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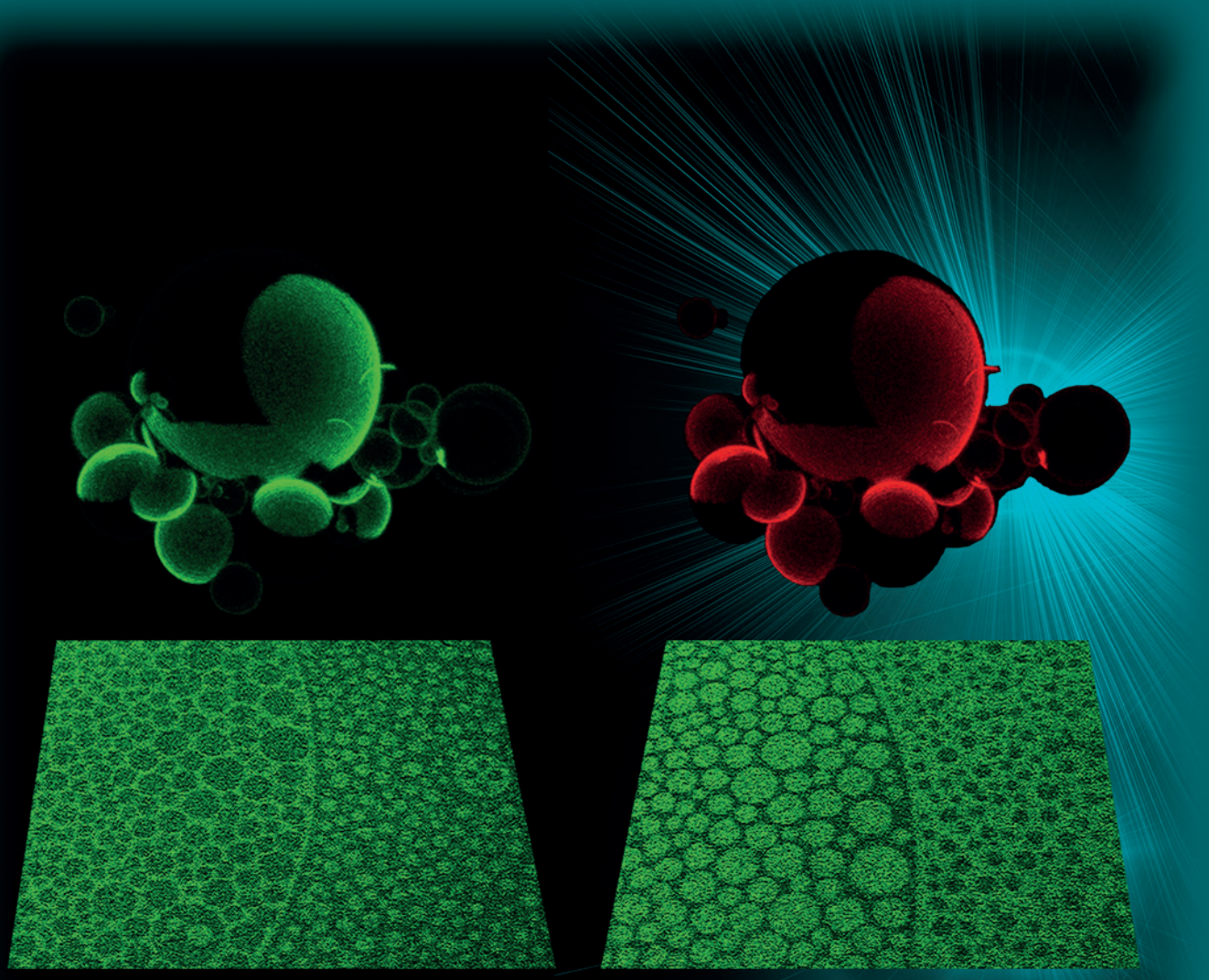

Light changes matter

6/2013

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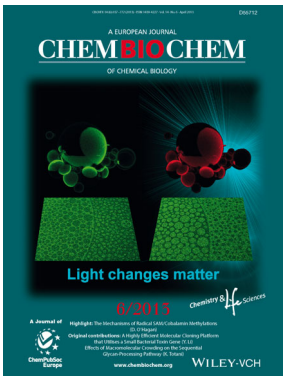
Cover Picture

Erdinc Sezgin, Grzegorz Chwastek, Gokcan Aydogan, Ilya Levental, Kai Simons, and Petra Schwille*



The cover picture shows that widely used Bodipy-labeled fluorescent lipid analogues undergo green-to-red photoconversion upon illumination with blue light. In their communication on p. 695 ff., P. Schwille et al. show that this photoconversion is highly dependent on the lipid environment. In heterogeneous membranes showing liquid-ordered/liquid-disordered phase coexistence, the photoconversion takes place preferentially in the liquid-disordered phase. Even without a spectral photoconversion, illumination can induce changes in fluorophores that lead to an inversion of their preference for coexisting lipid phases. Properly controlled experimental designs can exploit these phenomena as tools for elucidating the physicochemical nature of cellular membrane structure by taking advantage of switchable fluorescence spectra and/or phase localization. Of more immediate importance, these photophysical phenomena can lead to lipid-environment-specific false-positive signals in experimental techniques such as FRET in which spectral identity/separation is important if not carefully considered.