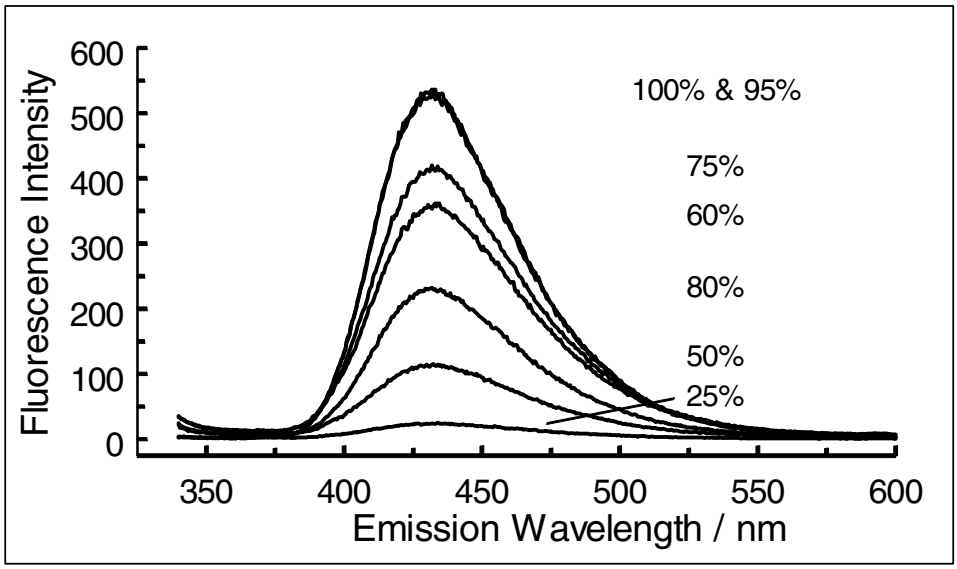

Figure 1. The TNS fluorescence spectrum obtained for 10.0 μM TNS in DDAB-AOT vesicles of varying composition when the requisite amounts of stock solutions of DDAB and AOT are added to aqueous solutions of TNS. Spectra were recorded 5 minutes after surfactant mixing.

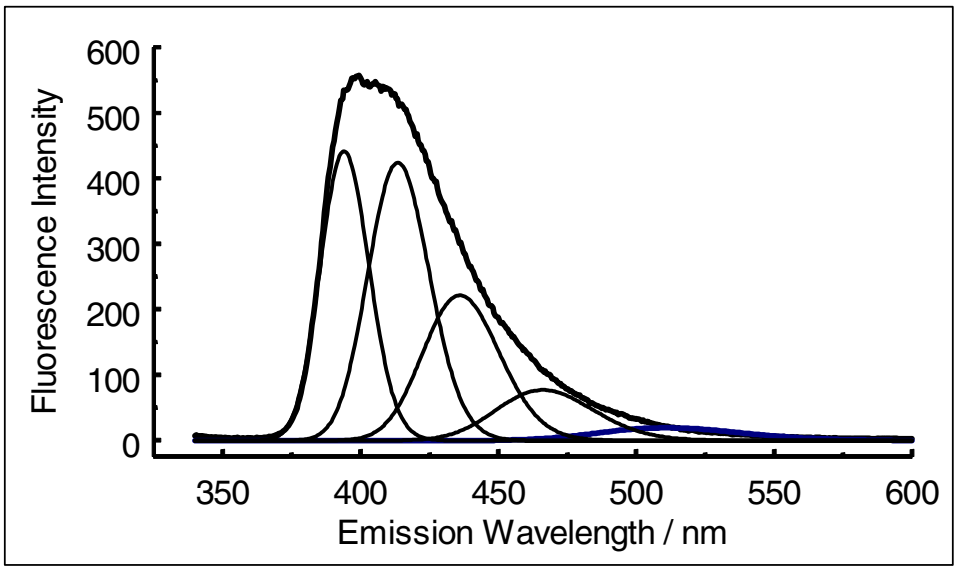

Figure 2. Deconvolution of the TNS spectra for a 95/5 DDAB/AOT solution.taken 5 minutes after adding the probe to the surfactant mixture. Five Gaussian curves of varying contribution are observed, centered at 394, 414, 436, 466, and 511 nm.

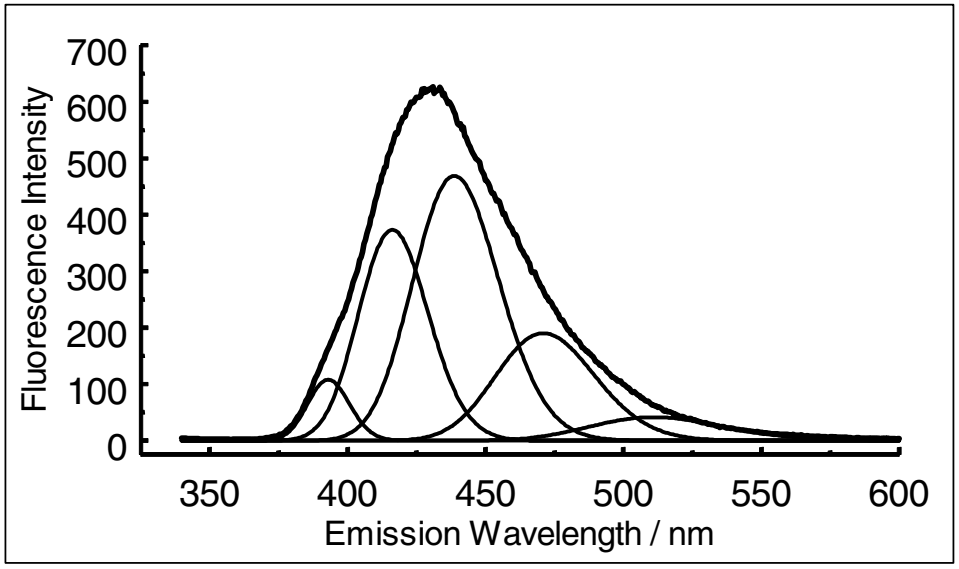

Figure 3. Deconvolution of the TNS spectra for a 95/5 DDAB/AOT solution taken 120 minutes after adding the probe to the surfactant mixture. Five Gaussian curves of varying contribution are observed, centered at 394, 414, 436, 466, and 511 nm.

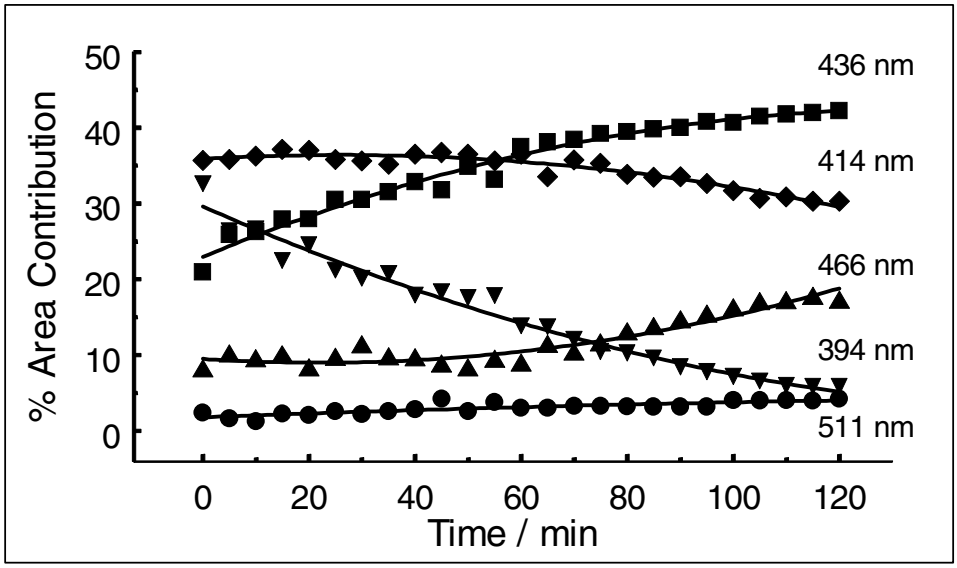

Figure 4. The time-dependent variation in the contributions of the Gaussian curves to the overall TNS spectra obtained after adding the probe to a 95/5 DDAB/AOT solution.

Table 1. Parameters of Deconvoluted Gaussian Components[a] of TNS Fluorescence Spectra Observed for DDAB/AOT Vesicles [b]

Fluorescence Spectra Observed 5 Minuted after Adding TNS Added to Vesicle Solution										
% DDAB	λ / nm	%	λ / nm	%	λ / nm	%	λ / nm	%	λ / nm	%
100	498	7.1	461	22.7	432	44.5	411	17.9	392	7.9
95	511	3.1	466	8.9	436	36.6	414	37.5	394	13.9
80	-	-	460	11.3	429	31.4	406	41.4	392	15.9
75	-	-	468	11.1	436	26.4	411	45.5	393	16.9
60	493	4.8	461	14.9	435	29.5	412	36.5	393	14.3
50	504	7.6	464	24.9	433	44.8	412	16.5	394	6.2
25 [c]	-	-	476	21.3	431	78.7	-	-	-	-
avg λ	499 ± 7		462 ± 4		433 ± 2		411 ± 1		393 ± 1	
Fluorescence Spectra Observed 2 Hours after TNS Added to Vesicle Solution										
% DDAB	λ / nm	%	λ / nm	%	λ / nm	%	λ / nm	%	λ / nm	%
100	487	11.5	456	26.4	432	40.5	414	21.6	-	-
95	495	7.2	458	26.7	432	32.1	412	25.7	392	4.3
80	496	9.4	457	25.1	433	35.7	411	24.1	398	5.6
75	499	7.3	457	30.7	430	35.0	410	23.1	392	4.0
60	494	9.3	456	30.4	430	35.7	410	20.6	394	3.9
50	496	9.8	458	31.1	432	34.4	413	20.1	396	4.5
25 [c]	-	-	465	34.9	428	65.1	-	-	-	-
avg λ	495 ± 3		458 ± 2		431 ± 2		412 ± 1		394 ± 2	

[a] The Gaussian peaks of the deconvoluted spectra are characterized by a center or wavelength λ of maximum emission and a % area contribution to the total fluorescence spectrum.

[b] Surfactant composition expressed in weight percentages with [total surfactant] = 1 weight %.

[c] No TNS fluorescence detected for 40/60 DDAB/AOT samples.

Table 2. Parameters [a] of Deconvoluted Gaussian Components of TNS Fluorescence Spectra Observed for 75/25 DDAB/AOT Vesicles [b]

Order of TNS addition [c]	Time [d]	Gaussian #1		Gaussian #2		Gaussian #3		Gaussian #4		Gaussian #5	
		λ/nm	%	λ/nm	%	λ/nm	%	λ/nm	%	λ/nm	%
before	5 min	485	17.9	456	23.2	433	37.6	412	23.3	-	-
before	1 hr	485	16.2	456	23.6	433	36.5	415	21.6	395	1.5
after	5 min	-	-	468	11.1	436	26.4	411	45.5	393	16.9
after	1 hr	484	11.1	457	18.0	432	38.2	411	24.6	393	8.0
after	2 hr	484	12.5	458	19.4	433	41.1	413	21.1	394	6.1
22 hr after	5 min	499	4.8	457	20.7	430	27.4	410	34.5	392	12.4
22 hr after	96 hr	498	5.7	457	20.3	430	27.3	409	33.1	392	13.6

[a] The Gaussian peaks of the deconvoluted spectra are characterized by a center or wavelength λ of maximum emission and a % area contribution to the total fluorescence spectrum.

[b] Surfactant composition expressed in weight percentages with [total surfactant] = 1 weight %.

[C] Order in which TNS is added to sample relative to the mixing of surfactants

[d] Time between the addition of TNS to the surfactant sample and the measurement of fluorescence emission

Table 3. Parameters of Deconvoluted Gaussian Components[a] of Prodan Fluorescence Spectra Observed for DDAB/AOT Vesicles [b]

%DDAB/%AOT (by weight)	λ_{max} of Overall Fluorescence Spectrum / nm	% Area of Gaussian Curve Centered at Given λ_{max}			
		520 nm	497 nm	468 nm	440 nm
100/0	497	18.0	37.9	21.7	22.4
95/5	497	21.4	26.4	34.7	17.5
80/20	497	22.0	25.8	29.2	23.0
75/25	497	11.2	27.0	28.8	32.9
60/40	469	7.5	12.8	35.8	43.9
50/50	469	2.5	11.7	34.9	51.0
40/60	469	0.0	15.7	17.3	67.0
25/75	469	0.0	19.7	18.8	61.5
5/95	439	0.0	46.0	0.0	54.0
0/100	520	100.0	0.0	0.0	0.0

[a] The Gaussian peaks of the deconvoluted spectra are characterized by a center or wavelength λ of maximum emission and a % area contribution to the total fluorescence spectrum.

[b] Relative surfactant composition expressed in weight percentages with [total surfactant] = 1 weight %

Table 4. Hydrodynamic Radii of DDAB/AOT Vesicles Determined Using Light Scattering

%DDAB / %AOT [a]	Vesicle Hydrodynamic Radii [b] / nm							
	no TNS			TNS added first [c]			TNS added last [c]	
	5 min	60 min	1 month	5 min	60 min	1 month	5 min	60 min
100/0	111 ± 3	107 ± 4	195 ± 27	115 ± 3	114 ± 5	198 ± 22	116 ± 2	109 ± 3
95/5	100 ± 1	98 ± 1	200. ± 24	96 ± 2	94 ± 2	203 ± 22	96 ± 1	93 ± 2
80/20	87 ± 2	87 ± 2	140. ± 8	92 ± 2	92 ± 2	135 ± 8	88 ± 2	87 ± 2
75/25	100 ± 1	96 ± 1	143 ± 5	94 ± 2	94 ± 2	154 ± 12	98 ± 2	94 ± 1
60/40	93 ± 10	96 ± 9	101 ± 4	94 ± 7	92 ± 7	118 ± 5	99 ± 7	97 ± 8
50/50	102 ± 7	115 ± 8	126 ± 19	104 ± 6	106 ± 5	141 ± 3	96 ± 9	99 ± 8
40/60	103 ± 6	103 ± 6	108 ± 5	96 ± 8	97 ± 8	108 ± 4	101 ± 7	104 ± 6
25/75	113 ± 4	116 ± 5	119 ± 26	111 ± 9	112 ± 8	121 ± 3	113 ± 6	116 ± 6

[a] Relative surfactant composition expressed in weight percentages with [total surfactant] = 1 weight %.

[b] Hydrodynamic radii determined 5 minutes, 60 minutes, and 1 month after sample preparation.

[c] For those samples containing the fluorescence probe TNS, the surfactants were either added to an aqueous TNS solution ("TNS added first") or mixed prior to TNS addition ("TNS added last").