

Supporting Information

Synergistic enhancement in the drug sequestration power and reduction in the cytotoxicity of surfactant

Rahul Kalel, Aruna K. Mora, Birija S. Patro, Dipak. K. Palit, and Sukhendu Nath*

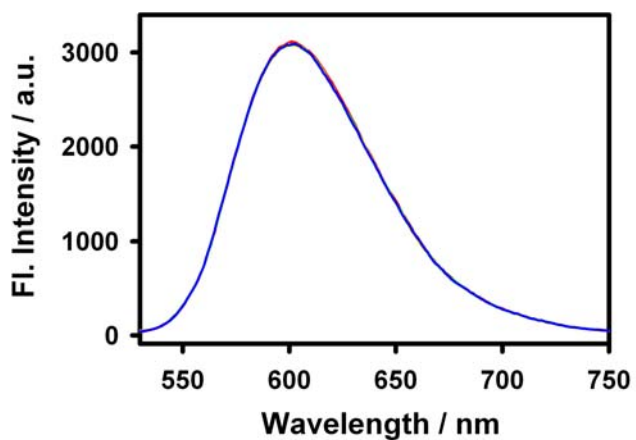


Figure S1: Emission spectra of EB in DNA-P105 solution in the presence of different concentrations (0-4 mM) of NaCl.

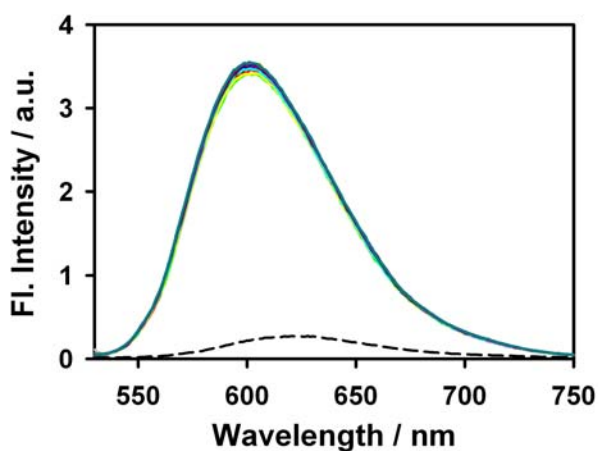


Figure S2: Emission spectra of EB in DNA solution in the presence of different concentrations of SDS (0-5 mM). The dashed curve is the emission spectra of EB in 5 mM SDS solution.

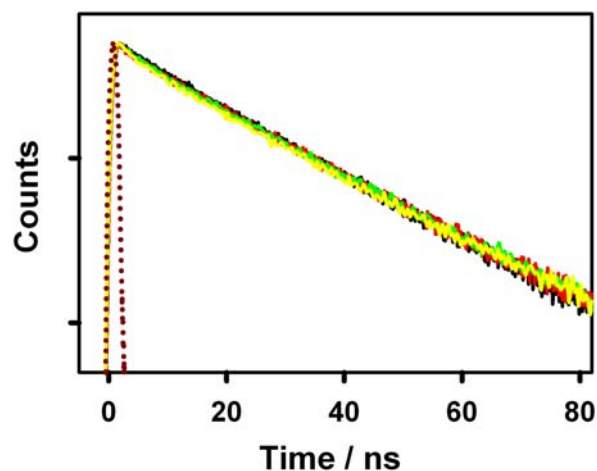


Figure S3: Emission transient decays for EB in DNA solution in the presence of different concentrations of SDS (0-4 mM). The dotted curve is the IRF.

Deconvolution of emission spectrum: The emission spectrum of EB in DNA-pluronic solution in the presence of different concentration of SDS ($I(\lambda)$) have been deconvoluted by using following equation

$$I(\lambda) = A_1 I^{\text{DNA}}(\lambda) + A_2 I^{\text{SA}}(\lambda) \quad (\text{S1})$$

where $I^{\text{DNA}}(\lambda)$ and $I^{\text{SA}}(\lambda)$ are the emission spectrum of EB in DNA-pluronic solution and in pluronic-SDS (4mM) supramolecular assemblies, respectively and A_1 and A_2 are their respective contribution to the total spectrum, $I(\lambda)$. $I^{\text{DNA}}(\lambda)$ and $I^{\text{SA}}(\lambda)$ are determined experimentally. Each emission spectrum, $I(\lambda)$, have been fitted by equation S1 using non-linear least square fitting to obtain the values of A_1 and A_2 .

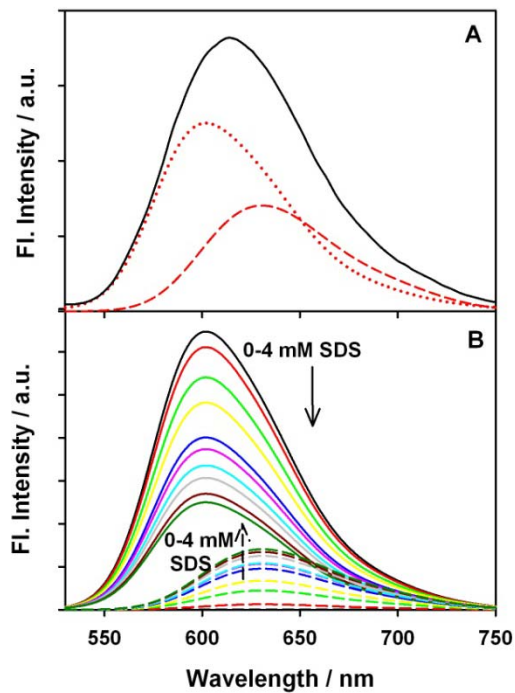


Figure S4-(A) Deconvoluted spectra for EB in DNA-P105 solution in the presence of 4 mM SDS. The solid curve is the experimentally measured emission spectra. The dotted and the dashed curves are the emission spectra of EB in DNA ($I^{\text{DNA}}(\lambda)$) and in P105-SDS assemblies ($I^{\text{SA}}(\lambda)$), respectively obtained by spectral deconvolution process. (B) Changes in the deconvoluted spectra for EB in DNA (solid lines) and in P105-SDS assemblies (dashed lines) in the presence of different concentrations of SDS.

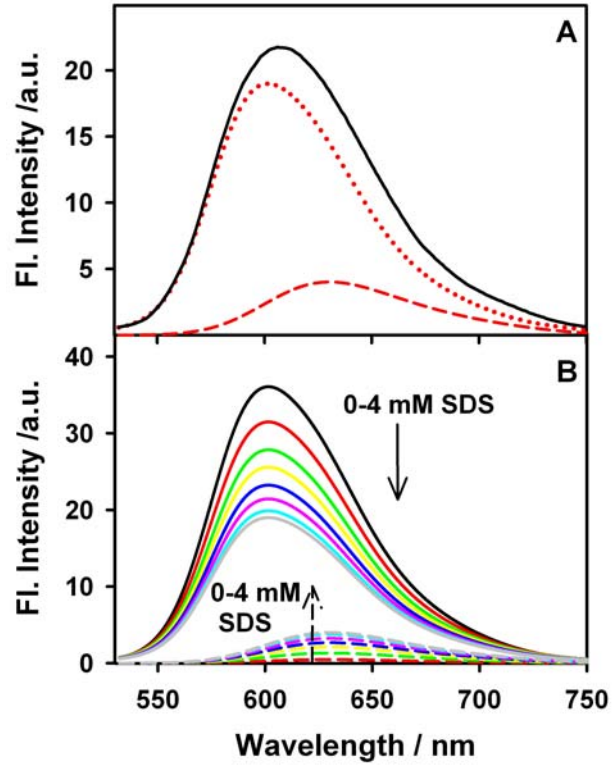


Figure S5-(A) Deconvoluted spectra for EB in DNA-F127 solution in the presence of 4 mM SDS. The solid curve is the experimentally measured emission spectra. The dotted and the dashed curves are the emission spectra of EB in DNA ($I^{\text{DNA}}(\lambda)$) and in F127-SDS assemblies ($I^{\text{SA}}(\lambda)$), respectively obtained by spectral deconvolution process. (B) Changes in the deconvoluted spectra for EB in DNA (solid lines) and in F127-SDS assemblies (dashed lines) in the presence of different concentrations of SDS.

Table S1- Fitting parameters for emission transient decays of EB in DNA and DNA-P105 solutions at different SDS concentrations.

| [SDS]/mM | τ_1 / ns | A ₁ | τ_2 / ns | A ₂ | τ_3 / ns | A ₃ | χ^2 |
|---------------|---------------|----------------|---------------|----------------|---------------|----------------|----------|
| Only DNA | - | - | 2.64 | 2.7 | 21.15 | 97.3 | 1.03 |
| 0.00 | - | - | 2.86 | 6.3 | 20.62 | 93.7 | 1.10 |
| 0.15 | 0.87 | 2.1 | 4.51 | 10.1 | 21.19 | 87.8 | 1.00 |
| 0.30 | 0.93 | 2.1 | 4.47 | 12.2 | 21.22 | 85.7 | 0.96 |
| 0.45 | 0.80 | 1.6 | 4.25 | 15.1 | 21.32 | 83.7 | 0.99 |
| 0.74 | 1.21 | 2.4 | 4.72 | 18.6 | 21.48 | 79.0 | 1.05 |
| 1.17 | 1.08 | 2.5 | 4.50 | 22.2 | 21.46 | 75.3 | 0.97 |
| 1.44 | 0.80 | 1.9 | 4.30 | 25.0 | 21.52 | 73.1 | 1.08 |
| 1.84 | 0.70 | 1.8 | 4.26 | 26.1 | 21.44 | 72.1 | 1.06 |
| 2.72 | 1.04 | 2.6 | 4.43 | 27.1 | 21.52 | 70.3 | 1.04 |
| 3.90 | 0.93 | 2.0 | 4.26 | 28.5 | 21.53 | 69.5 | 1.04 |
| P105-4 mM SDS | 1.38 | 9.5 | 4.29 | 90.5 | - | - | 1.04 |

Table S2: Fitted parameters for the emission transient decays of EB in DNA-F127-SDS solutions.

| [SDS]/mM | τ_1 / ns | A ₁ | τ_2 / ns | A ₂ | τ_3 / ns | A ₃ | χ^2 |
|---------------|---------------|----------------|---------------|----------------|---------------|----------------|----------|
| 0.00 | - | - | 2.67 | 4.73 | 21.00 | 95.27 | 1.04 |
| 0.16 | 1.69 | 3.02 | 4.62 | 6.36 | 20.31 | 90.63 | 0.98 |
| 0.46 | 1.32 | 2.22 | 4.78 | 9.98 | 21.69 | 87.88 | 1.04 |
| 0.88 | 0.94 | 1.85 | 4.43 | 13.84 | 21.86 | 84.31 | 1.00 |
| 1.40 | 1.29 | 2.34 | 4.70 | 15.37 | 21.88 | 82.29 | 1.00 |
| 1.98 | 1.17 | 2.14 | 4.55 | 17.38 | 21.87 | 80.48 | 1.04 |
| 2.97 | 1.02 | 1.90 | 4.38 | 20.29 | 22.06 | 77.81 | 1.05 |
| 4.10 | 1.05 | 2.12 | 4.44 | 21.44 | 22.10 | 76.44 | 1.03 |
| F127-4 mM SDS | 1.55 | 13.23 | 4.34 | 86.77 | - | - | 1.18 |