Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics.

Supporting Information

Fluorescence Switching of Sanguinarine in Micellar Environments

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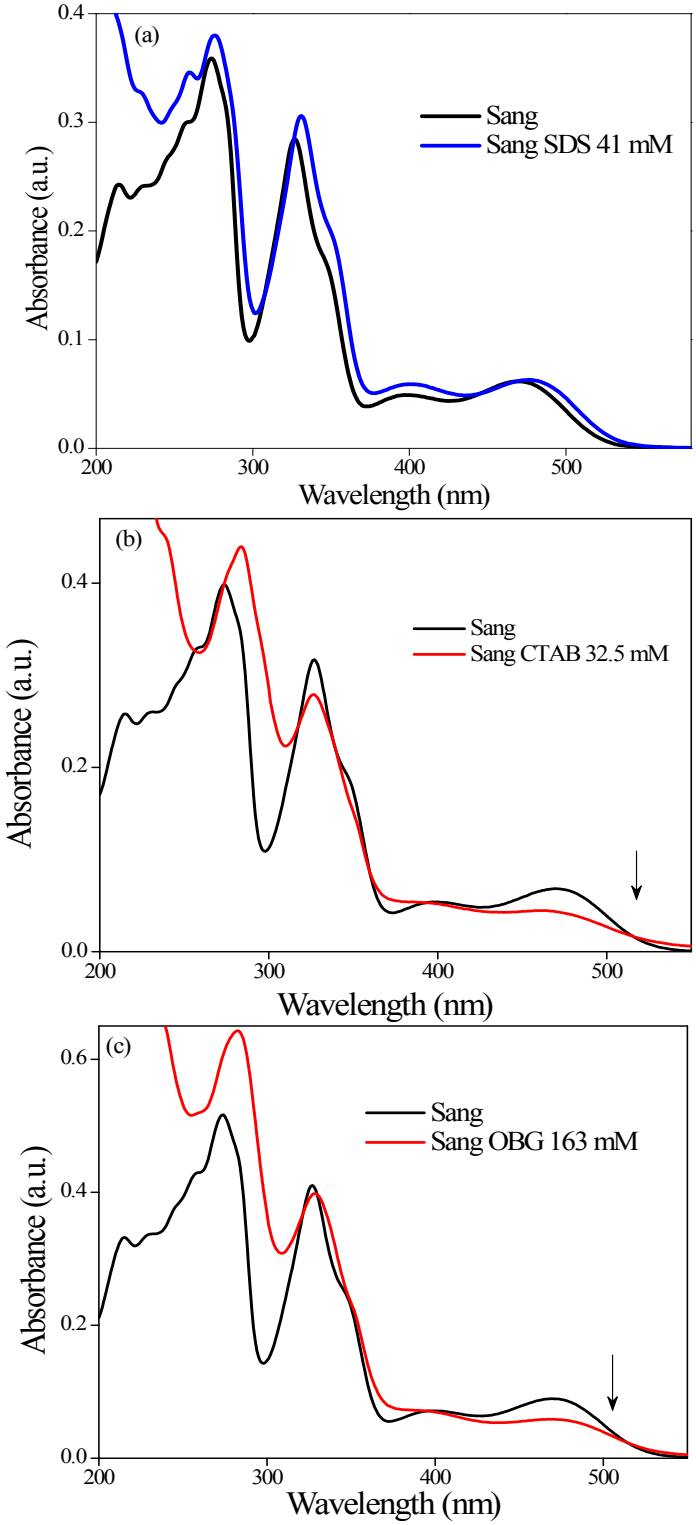

Figure S1. Absorption spectra of sanguinarine (~10 μM) in presence of different surfactants (a) SDS, (b) CTAB, (c) OBG.

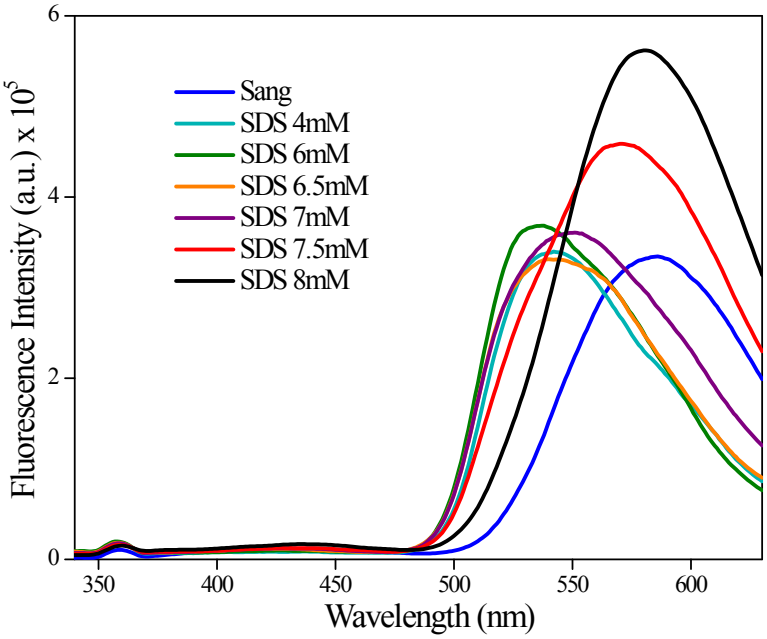

Figure S2. Emission spectra of sanguinarine in presence of SDS (0 to 8 mM) up to its CMC.

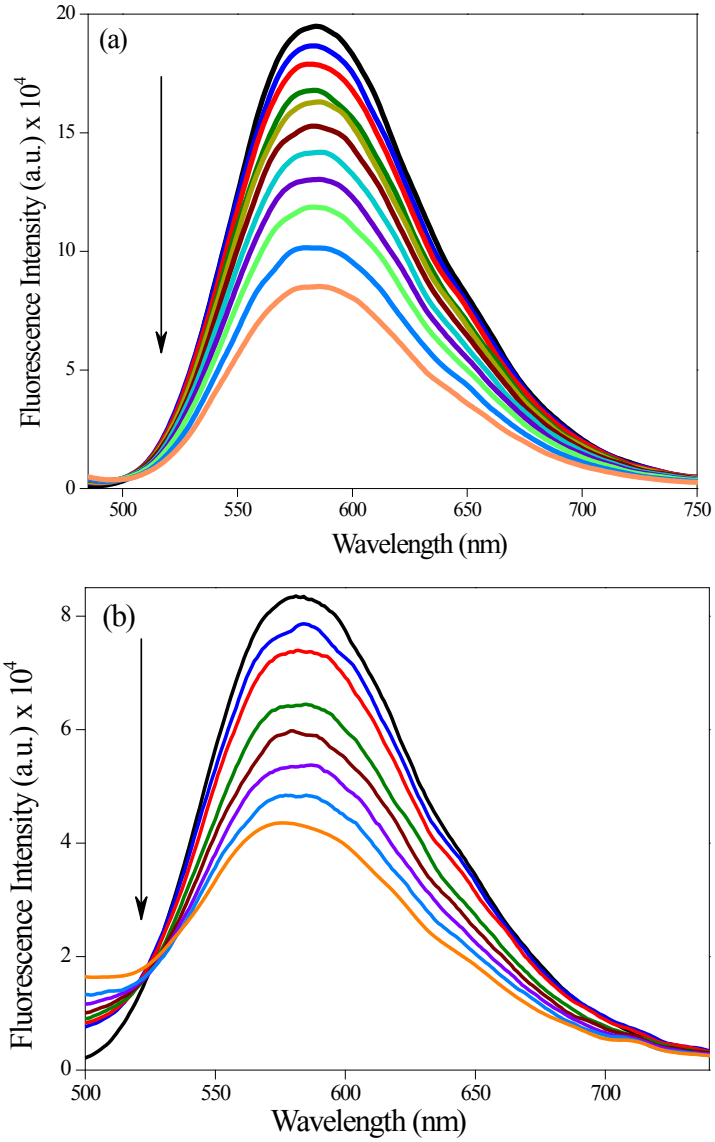

Figure S3. Emission spectra (λ_{ex}= 475 nm) of sanguinarine (~10 μM) with increasing concentration of different types of surfactants (a) CTAB (0 to 32.5 mM) and (b) OBG (0 to 163 mM). The direction of arrow indicates lower to higher concentration.

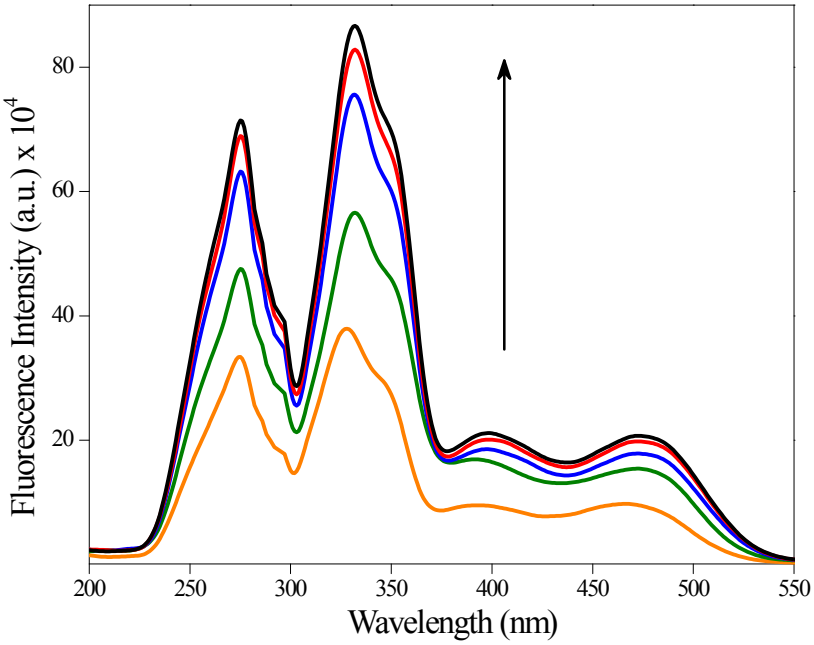

Figure S4. Excitation spectra of sanguinarine (~10 μM) at λ_{ex}= 580 nm with increasing concentration of SDS (0 to 41 mM). The direction of arrow indicates lower to higher concentration.

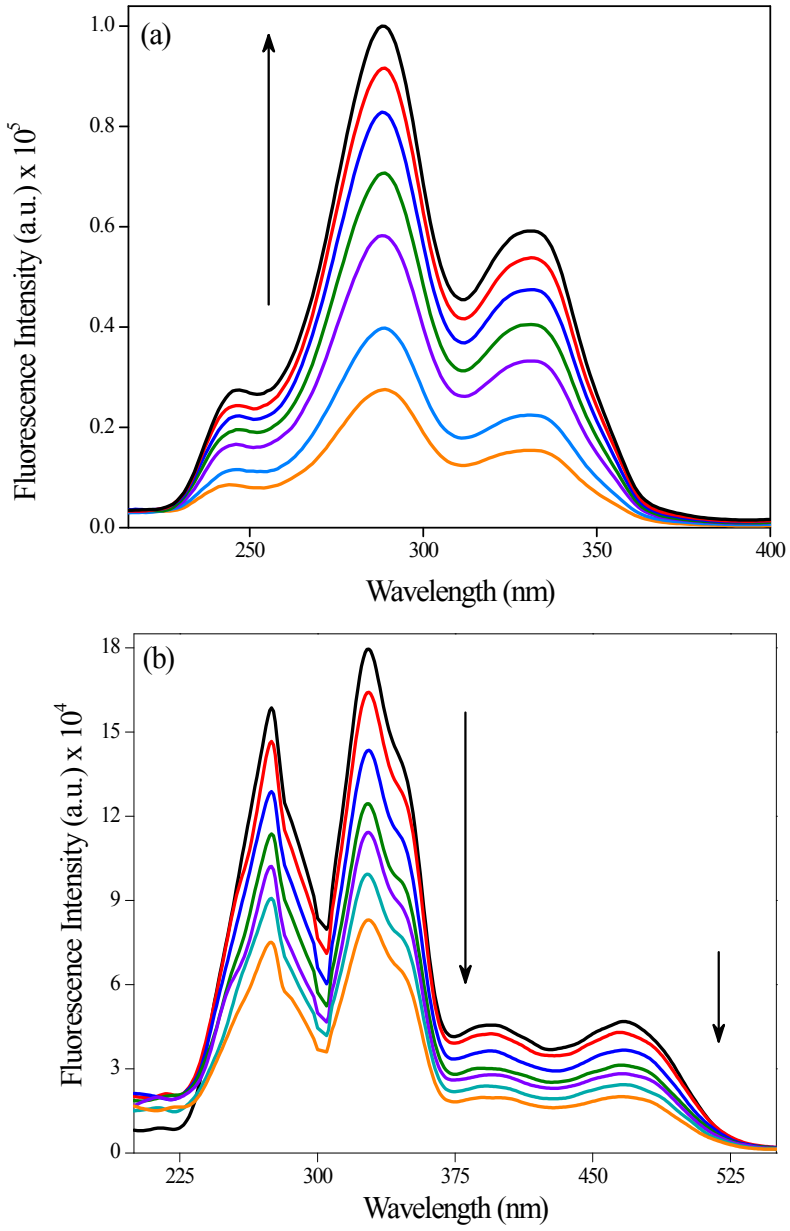

Figure S5. Excitation spectra of sanguinarine (~10 μM) (a) at λ_{ex}= 420 nm (b) at λ_{ex}= 580 nm with increasing concentration of CTAB (0 to 32.5 mM). The direction of arrow indicates lower to higher concentration.

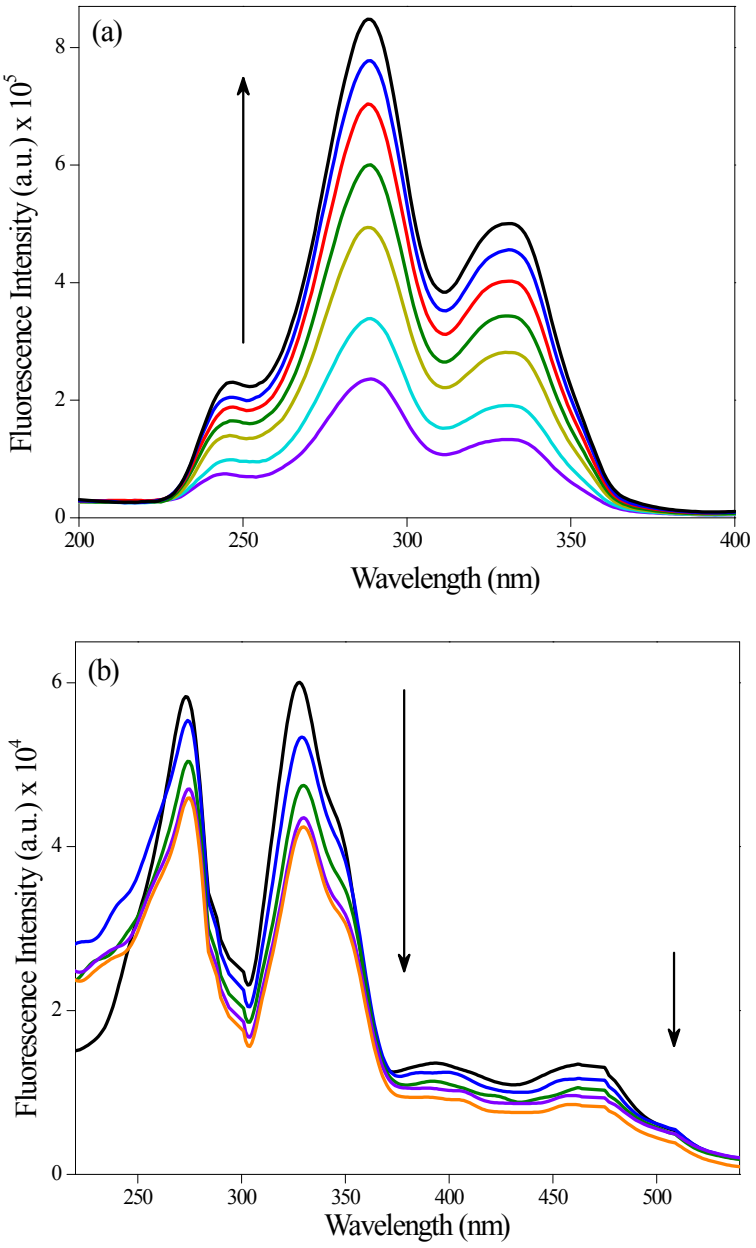

Figure S6. Excitation spectra of sanguinarine (~10 µM) (a) at λ_{ex}= 420 nm (b) at λ_{ex}= 580 nm with increasing concentration of OBG (0 to 163 mM). The direction of arrow indicates lower to higher concentration.

Note S1

Calculation of hydrodynamics diameter (D_h) for different drug-micellar system from fluorescence depolarization time (τ_r):

The τ_r value obtained for different drug-micellar complex is employed to calculate the hydrodynamic diameters (D_h) using the Stokes–Einstein relationship[1],

$$D_h = 2\left(\frac{3\,T\,\tau_r\,k_b}{4\,\pi\,\eta}\right)^{\frac{1}{3}}$$

Here, k_b is the Boltzmann constant, η is the viscosity coefficient of medium, T is the temperature in Kelvin unit.

For CTAB τ_r is 1.97 ns and D_h is 24.92 Å.

For OBG, τ_r is 2.30 ns and D_h is 26.24 Å.

For SDS, τ_r is 0.75 ns and D_h is 18.06 Å.

These values are well supported with literature[2-4].

Reference

1. J. R. Lakowicz;, *Principles of Fluorescence Spectroscopy;*, Springer, New York, 3rd edn., 2006.
2. G. Duplâtre, M. F. Ferreira Marques and M. da Graça Miguel, *J. Phys. Chem.*, 1996, 100, 16608-16612.
3. B. Lorber, J. B. Bishop and L. J. DeLucas, *Biochimica et Biophysica Acta (BBA) - Biomembranes*, 1990, 1023, 254-265.
4. B. K. Paul, D. Ray and N. Guchhait, *J. Phys. Chem. B*, 2012, 116, 9704-9717.