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Second Harmonic Generation study on the transport dynamics of small molecules across liposome bilayers

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SHG (Second harmonic generation) can be used to probe the surface of centrosymmetric particles suspended in bulk isotropic solution, because it is forbidden in centrosymmetric media under the dipole approximation. Using this technique, we can study the transport dynamics of small organic dye molecules across liposome bilayers. Because molecules adsorbed on the outer layer are in opposite direction with that on the inner layer by symmetry, the SH field is proportional to the difference between the number density of dye molecules on both sides of the bilayer, and the time dependence of the SH intensity is related to the time constant of the molecular transportation of dye molecules across liposome bilayers.