OXIDATION AND REPLACEMENT OF OLEIC ACID AT THE AIR/WATER INTERFACE TO UNDERSTAND FAT-COATED AEROSOLS

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Field studies of marine and continental aerosols find fatty acid films present on aqueous tropospheric aerosols. Using vibrational sum frequency generation spectroscopy, we present a molecular-level investigation of the interfacial structure of fatty acid monolayers at the air/water interface and, furthermore, explore reactions with atmospheric oxidants and these model monolayer systems. Results include the reaction of oleic acid with atmospheric oxidants and the subsequent replacement of the products at the interface by less soluble species from the aqueous sub-phase.