

Self-organized micellae with UV-light triggered fluorescence turn-on

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Particles with stimulus-responsive fluorescence are in demand for imaging and diagnostic applications [1,2]. Different strategies have been employed to obtain such particles (micellae or liposomes). We report a novel approach based on fatty acids conjugated with a photolabile group, which self-organize into micellae in water. Under near-UV illumination the photolabile group dissociates and becomes fluorescent, accumulating inside the drops.

Our experiments showed the formation of micellae with sizes ranging from one to several tens of micrometers. Initially, particles were not visible under a microscope with a 450–490 nm excitation and >520 nm emission filters. Illumination with a 365 nm LED during 100 ms turned on the orange-colored emission of micellae. The signal was stable for at least an hour. Further UV illumination increased the fluorescence intensity and made even the smallest observed particles very bright. This effect may potentially be used in life sciences (e.g., to track movements of particles from the specific origin) because fatty acids represent a bio-friendly material.

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References

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