

Abstract Submitted  
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**Vibrational Spectroscopy and Unique Structures of Water Molecules Confined in Molecular Films and Membrane**<sup>1</sup> HONG-FEI WANG, Pacific Northwest National Laboratory — Development of nonlinear spectroscopy, such as Sum Frequency Generation Vibrational Spectroscopy (SFG-VS), enables in-situ measurement of the structural details of molecular films and membrane. Vibrational spectral signatures of various water species have thus been observed and identified. These observation and knowledge have provided detail pictures of the water mediated specific structural changes in molecular films and membrane. Here the study on the accommodation and penetration of water molecules into molecular monolayer films is to be presented. These results not only demonstrated that surface nonlinear spectroscopic methods are effective tools for interrogating spectroscopy of confined and biological water, they also provided unique model molecular systems in understanding and predicting their behaviors.

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