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APPENDIX A

Experimental Data of Microemulsion Formation Study

Table A-1 Volume fraction of water, middle and oil phases in microemulsion formation at different SDS concentrations and initial oil/water ratio =1/1

SDS (wt. %)	Volume fraction		
	Oil Phase	Middle Phase	Water Phase
1	0.437	0.000	0.563
3	0.433	0.000	0.567
5	0.424	0.000	0.576
7	0.419	0.000	0.581
9	0.387	0.000	0.613

Table A-2 Volume fraction of water, middle and oil phases in microemulsion formation at different $NP(EO)_{10}$ concentrations and initial oil/water ratio =1/1

$NP(EO)_{10}$ (wt. %)	Volume fraction		
	Oil Phase	Middle Phase	Water Phase
1	0.467	0.033	0.500
3	0.433	0.033	0.533
5	0.467	0.067	0.467
7	0.467	0.100	0.433
9	0.467	0.067	0.467

TableA-3 Volume fraction of water, middle and oil phases in microemulsion formation at different mixed surfactant (SDS and $NP(EO)_{10}$) concentrations and different Xsds with initial oil/water ratio =1/1

Xsds	Volume Fraction at different Xsds for 1wt. % mixed surfactants concentration										
	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
Oil Phase	0.467	0.452	0.452	0.452	0.452	0.452	0.452	0.367	0.323	0.323	0.437
Middle Phase	0.033	0.065	0.065	0.065	0.032	0.032	0.032	0.133	0.161	0.194	0.000
Water Phase	0.500	0.484	0.484	0.484	0.516	0.516	0.516	0.500	0.516	0.484	0.563

Xsds	Volume Fraction at different Xsds for 3 wt. % mixed surfactants concentration										
	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
Oil Phase	0.433	0.438	0.452	0.419	0.406	0.406	0.406	0.406	0.355	0.344	0.433
Middle Phase	0.033	0.063	0.065	0.065	0.156	0.125	0.094	0.063	0.063	0.094	0.000
Water Phase	0.533	0.500	0.484	0.516	0.438	0.469	0.500	0.531	0.582	0.563	0.567

TableA-3 Continued

Xsds	Volume Fraction at different Xsds for 5 wt. % mixed surfactants concentration										
	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
Oil Phase	0.467	0.400	0.419	0.414	0.438	0.414	0.419	0.438	0.438	0.375	0.424
Middle Phase	0.067	0.133	0.097	0.241	0.281	0.207	0.032	0.031	0.031	0.063	0.000
Water Phase	0.467	0.467	0.484	0.345	0.281	0.379	0.548	0.531	0.531	0.563	0.576

Xsds	Volume Fraction at different Xsds for 7 wt. % mixed surfactants concentration										
	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
Oil Phase	0.467	0.345	0.367	0.419	0.394	0.424	0.424	0.455	0.419	0.414	0.387
Middle Phase	0.100	0.172	0.200	0.161	0.182	0.152	0.121	0.121	0.000	0.000	0.000
LC Phase	0.000	0.000	0.167	0.194	0.212	0.182	0.091	0.152	0.000	0.000	0.000
Water Phase	0.433	0.483	0.267	0.226	0.212	0.242	0.364	0.273	0.581	0.586	0.613

Xsds	Volume Fraction at different Xsds for 9 wt. % mixed surfactants concentration										
	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
Oil Phase	0.467	0.333	0.438	0.441	0.387	0.344	0.412	0.424	0.400	0.452	0.387
Middle Phase	0.067	0.152	0.219	0.118	0.161	0.313	0.118	0.121	0.000	0.000	0.000
LC Phase	0.000	0.394	0.156	0.235	0.323	0.344	0.176	0.091	0.233	0.000	0.000
Water Phase	0.467	0.121	0.188	0.206	0.129	0.000	0.294	0.364	0.367	0.548	0.613

TableA-4 Volume fraction of water, middle and oil phases in microemulsion formation at 1wt. % mixed surfactants (SDS and $NP(EO)_{10}$) concentration and different NaCl concentrations and different Xsds with initial oil/water ratio =1/1

Xsds = 0.1

NaCl (wt.%)	Oil	Middle	Water
0	0.452	0.065	0.484
0.50	0.467	0.367	0.167
1.00	0.500	0.300	0.200
1.50	0.387	0.129	0.484
2.00	0.500	0.000	0.500
2.50	0.500	0.000	0.500

Xsds = 0.2

NaCl (wt.%)	Oil	Middle	Water
0	0.452	0.065	0.484
0.50	0.452	0.065	0.484
1.00	0.484	0.387	0.129
1.50	0.516	0.000	0.484
2.00	0.500	0.000	0.500
2.50	0.500	0.000	0.500

Xsds = 0.3

NaCl (wt.%)	Oil	Middle	Water
0	0.452	0.065	0.484
0.50	0.467	0.033	0.500
1.00	0.452	0.452	0.097
1.50	0.517	0.000	0.483
2.00	0.500	0.000	0.500
2.50	0.516	0.000	0.484

TableA-4 Continued

Xsds = 0.4

NaCl (wt.%)	Oil	Middle	Water
0	0.452	0.032	0.516
0.50	0.483	0.310	0.207
1.00	0.452	0.452	0.097
1.50	0.400	0.167	0.433
2.00	0.516	0.000	0.484
2.50	0.516	0.000	0.484

Xsds = 0.5

NaCl (wt.%)	Oil	Middle	Water
0	0.452	0.032	0.516
0.50	0.448	0.034	0.517
1.00	0.469	0.063	0.469
1.50	0.517	0.172	0.310
2.00	0.484	0.097	0.419
2.50	0.517	0.000	0.483

Xsds = 0.6

NaCl (wt.%)	Oil	Precipitation	Middle	Water
0	0.452	0.000	0.032	0.516
0.50	0.483	0.000	0.172	0.345
1.00	0.452	0.000	0.387	0.161
1.50	0.500	0.000	0.250	0.250
2.00	0.469	0.000	0.219	0.313
2.50	0.500	0.143	0.000	0.357

Xsds = 0.7

NaCl (wt.%)	Oil	Precipitation	Middle	Water
0	0.367	0.000	0.133	0.500
0.50	0.467	0.000	0.133	0.400
1.00	0.467	0.000	0.233	0.300
1.50	0.483	0.000	0.379	0.138
2.00	0.464	0.214	0.000	0.321
2.50	0.500	0.133	0.000	0.367

Xsds = 0.8

NaCl (wt.%)	Oil	Precipitation	Middle	Water
0	0.323	0.000	0.161	0.516
0.50	0.469	0.000	0.375	0.156
1.00	0.484	0.000	0.387	0.129
1.50	0.483	0.000	0.241	0.276
2.00	0.483	0.138	0.000	0.379
2.50	0.500	0.107	0.000	0.393

Xsds = 0.9

NaCl (wt.%)	Oil	Precipitation	Middle	Water
0	0.323	0.000	0.194	0.484
0.50	0.483	0.000	0.000	0.517
1.00	0.483	0.000	0.000	0.517
1.50	0.429	0.036	0.000	0.536
2.00	0.483	0.069	0.000	0.448
2.50	0.483	0.034	0.000	0.483

TableA-5 Volume fraction of water, middle and oil phases in microemulsion formation at 3wt. % mixed surfactants (SDS and $NP(EO)_{10}$) concentration and different NaCl concentrations and different Xsds with initial oil/water ratio =1/1

Xsds = 0.1

NaCl (wt.%)	Oil	Middle	Water
0	0.438	0.063	0.500
0.50	0.500	0.393	0.097
1.00	0.536	0.000	0.464
1.50	0.536	0.000	0.464
2.00	0.516	0.000	0.484
2.50	0.536	0.000	0.448

Xsds = 0.2

NaCl (wt.%)	Oil	Middle	Water
0	0.452	0.065	0.484
0.50	0.419	0.484	0.097
1.00	0.536	0.000	0.464
1.50	0.516	0.000	0.484
2.00	0.517	0.000	0.483
2.50	0.552	0.000	0.448

Xsds = 0.3

NaCl (wt.%)	Oil	Middle	Water
0	0.419	0.065	0.516
0.50	0.433	0.467	0.100
1.00	0.571	0.000	0.429
1.50	0.536	0.000	0.464
2.00	0.536	0.000	0.464
2.50	0.536	0.000	0.464

TableA-5 Continued

Xsds = 0.4

NaCl (wt.%)	Oil	Middle	Water
0	0.406	0.156	0.438
0.50	0.419	0.161	0.419
1.00	0.613	0.000	0.387
1.50	0.536	0.000	0.464
2.00	0.533	0.000	0.467
2.50	0.536	0.000	0.464

Xsds = 0.5

NaCl (wt.%)	Oil	Middle	Water
0	0.406	0.125	0.469
0.50	0.433	0.533	0.033
1.00	0.714	0.000	0.286
1.50	0.581	0.000	0.419
2.00	0.567	0.000	0.433
2.50	0.536	0.000	0.464

Xsds = 0.6

NaCl (wt.%)	Oil	Middle	Water
0	0.406	0.094	0.500
0.50	0.406	0.156	0.438
1.00	0.483	0.414	0.103
1.50	0.467	0.433	0.100
2.00	0.625	0.000	0.375
2.50	0.586	0.000	0.414

Xsds = 0.7

NaCl (wt.%)	Oil	Precipitation	Middle	Water
0	0.406	0.000	0.063	0.531
0.50	0.467	0.000	0.267	0.267
1.00	0.448	0.000	0.276	0.276
1.50	0.500	0.000	0.393	0.107
2.00	0.483	0.000	0.414	0.103
2.50	0.483	0.276	0.000	0.241

Xsds = 0.8

NaCl (wt.%)	Oil	Precipitation	Middle	LC	Water
0	0.355	0.000	0.063	0.000	0.582
0.50	0.452	0.000	0.387	0.000	0.161
1.00	0.429	0.000	0.357	0.000	0.214
1.50	0.464	0.000	0.000	0.429	0.107
2.00	0.500	0.214	0.000	0.000	0.286
2.50	0.483	0.241	0.000	0.000	0.276

Xsds = 0.9

NaCl (wt.%)	Oil	Precipitation	Middle	LC	Water
0	0.344	0.000	0.094	0.000	0.563
0.50	0.419	0.000	0.097	0.000	0.484
1.00	0.448	0.000	0.345	0.103	0.103
1.50	0.452	0.032	0.000	0.000	0.516
2.00	0.464	0.071	0.000	0.000	0.464
2.50	0.484	0.065	0.000	0.000	0.452

TableA-6 Volume fraction of water, middle and oil phases in microemulsion formation at 5wt. % mixed surfactants (SDS and $NP(EO)_{10}$) concentration and different NaCl concentrations and different Xsds with initial oil/water ratio =1/1

Xsds = 0.1

NaCl (wt.%)	Oil	Middle	Water
0	0.400	0.133	0.467
0.50	0.677	0.000	0.323
1.00	0.533	0.000	0.467
1.50	0.552	0.000	0.448
2.00	0.536	0.000	0.464
2.50	0.536	0.000	0.464

Xsds = 0.2

NaCl (wt.%)	Oil	Middle	Water
0	0.419	0.097	0.484
0.50	0.667	0.000	0.333
1.00	0.552	0.000	0.448
1.50	0.536	0.000	0.464
2.00	0.548	0.000	0.452
2.50	0.536	0.000	0.464

Xsds = 0.3

NaCl (wt.%)	Oil	Middle	Water
0	0.414	0.241	0.345
0.50	0.714	0.000	0.286
1.00	0.571	0.000	0.429
1.50	0.571	0.000	0.429
2.00	0.536	0.000	0.464
2.50	0.536	0.000	0.464

TableA-6 Continued

Xsds = 0.4

NaCl (wt.%)	Oil	Middle	Water
0	0.438	0.281	0.281
0.50	0.143	0.679	0.179
1.00	0.600	0.000	0.400
1.50	0.556	0.000	0.444
2.00	0.571	0.000	0.429
2.50	0.552	0.000	0.448

Xsds = 0.5

NaCl (wt.%)	Oil	Middle	Water
0	0.414	0.207	0.379
0.50	0.414	0.207	0.379
1.00	0.655	0.000	0.345
1.50	0.586	0.000	0.414
2.00	0.586	0.000	0.414
2.50	0.552	0.000	0.448

Xsds = 0.6

NaCl (wt.%)	Oil	Middle	Water
0	0.419	0.032	0.548
0.50	0.419	0.161	0.419
1.00	0.467	0.000	0.533
1.50	0.710	0.000	0.290
2.00	0.621	0.000	0.379
2.50	0.600	0.000	0.400

Xsds = 0.7

NaCl (wt.%)	Oil	Middle	LC	Water
0	0.438	0.031	0.000	0.531
0.50	0.433	0.067	0.433	0.067
1.00	0.467	0.167	0.167	0.200
1.50	0.464	0.250	0.179	0.107
2.00	0.469	0.125	0.281	0.125
2.50	0.500	0.000	0.000	0.500

Xsds = 0.8

NaCl (wt.%)	Oil	Precipitation	Middle	LC	Water
0	0.438	0.000	0.031	0.000	0.531
0.50	0.419	0.000	0.129	0.323	0.129
1.00	0.438	0.000	0.000	0.469	0.094
1.50	0.484	0.000	0.000	0.419	0.097
2.00	0.448	0.379	0.000	0.000	0.172
2.50	0.500	0.267	0.000	0.000	0.233

Xsds = 0.9

NaCl (wt.%)	Oil	Precipitation	Middle	LC	Water
0	0.375	0.000	0.063	0.000	0.563
0.50	0.429	0.000	0.000	0.179	0.393
1.00	0.414	0.000	0.000	0.310	0.276
1.50	0.467	0.000	0.000	0.133	0.400
2.00	0.467	0.100	0.000	0.000	0.433
2.50	0.452	0.097	0.000	0.000	0.452

TableA-7 Volume fraction of water, middle and oil phases in microemulsion formation at 7wt. % mixed surfactants (SDS and $NP(EO)_{10}$) concentration and different NaCl concentrations and different Xsds with initial oil/water ratio =1/1

Xsds = 0.1

NaCl (wt.%)	Oil	Middle	Water
0	0.345	0.172	0.483
0.50	0.630	0.000	0.370
1.00	0.567	0.000	0.433
1.50	0.567	0.000	0.433
2.00	0.571	0.000	0.429
2.50	0.552	0.000	0.448

Xsds = 0.2

NaCl (wt.%)	Oil	Middle	LC	Water
0	0.367	0.200	0.167	0.267
0.50	0.645	0.000	0.000	0.355
1.00	0.571	0.000	0.000	0.429
1.50	0.567	0.000	0.000	0.433
2.00	0.567	0.000	0.000	0.433
2.50	0.581	0.000	0.000	0.419

Xsds = 0.3

NaCl (wt.%)	Oil	Middle	LC	Water
0	0.419	0.161	0.194	0.226
0.50	0.733	0.000	0.000	0.267
1.00	0.600	0.000	0.000	0.400
1.50	0.567	0.000	0.000	0.433
2.00	0.586	0.000	0.000	0.414
2.50	0.567	0.000	0.000	0.433

TableA-7 Continued

Xsds = 0.4

NaCl (wt.%)	Oil	Middle	LC	Water
0	0.394	0.182	0.212	0.212
0.50	0.774	0.000	0.000	0.226
1.00	0.613	0.000	0.000	0.387
1.50	0.621	0.000	0.000	0.379
2.00	0.600	0.000	0.000	0.400
2.50	0.567	0.000	0.000	0.433

Xsds = 0.5

NaCl (wt.%)	Oil	Middle	LC	Water
0	0.424	0.152	0.182	0.242
0.50	0.690	0.000	0.000	0.310
1.00	0.690	0.000	0.000	0.310
1.50	0.633	0.000	0.000	0.367
2.00	0.613	0.000	0.000	0.387
2.50	0.600	0.000	0.000	0.400

Xsds = 0.6

NaCl (wt.%)	Oil	Middle	LC	Water
0	0.424	0.121	0.091	0.364
0.50	0.690	0.000	0.000	0.310
1.00	0.690	0.000	0.000	0.310
1.50	0.714	0.000	0.000	0.286
2.00	0.600	0.000	0.000	0.400
2.50	0.586	0.000	0.000	0.414

Xsds = 0.7

NaCl (wt.%)	Oil	Middle	LC	Water
0	0.455	0.121	0.152	0.273
0.50	0.438	0.156	0.125	0.281
1.00	0.467	0.000	0.200	0.333
1.50	0.483	0.000	0.448	0.069
2.00	0.483	0.000	0.448	0.069
2.50	0.483	0.000	0.448	0.069

Xsds = 0.8

NaCl (wt.%)	Oil	Precipitation	Middle	LC	Water
0	0.419	0.000	0.000	0.000	0.581
0.50	0.379	0.000	0.000	0.241	0.379
1.00	0.438	0.000	0.000	0.313	0.250
1.50	0.467	0.000	0.000	0.467	0.067
2.00	0.500	0.333	0.000	0.000	0.167
2.50	0.452	0.290	0.000	0.000	0.258

Xsds = 0.9

NaCl (wt.%)	Oil	Precipitation	Middle	LC	Water
0	0.414	0.000	0.000	0.000	0.586
0.50	0.393	0.000	0.000	0.000	0.607
1.00	0.452	0.000	0.000	0.194	0.355
1.50	0.419	0.000	0.000	0.161	0.419
2.00	0.433	0.133	0.000	0.000	0.433
2.50	0.452	0.129	0.000	0.000	0.419

TableA-8 Volume fraction of water, middle and oil phases in microemulsion formation at 9wt. % mixed surfactants (SDS and $NP(EO)_{10}$) concentration and different NaCl concentrations and different Xsds with initial oil/water **ratio =1/1**

Xsds = 0.1

NaCl (wt.%)	Oil	Middle	LC	Water
0	0.333	0.152	0.394	0.121
0.50	0.625	0.000	0.000	0.375
1.00	0.586	0.000	0.000	0.414
1.50	0.571	0.000	0.000	0.429
2.00	0.567	0.000	0.000	0.433
2.50	0.548	0.000	0.000	0.452

Xsds = 0.2

NaCl (wt.%)	Oil	Middle	LC	Water
0	0.438	0.219	0.156	0.188
0.50	0.655	0.000	0.000	0.345
1.00	0.613	0.000	0.000	0.387
1.50	0.586	0.000	0.000	0.414
2.00	0.607	0.000	0.000	0.393
2.50	0.581	0.000	0.000	0.419

Xsds = 0.3

NaCl (wt.%)	Oil	Middle	LC	Water
0	0.441	0.118	0.235	0.206
0.50	0.700	0.000	0.000	0.300
1.00	0.633	0.000	0.000	0.367
1.50	0.621	0.000	0.000	0.379
2.00	0.613	0.000	0.000	0.387
2.50	0.607	0.000	0.000	0.393

TableA-8 Continued

Xsds = 0.4

NaCl (wt.%)	Oil	Middle	LC	Water
0	0.387	0.161	0.323	0.129
0.50	0.742	0.000	0.000	0.258
1.00	0.643	0.000	0.000	0.357
1.50	0.621	0.000	0.000	0.379
2.00	0.581	0.000	0.000	0.419
2.50	0.600	0.000	0.000	0.400

Xsds = 0.5

NaCl (wt.%)	Oil	Middle	LC	Water
0	0.344	0.313	0.344	0.000
0.50	0.741	0.000	0.111	0.148
1.00	0.679	0.000	0.000	0.321
1.50	0.643	0.000	0.000	0.357
2.00	0.643	0.000	0.000	0.357
2.50	0.621	0.000	0.000	0.379

Xsds = 0.6

NaCl (wt.%)	Oil	Middle	LC	Water
0	0.412	0.118	0.176	0.294
0.50	0.429	0.071	0.286	0.214
1.00	0.793	0.000	0.000	0.207
1.50	0.714	0.000	0.000	0.286
2.00	0.667	0.000	0.000	0.333
2.50	0.643	0.000	0.000	0.357

Xsds = 0.7

NaCl (wt.%)	Oil	Precipitation	Middle	LC	Water
0	0.424	0.000	0.121	0.091	0.364
0.50	0.448	0.000	0.000	0.172	0.379
1.00	0.483	0.000	0.000	0.172	0.345
1.50	0.464	0.000	0.000	0.500	0.036
2.00	0.483	0.000	0.000	0.517	0.000
2.50	0.500	0.067	0.000	0.000	0.433

Xsds = 0.8

NaCl (wt.%)	Oil	Precipitation	Middle	LC	Water
0	0.400	0.000	0.000	0.233	0.367
0.50	0.414	0.000	0.000	0.483	0.103
1.00	0.429	0.000	0.000	0.286	0.286
1.50	0.448	0.483	0.000	0.000	0.069
2.00	0.483	0.448	0.000	0.000	0.069
2.50	0.467	0.300	0.000	0.000	0.233

TableA-8 Continued

Xsds = 0.9

NaCl (wt.%)	Oil	Precipitation	Middle	LC	Water
0	0.452	0.000	0.000	0.000	0.548
0.50	0.433	0.000	0.000	0.367	0.200
1.00	0.464	0.143	0.000	0.000	0.393
1.50	0.464	0.143	0.000	0.000	0.393
2.00	0.483	0.138	0.000	0.000	0.379
2.50	0.469	0.188	0.000	0.000	0.344

APPENDIX B

Experimental Data of Froth Flotation Study

Table B-1 Removal efficiency of ODCB at different mixed surfactants concentrations with initial oil/water ratio = 1/1 in water, middle and oil phase system (w-m-o)

Mixed surfactants concentrations	Time (min)	%ODCB removal at different Xsds			
		0.2	0.4	0.6	0.8
3 wt. %	20	1.900	3.372	6.951	2.264
	60	3.889	5.135	10.888	4.317
	90	5.469	17.373	43.766	63.503
	120	8.499	72.173	86.221	99.901
	150	21.253	98.606	98.042	-
	180	83.228	-	-	-
5 wt. %	20	2.799	6.013	7.019	24.699
	60	5.637	46.185	16.062	70.619
	90	20.334	64.887	58.444	99.631
	120	58.554	72.050	97.120	-
	150	73.846	-	-	-
	180	-	-	-	-

Table B-2 Removal efficiency of ODCB at different mixed surfactants concentrations with initial oil/water ratio = 1/1 in water and oil phase system (w-o)

Mixed surfactants concentrations	Time (min)	%ODCB removal at different Xsds			
		0.2	0.4	0.6	0.8
3 wt. %	20	1.143	2.280	1.178	2.551
	60	1.375	4.613	4.386	13.056
	90	3.715	14.292	8.636	44.298
	120	7.201	47.964	50.550	95.799
	150	24.755	91.775	81.936	99.877
	180	97.352	98.031	86.184	-
5 wt. %	20	1.858	3.943	13.193	23.372
	60	11.711	18.347	52.509	88.013
	90	27.165	38.004	83.741	99.359
	120	88.222	61.491	91.761	-
	150	-	-	-	-
	180	-	-	-	-

Table B-3 Removal efficiency of ODCB at different mixed surfactant concentration with initial oil/water ratio = 1/1 in water and middle phase system (w-m)

Mixed surfactants concentrations	Time (min)	%ODCB removal at different Xsds			
		0.2	0.4	0.6	0.8
3 wt. %	20	3.009	4.777	3.720	4.194
	60	6.786	9.621	7.146	14.159
	90	10.808	17.853	10.379	19.085
	120	14.029	23.011	12.879	40.230
	150	17.507	30.784	17.983	47.481
	180	21.438	98.031	24.721	53.703
5 wt. %	20	3.580	2.822	11.687	9.713
	60	11.505	7.826	25.303	26.253
	120	38.187	24.574	75.282	43.734

Table B-4 Removal efficiency of ODCB at 3 wt. % mixed surfactants with initial oil/water ratio = 1/1 at different systems: water, middle and oil phase (w-m-o), water and oil phase (w-o), water and middle phase (w-m)

Xsds	Time (min)	%ODCB removal at different systems		
		w-m-o	w-o	w-m
3 wt. % Xsds = 0.2	20	1.900	1.143	3.009
	60	3.889	1.375	6.786
	90	5.469	3.715	10.808
	120	8.499	7.201	14.029
	150	21.253	24.755	17.507
	180	83.228	97.352	21.438
3 wt. % Xsds = 0.4	20	3.372	2.280	4.777
	60	5.135	4.613	9.621
	90	17.373	14.292	17.853
	120	72.173	47.964	23.011
	150	98.606	91.775	30.784
	180	-	98.031	41.435
3 wt. % Xsds = 0.6	20	6.951	1.178	3.720
	60	10.888	4.386	7.146
	90	43.766	8.636	10.379
	120	86.221	50.550	12.879
	150	98.042	81.936	17.983
	180	-	86.184	24.721
3 wt. % Xsds = 0.8	20	2.264	2.551	4.194
	60	4.317	13.056	14.159
	90	63.503	44.298	19.085
	120	99.901	95.799	40.230
	150	-	99.877	47.481
	180	-	-	53.703

Table B-5 Removal efficiency of ODCB at 5 wt. % mixed surfactants with initial oil/water ratio = 1/1 at different systems: water, middle and oil phase (w-m-o), water and oil phase (w-o), water and middle phase (w-m)

Xsds	Time (min)	%ODCB removal at different systems		
		w-m-o	w-o	w-m
5 wt. % Xsds = 0.2	20	2.799	1.858	3.580
	60	5.637	11.711	11.505
	90	20.334	27.165	-
	120	58.554	88.222	38.187
	150	73.846	-	-
	180	-	-	-
5 wt. % Xsds = 0.4	20	6.013	3.943	2.822
	60	46.185	18.347	7.826
	90	64.887	38.004	-
	120	72.050	61.491	24.574
	150	-	-	-
	180	-	-	-
5 wt. % Xsds = 0.6	20	7.019	13.193	11.687
	60	16.062	52.509	25.303
	90	58.444	83.741	-
	120	97.120	91.761	75.282
	150	-	-	-
	180	-	-	-
5 wt. % Xsds = 0.8	20	24.699	23.372	9.713
	60	70.619	88.013	26.253
	90	99.631	99.359	-
	120	-	-	43.734
	150	-	-	-
	180	-	-	-

Table B-6 Removal efficiency of ODCB at 3 wt. % mixed surfactants, Xsds = 0.6 with initial oil/water ratio = 1/1 at different NaCl concentrations in water, middle and oil phase system

Time (min)	%ODCB removal at different NaCl concentration				
	0.0	0.5	1.0	1.5	2.0
20	1.900	6.830	14.033	13.223	11.609
60	3.889	52.227	39.469	36.130	34.534
90	5.469	89.784	58.946	47.068	46.393
120	8.499	99.703	63.241	53.946	53.681
150	21.253	-	-	-	62.707
180	83.228	-	-	-	64.676

Table B-7 Removal efficiency of ODCB at 3 wt. % mixed surfactants with initial oil/water ratio = 1/1 at different volume of each phase in water and oil phase (w-o), water and middle phase (w-m) system

Xsds	Volume ml	%ODCB removal at different times					
		20 min	60 min	90 min	120 min	150 min	180 min
3 wt. % Xsds = 0.2	**w = 822, o =118** fw=0.822,fo=0.118	4.218	8.659	12.084	15.849	20.871	27.27
	w= 517, o = 483 fw=0.517,fo=0.483	1.143	1.375	3.715	7.201	24.755	97.352
	w = 822,m =118 fw=0.822,fm=0.118	3.009	6.786	10.808	14.029	17.507	21.438
	w= 517,m = 483 fw=0.517,fm=0.483	2.244	3.913	7.153	23.3	30.159	47.291
3 wt. % Xsds = 0.4	**w= 888, o = 112** fw=0.888,fo=0.112	6.684	15.506	24.125	33.96	51.326	93.896
	w= 533, o = 467 fw=0.533,fo=0.467	2.28	4.613	14.292	47.964	91.775	98.031
	w= 888,m = 112 fw=0.888,fm=0.112	4.777	9.621	17.856	23.011	30.784	41.435
	w= 533,m = 467 fw=0.533,fm=0.467	1.092	5.24	15.091	41.218	58.462	63.509
3 wt. % Xsds = 0.6	**w= 888, o = 112** fw=0.888,fo=0.112	8.879	17.788	24.567	31.786	39.91	78.727
	w= 533, o = 467 fw=0.533,fo=0.467	1.728	4.386	8.636	50.55	81.936	86.184
	w= 888,m = 112 fw=0.888,fm=0.112	3.72	7.146	10.379	12.879	17.983	24.721
	w= 533,m = 467 fw=0.533,fm=0.467	3.446	9.667	30.939	61.711	67.981	-
3 wt. % Xsds = 0.8	**w= 850, o = 150** fw=0.850,fo=0.150	3.587	10.756	20.017	29.364	43.808	56.974
	w= 607, o = 393 fw=0.607,fo=0.393	2.551	13.056	44.298	95.799	99.877	-
	w= 850,m = 150 fw=0.850,fm=0.150	4.194	14.159	19.085	40.23	47.481	53.703
	w= 607,m = 393 fw=0.607,fm=0.393	1.148	3.095	5.381	7.581	16.431	74.269

Table B-8 Removal efficiency of ODCB at 5 wt. % mixed surfactants with initial oil/water ratio = 1/1 at different volume of each phase in water and oil phase (w-o), water and middle phase (w-m) system

Xsds	Volume ml	%ODCB removal at different times			
		20 min	60 min	90 min	120 min
5 wt. % Xsds = 0.2	**w = 833, o =167** fw=0.833,fo=0.167	6.973	25.515	41.947	58.89
	w= 536, o = 464 fw=0.536,fo=0.464	1.858	11.711	27.165	88.222
	w = 833, m =167 fw=0.833,fm=0.167	3.58	11.505	-	38.187
	w= 536, m = 464 fw=0.536,fm=0.464	2.659	10.757	21.851	45.653
5 wt. % Xsds = 0.4	**w= 500, o = 500** fw=0.500,fo=0.500	2.568	15.437	33.61	57.605
	w= 391, o = 609 fw=0.391,fo=0.609	3.943	18.347	38.004	61.491
	w= 500, m = 500 fw=0.500,fm=0.500	2.822	7.826	-	24.574
	w= 391, m = 609 fw=0.391,fm=0.609	3.521	9.424	17.378	27.597
5 wt. % Xsds = 0.6	**w= 945, o = 55** fw=0.945,fo=0.055	5.561	23.171	46.589	80.952
	w= 567, o = 433 fw=0.567,fo=0.433	13.193	52.509	83.741	91.761
	w= 945, m = 55 fw=0.945,fm=0.055	11.687	25.303	-	75.282
	w= 567, m = 433 fw=0.567,fm=0.433	3.007	21.212	50.792	79.343
5 wt. % Xsds = 0.8	**w= 945, o = 55** fw=0.945,fo=0.055	11.396	33.318	50.74	70.602
	w= 548, o = 452 fw=0.548,fo=0.452	23.372	88.013	99.359	-
	w= 945, m = 55 fw=0.945,fm=0.055	9.713	26.253	-	43.734
	w= 548, m = 452 fw=0.548,fm=0.452	3.225	11.468	38.223	60.817

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