INTERFACIAL WATER STRUCTURE OF PHOSPHOLIPID LANGMUIR MONOLAYERS INVESTIGATED BY VIBRATIONAL SUM FREQUENCY GENERATION SPECTROSCOPY

XIANGKE CHEN, GANG MA, HEATHER C. ALLEN, *Department of Chemistry, The Ohio State University, Columbus, OH 43210*.

Broad bandwidth sum frequency generation (BBSFG) spectroscopy was employed in the free OD stretching region to investigate the interfacial water structure of Langmuir monolayers, 1,2-dipalmitoyl-d62-sn-glycero-3-phosphocholine (DPPC-d62) and 1,2-dipalmitoyl-d62-sn-glycero-3-phosphoethanolamine (DPPE-d62) on a D2O subphase. BBSFG spectra were measured in-situ in a Langmuir trough under different surface pressures. Results showed that even under the full surface coverage of phospholipid, the free OD stretching band, rather than disappear, persists. In addition, the free OD band red-shifted to a lower frequency. The observed frequency red-shift is attributed to the perturbation of the phospholipid hydrocarbon chain on the free OD bond.