Use of a phospholipid analogue of diphenyl-1,3,5-hexatriene to study vesicle fusion

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The synthesis of a phospholipid analogue of diphenyl-1,3,5-hexatriene (DPH) and its use to investigate melittin-induced phospholipid vesicle fusion are described.

The analogue has fluorescence properties that are appropriate to steady state and time-resolved studies of phospholipid aggregates and will not redistribute through the solution to bind to unlabelled material.

Phospholipid dispersions prepared in the presence of the analogue were examined as a function of temperature and the results were compared with those seen for DPH. In lipids below the characteristic phase transition temperature, the motion seen with both probes is similar, as judged by the depolarization of fluorescence. Above the transition temperature the analogue is more motionally restricted than DPH is.

The fluorescent phospholipid analogue should resolve some of the current uncertainties surrounding the parent chromophore. It is hoped that time-resolved measurements using synchrotron radiation will give information on the reported effects of malignancy and viral transformation on cell membranes.

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Time-resolved IR spectral photography

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The non-linear optics basis and experimental realization of time-resolved IR spectral photography (TRISP), a new technique of nanosecond time-resolved IR absorption spectroscopy, are described. TRISP has been applied to the study of transients. It was used to study the time evolution of the rotational temperature of HCl during CO_2-laser-induced explosions of HN_3–HCl mixtures. In a recent experiment *tert*-butyl radicals were formed by ruby laser photolysis of $(CH_3)_3CNO$. TRISP was used to obtain the gas phase IR spectrum of the