



SUPPLEMENTARY MATERIAL TO
**Response surface methodology for the study of interactions
between components in a micellar system formulation**

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J. Serb. Chem. Soc. 86 (7–8) (2021) 725–738

TABLE S-I. Matrix of coded values X_i

Exp No.	Expname	Run order	Incl/Excl	Coded values X_i			
				CTAB	Tween 80	Olive oil	Alg Na
1	N1	12	Incl	-1	-1	-1	-1
2	N2	15	Incl	1	-1	-1	-1
3	N3	8	Incl	-1	1	-1	-1
4	N4	16	Incl	1	1	-1	-1
5	N5	4	Incl	-1	-1	1	-1
6	N6	5	Incl	1	-1	1	-1
7	N7	9	Incl	-1	1	1	-1
8	N8	7	Incl	1	1	1	-1
9	N9	11	Incl	-1	-1	-1	1
10	N10	2	Incl	1	-1	-1	1
11	N11	6	Incl	-1	1	-1	1
12	N12	1	Incl	1	1	-1	1
13	N13	14	Incl	-1	-1	1	1
14	N14	10	Incl	1	-1	1	1
15	N15	13	Incl	-1	1	1	1
16	N16	3	Incl	1	1	1	1

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TABLE S-II. Coefficient of determination and of prediction obtained from the experimental results

	R^2	$R^2_{(adj)}$	Q^2	SD	RS	N
Interfacial tension	0.99	0.99	0.80	2.53	0.17	16
Conductivity	0.98	0.94	0.74	0.34	0.08	16
Viscosity	0.97	0.93	0.73	41.86	8.43	16
Turbidity	0.98	0.95	0.72	54.18	11.37	16

SD: standard deviation; RS: residual

TABLE S-III. Levels of independent variables in uncoded form and responses

Exp N ^o	Content, %				Interfacial tension, mN m ⁻¹	Conductivity, mS cm ⁻¹	Viscosity, mPa s	Turbidity, NTU
	CTAB	Tween 80	Olive oil	AlgNa				
1	0.01	0.01	0.10	0.30	37.90	3.00	100	150
2	0.20	0.01	0.10	0.30	37.00	3.55	110	184
3	0.01	0.04	0.10	0.30	38.40	3.65	115	195
4	0.20	0.04	0.10	0.30	36.50	3.80	125	251
5	0.01	0.01	0.30	0.30	35.40	3.85	125	268
6	0.20	0.01	0.30	0.30	34.70	3.90	165	290
7	0.01	0.04	0.30	0.30	39.00	3.95	175	300
8	0.20	0.04	0.30	0.30	38.00	4.00	185	315
9	0.01	0.01	0.10	0.80	38.00	3.45	120	250
10	0.20	0.01	0.10	0.80	36.80	3.90	165	280
11	0.01	0.04	0.10	0.80	35.50	3.85	180	278
12	0.20	0.04	0.10	0.80	33.40	4.25	185	305
13	0.01	0.01	0.30	0.80	32.00	3.95	187	285
14	0.20	0.01	0.30	0.80	31.50	4.25	205	315
15	0.01	0.04	0.30	0.80	32.90	4.20	220	320
16	0.20	0.04	0.30	0.80	32.00	4.35	237	350

TABLE S-IV. ANOVA analysis for the regression of the model representing interfacial tension, conductivity, viscosity and turbidity using coded values

	DF	SS	MS	F	p	SD
Interfacial tension, mN m ⁻¹						
Regression	10	95.97	9.59	336.75	0	3.10
Residual	5	0.14	0.030			0.17
Lack of fit	5					
Pure error	0					
Total	16	20.33	12.70			
Total corrected	15	96.11	6.41			2.53
$R^2 = 0.99$						
$R^2_{(adj)} = 0.99$						
$Q^2 = 0.80$						
Conductivity, mS cm ⁻¹						
Regression	10	1.72	0.17	26.94	0.001	0.41
Residual	5	0.032	0.006			0.08
Lack of fit	5					

TABLE S-IV. Continued

Pure error	0					
Total	16	241.22	15.10			
Total corrected	15	1.75	0.17			0.34
$R^2 = 0.98$						
$R^2_{(adj)} = 0.94$						
$Q^2 = 0.74$						
Viscosity, mPa s						
Regression	10	1.72	0.17	26.94	0.001	0.41
Residual	5	0.032	0.006			0.08
Lack of fit	5					
Pure error	0					
Total	16	241.22	15.07			
Total corrected	15	1.75	0.12			41.86
$R^2 = 0.97$						
$R^2_{(adj)} = 0.93$						
$Q^2 = 0.73$						
Turbidity, NTU						
Regression	10	43387.50	4338.75	33.55	0.001	65.87
Residual	5	646.50	129.30			11.37
Lack of fit	5					
Pure error	0					
Total	16	1.21e006	76193.10			
Total corrected	15	44034	2935.60			54.18
$R^2 = 0.98$						
$R^2_{(adj)} = 0.95$						
$Q^2 = 0.72$						

DF: degree of freedom; SS: sum of squares; MS: mean square; F : Fisher test; p : probability; SD: standard deviation.