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Simulation of the rotational mobility and hydration of laurdan in a DPPC bilayer RYAN FREI, Department of Physics, Brigham Young University, DAVID BUSATH, Department of Physiology and Developmental Biology, Brigham Young University — Laurdan (2-dimethylamino-6-lauroylnaphthalene) is a fluorescent dye commonly used in biophysical experiments to detect ordered regions in lipid bilayers through changes in the polarization and wavelength of emitted light. It is supposed that the fluidity of the bilayer affects changes in polarization by allowing or hindering free rotation of the dye molecule. We have used molecular dynamics (MD) to investigate the rotational diffusion of Laurdan in liquid and gel dipalmitoylphosphatidylcholine (DPPC) bilayers at temperatures above and below the phase transition. Results will be examined for correlation between relaxation times and experimental observations of the decay of anisotropy of the emitted light and between hydration and shift in fluorescence wavelengths. We will also show similar data for Prodan (2-dimethylamino-6-propionylnaphthalene) for comparison.

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