and Ward A.D. **Laser Tweezers Ramen Study of Optically Trapped Aerosol Droplets of Seawater and Oleic Acid Reacting with Ozone: Implications for Cloud-Droplet Properties**

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