

Supplementary Materials

Analysis of the Photophysical Behavior and Rotational-Relaxation Dynamics of Coumarin 6 in Nonionic Micellar Environments: The effect of Temperature

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Micellar properties as a function of temperature

Critical Micelle Concentration (CMC)

Table S1. Literature values of the critical micelle concentration (CMC) of the micellar systems at different temperatures.

T (K)	CMC (mM)		
	β -C ₁₂ G ₂	TX100	C ₁₂ E ₆
298.15	0.180 [1] 0.150 [2]	0.238 [3] 0.240 [4]	0.073[2] 0.072 [5]
303.15		0.231 [3]	0.068 [5]
308.15		0.221 [4]	
313.15	0.242 [1]		0.063 [5]
318.15		0.217 [4]	
323.15	0.255 [1]		0.060 [5]

Aggregation Number (N_{agg})

Aoudia and Zana have studied the mean aggregation number of β -C₁₂G₂ in a range of temperature. They determined that the aggregation number is nearly invariant in the T -range 16–60 °C, with an average value of 125 ± 10 [1], which is within the range reported by Baverbäck *et al.* of 137–113 at 25 °C [6].

The effect of temperature on the size of ethoxylated surfactants, including TX100 and C₁₂E₆ has been widely reported in the literature. See, for example, references [7–14]. The conclusion attained in these studies is that TX100 shows a modest increase in the aggregation number with temperature in comparison with C₁₂E₆. Specifically, it was observed that N_{agg} of TX100 increases with T , slowly in the T -range 25–40 °C (from 105 to ~150), but much more rapidly above 40 °C. On the contrary, N_{agg} of C₁₂E₆ increases dramatically as the temperature undergoes a relatively small change from 30 °C. Essentially the same behavior that we have observed by DLS measurements (see, Figure 6).

Plots in Figure S1 shows selected literature values of the aggregation number of TX100 and C₁₂E₆ for comparison.

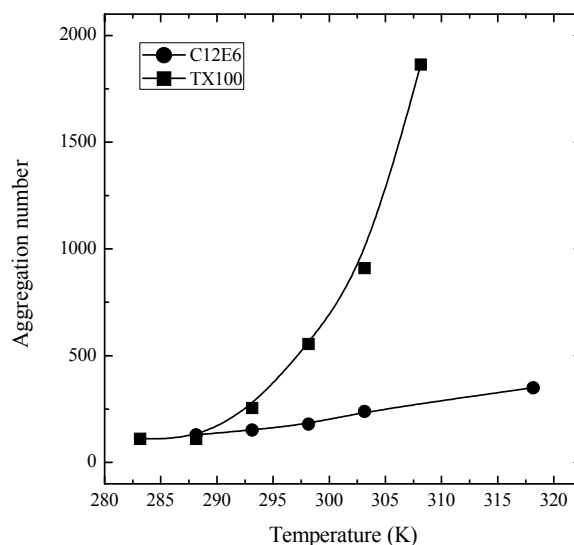


Figure S1. Literature data for the micellar aggregation numbers: (●) TX100 from reference [8] and (■) C12E6 from reference [10], as obtained by sedimentation equilibrium measurements.

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