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Lipid/water system with varying charge densities at the interface monitored by sum-frequency vibrational spectroscopy WOONGMO SUNG, SANGJUN SEOK, DOSEOK KIM, Department of Physics, Sogang University — Lipids having negatively- and positively charged headgroups were mixed together and spread on water to make Langmuir monolayers with interface charge densities controlled at will. These systems were then monitored with surface-selective sum-frequency vibrational spectroscopy. Sum-frequency signal from the interfacial water molecules changed sensitively with the composition of lipids in the mixture, reflecting the electric field induced by the lipid headgroups. By comparing the interference patterns between CH stretch vibration peaks of the lipid molecules and OH stretch vibration peaks of the water molecules in the sum-frequency spectra, the change in the polar ordering of the interfacial water molecules was monitored.

Doseok Kim
Department of Physics, Sogang University

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