

Abstract Submitted
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Fluorescence dynamics of microsphere-adsorbed sunscreens¹ R. KRISHNAN, T. NORDLUND, Dept. of Physics, Univ. of Alabama at Birmingham — Sunscreens are generally oily substances which are prepared in organic solvents, emulsions or dispersions with micro- or nanoparticles. These molecules adsorb to and integrate into skin cells. In order to understand the photophysical properties of the sunscreen, we compare steady-state and time-resolved fluorescence in organic solvent of varying dielectric constant ϵ and adsorbed to polystyrene microspheres and dispersed in water. Steady-state fluorescence is highest and average fluorescence lifetime longest in toluene, the solvent of lowest ϵ . However, there is no uniform dependence on ϵ . Sunscreens PABA and padimate-O show complex emission spectra. Microsphere-adsorbed sunscreens exhibit highly non-exponential decay, illustrative of multiple environments of the adsorbed molecule. The heterogeneous fluorescence dynamics likely characterizes sunscreen adsorbed to cells.

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