

Abstract Submitted
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**An Investigation of Ionic Binding to Fatty Acid Monolayers by
Broad-bandwidth Sum Frequency Generation Vibrational Spectroscopy¹**

CHENG TANG, HEATHER ALLEN, Ohio State University — Model study of ionic binding of fatty acid monolayer is a good proxy towards understanding the fundamental chemistry in biological processes. In this study, we used broad-bandwidth sum frequency generation (BBSFG) vibrational spectroscopy to investigate the ionic binding event that leads to deprotonation of the fatty acid head groups. Palmitic acid (C15C00H) exists as monolayer on aqueous surfaces, and on aqueous alkali and alkaline solutions surfaces. Surface vibrational stretching modes of palmitic acid from 1400 cm^{-1} to 3700 cm^{-1} were observed (COO^- , $\text{C}=\text{O}$, C-H , and O-H). Palmitic acid is mostly protonated at the aqueous surface at neutral pH (~ 6). However, various degrees of deprotonation are initiated by introduction of different cations in the salt solutions albeit at neutral pH.

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