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APPENDICES

APPENDIX A: EXPERIMENTAL DATA ON PHASE BEHAVIOR STUDY (OCTANOIC ACID COSURFACTANT)

Effect of Temperature

Sodium dodecyl sulfate	=	1.22% – 6.42 %
Initial oil/water volume ratio	=	1/1
Weight ratio of SDS/Octanoic acid	=	40/60
Temperature	=	25 - 35 ^{o}C
Electrolyte (NaCl)	=	0.65% - 4.28 %
Density of octanoic acid (C8)	=	0.91 g/cc
Density of hexane	=	0.659 g/cc

NOTE: Microemulsion systems were prepared by sequentially adding the stock solutions of SDS (0.19908 g/ml) and NaCl (0.2500 g/ml), octanoic acid and hexane to make the 10 ml solution volume.

Weight % SDS, %(SDS+C8) and % NaCl were calculated relative to total weight, where

total weight = wt (5mL water + mL hexane added)

NOTE : Example of the calculation for microemulsion preparations

Example ; SDS 0.5 mL, NaCl 0.96 mL

wt of SDS = (0.5 mL)(0.19908 g/mL) = 0.0995 g

g of SDS/ g of octanoic = 40/60

g of octanoic acid = (60/40)x(0.0995 g) = 0.1493 g

mL of octanic acid = (0.1493g)/(Density C_8 0.91g/cc) = 0.164 mL

g of hexane (C_6) = (5 mL - 0.165mL C_8)x(Density C_6 0.659 g/cc) = 3.186 g

%(SDS+octanoic acid) = [wt (0.0995 g SDS + 0.1493 g octanoic acid)/ wt (5 g water + 3.186 g hexane)] x 100 = 3.04%

% NaCl = [(0.96 mL x 0.250 g/mL)/ wt (5 g water + 3.186 g hexane)] x 100 = 2.93%

% SDS = [0.0995/(5 g water + 3.186 g hexane)]x100 = 1.22%

Table A-1 Data of sample preparation for 1.22% SDS, NaCl scan, 25 °C, 35°C.

Volume, mL					Weight, g						Wt%			Emulsion type	
SDS stock	NaCl stock	H_2O	C_8	Hexane	SDS	NaCl	H_2O	C_8	Hexane	H_2O+C_6	SDS	$SDS+C_8$	NaCl	25 °C	35°C
0.50	0.96	3.54	0.165	4.84	0.0995	0.240	5.00	0.149	3.186	8.186	1.22	3.04	2.93	I	I
0.50	1.00	3.50	0.165	4.84	0.0995	0.250	5.00	0.149	3.186	8.186	1.22	3.04	3.05	I	N/A
0.50	1.06	3.44	0.165	4.84	0.0995	0.265	5.00	0.149	3.186	8.186	1.22	3.04	3.24	I	I
0.50	1.07	3.43	0.165	4.84	0.0995	0.268	5.00	0.149	3.186	8.186	1.22	3.04	3.27	III	I
0.50	1.08	3.42	0.165	4.84	0.0995	0.270	5.00	0.149	3.186	8.186	1.22	3.04	3.30	III	I
0.50	1.12	3.38	0.165	4.84	0.0995	0.280	5.00	0.149	3.186	8.186	1.22	3.04	3.42	III	N/A
0.50	1.14	3.36	0.165	4.84	0.0995	0.285	5.00	0.149	3.186	8.186	1.22	3.04	3.48	II	I
0.50	1.20	3.3	0.165	4.84	0.0995	0.300	5.00	0.149	3.186	8.186	1.22	3.04	3.66	II	I
0.50	1.30	3.2	0.165	4.84	0.0995	0.325	5.00	0.149	3.186	8.186	1.22	3.04	3.97	II	I
0.50	1.40	3.1	0.165	4.84	0.0995	0.350	5.00	0.149	3.186	8.186	1.22	3.04	4.28	II	III

Table A-2 Data of sample preparation for 2.46% SDS, NaCl scan, 25 °C, 35°C.

Volume, mL					Weight, g						Wt%			Emulsion type	
SDS stock	NaCl stock	H_2O	C_8	Hexane	SDS	NaCl	H_2O	C_8	Hexane	H_2O+C_6	SDS	SDS+C_8	NaCl	25 °C	35°C
1.0	0.78	3.22	0.33	4.67	0.1991	0.195	5.00	0.30	3.078	8.078	2.46	6.16	2.42	I	N/A
1.0	0.80	3.20	0.33	4.67	0.1991	0.200	5.00	0.30	3.078	8.078	2.46	6.16	2.48	III	I
1.0	0.82	3.18	0.33	4.67	0.1991	0.205	5.00	0.30	3.078	8.078	2.46	6.16	2.54	III	I
1.0	0.83	3.17	0.33	4.67	0.1991	0.208	5.00	0.30	3.078	8.078	2.46	6.16	2.57	III	I
1.0	0.84	3.16	0.33	4.67	0.1991	0.210	5.00	0.30	3.078	8.078	2.46	6.16	2.60	II	I
1.0	0.85	3.15	0.33	4.67	0.1991	0.213	5.00	0.30	3.078	8.078	2.46	6.16	2.63	II	I
1.0	0.86	3.14	0.33	4.67	0.1991	0.215	5.00	0.30	3.078	8.078	2.46	6.16	2.66	II	I
1.0	0.88	3.12	0.33	4.67	0.1991	0.220	5.00	0.30	3.078	8.078	2.46	6.16	2.73	II	N/A
1.0	0.90	3.10	0.33	4.67	0.1991	0.225	5.00	0.30	3.078	8.078	2.46	6.16	2.79	II	I

Table A-3 Data of sample preparation for 3.23% SDS, NaCl scan, 25 °C, 35°C.

Volume, mL					Weight, g						Wt%			Emulsion type	
SDS stock	NaCl stock	H_2O	C_8	Hexane	SDS	NaCl	H_2O	C_8	Hexane	H_2O+C_6	SDS	SDS+C_8	NaCl	25 °C	35°C
1.30	0.70	3.00	0.425	4.58	0.259	0.175	5.00	0.388	3.015	8.015	3.23	8.07	2.18	I	I
1.30	0.72	2.98	0.425	4.58	0.259	0.180	5.00	0.388	3.015	8.015	3.23	8.07	2.25	I	I
1.30	0.74	2.96	0.425	4.58	0.259	0.185	5.00	0.388	3.015	8.015	3.23	8.07	2.31	I	N/A
1.30	0.75	2.95	0.425	4.58	0.259	0.187	5.00	0.388	3.015	8.015	3.23	8.07	2.33	I	I
1.30	0.75	2.95	0.425	4.58	0.259	0.189	5.00	0.388	3.015	8.015	3.23	8.07	2.35	III	I
1.30	0.76	2.94	0.425	4.58	0.259	0.190	5.00	0.388	3.015	8.015	3.23	8.07	2.37	II	I
1.30	0.80	2.90	0.425	4.58	0.259	0.200	5.00	0.388	3.015	8.015	3.23	8.07	2.50	II	I
1.30	0.84	2.86	0.425	4.58	0.259	0.210	5.00	0.388	3.015	8.015	3.23	8.07	2.62	II	N/A

Table A-4 Data of sample preparation for 3.74% SDS, NaCl scan, 25 °C, 35°C.

Volume, mL					Weight, g						Wt%			Emulsion type	
SDS stock	NaCl stock	H_2O	C_8	Hexane	SDS	NaCl	H_2O	C_8	Hexane	H_2O+C_6	SDS	SDS+C_8	NaCl	25 °C	35°C
1.50	0.660	2.840	0.49	4.51	0.2986	0.165	5.00	0.448	2.972	7.972	3.74	9.36	2.07	I	I
1.50	0.700	2.800	0.49	4.51	0.2986	0.175	5.00	0.448	2.972	7.972	3.74	9.36	2.20	I	I
1.50	0.710	2.790	0.49	4.51	0.2986	0.178	5.00	0.448	2.972	7.972	3.74	9.36	2.23	I	N/A
1.50	0.716	2.784	0.49	4.51	0.2986	0.179	5.00	0.448	2.972	7.972	3.74	9.36	2.25	II	N/A
1.50	0.720	2.780	0.49	4.51	0.2986	0.180	5.00	0.448	2.972	7.972	3.74	9.36	2.26	II	I
1.50	0.760	2.740	0.49	4.51	0.2986	0.190	5.00	0.448	2.972	7.972	3.74	9.36	2.38	II	N/A
1.50	0.780	2.720	0.49	4.51	0.2986	0.195	5.00	0.448	2.972	7.972	3.74	9.36	2.45	II	III

Table A-5 Data of sample preparation for 4.01% SDS, NaCl scan, 25 °C, 35°C.

Volume, mL					Weight, g						Wt%			Emulsion type	
SDS stock	NaCl stock	H_2O	C_8	Hexane	SDS	NaCl	H_2O	C_8	Hexane	H_2O+C_6	SDS	SDS+C_8	NaCl	25 °C	35°C
1.60	0.56	2.84	0.525	4.48	0.3185	0.140	5.00	0.478	2.949	7.949	4.01	10.01	1.76	I	I
1.60	0.64	2.76	0.525	4.48	0.3185	0.160	5.00	0.478	2.949	7.949	4.01	10.01	2.01	I	I
1.60	0.68	2.72	0.525	4.48	0.3185	0.170	5.00	0.478	2.949	7.949	4.01	10.01	2.14	I	N/A
1.60	0.70	2.70	0.525	4.48	0.3185	0.175	5.00	0.478	2.949	7.949	4.01	10.01	2.20	I	I
1.60	0.72	2.68	0.525	4.48	0.3185	0.180	5.00	0.478	2.949	7.949	4.01	10.01	2.26	II	I
1.60	0.74	2.66	0.525	4.48	0.3185	0.185	5.00	0.478	2.949	7.949	4.01	10.01	2.33	II	III
1.60	0.76	2.64	0.525	4.48	0.3185	0.190	5.00	0.478	2.949	7.949	4.01	10.01	2.39	II	III

Table A-6 Data of sample preparation for 4.27% SDS, NaCl scan, 25 °C, 35°C.

Volume, mL					Weight, g						Wt%			Emulsion type	
SDS stock	NaCl stock	H_2O	C_8	Hexane	SDS	NaCl	H_2O	C_8	Hexane	H_2O+C_6	SDS	SDS+C_8	NaCl	25 °C	35°C
1.70	0.50	2.80	0.555	4.45	0.3384	0.125	5.00	0.508	2.929	7.929	4.27	10.67	1.58	I	I
1.70	0.56	2.74	0.555	4.45	0.3384	0.14 0	5.00	0.508	2.929	7.929	4.27	10.67	1.77	I	I
1.70	0.60	2.70	0.555	4.45	0.3384	0.150	5.00	0.508	2.929	7.929	4.27	10.67	1.89	I	N/A
1.70	0.66	2.64	0.555	4.45	0.3384	0.165	5.00	0.508	2.929	7.929	4.27	10.67	2.08	I	I
1.70	0.68	2.62	0.555	4.45	0.3384	0.170	5.00	0.508	2.929	7.929	4.27	10.67	2.15	II	N/A
1.70	0.70	2.60	0.555	4.45	0.3384	0.175	5.00	0.508	2.929	7.929	4.27	10.67	2.21	II	I

Table A-7 Data of sample preparation for 4.61% SDS, NaCl scan, 25 ^{o}C, 35^{o}C.

Volume, mL					Weight, g						Wt%			Emulsion type	
SDS stock	NaCl stock	H_2O	C_8	Hexane	SDS	NaCl	H_2O	C_8	Hexane	H_2O+C_6	SDS	SDS+C_8	NaCl	25 ^{o}C	35^{o}C
1.83	0.40	2.76	0.60	4.40	0.3643	0.100	5.00	0.546	2.900	7.900	4.61	11.53	1.27	I	I
1.83	0.44	2.72	0.60	4.40	0.3643	0.110	5.00	0.546	2.900	7.900	4.61	11.53	1.39	I	I
1.83	0.46	2.70	0.60	4.40	0.3643	0.115	5.00	0.546	2.900	7.900	4.61	11.53	1.46	IV	I
1.83	0.48	2.68	0.60	4.40	0.3643	0.120	5.00	0.546	2.900	7.900	4.61	11.53	1.52	IV	I
1.83	0.50	2.66	0.60	4.40	0.3643	0.125	5.00	0.546	2.900	7.900	4.61	11.53	1.58	IV	I
1.83	0.52	2.64	0.60	4.40	0.3643	0.130	5.00	0.546	2.900	7.900	4.61	11.53	1.65	IV	I
1.83	0.78	2.38	0.60	4.40	0.3643	0.195	5.00	0.546	2.900	7.900	4.61	11.53	2.47	IV	II
1.83	0.80	2.36	0.60	4.40	0.3643	0.200	5.00	0.546	2.900	7.900	4.61	11.53	2.53	II	II
1.83	0.86	2.30	0.60	4.40	0.3643	0.215	5.00	0.546	2.900	7.900	4.61	11.53	2.72	II	II
1.83	0.88	2.28	0.60	4.40	0.3643	0.220	5.00	0.546	2.900	7.900	4.61	11.53	2.79	II	II
1.83	0.90	2.26	0.60	4.40	0.3643	0.225	5.00	0.546	2.900	7.900	4.61	11.53	2.85	II	II

Table A-8 Data of sample preparation for 5.06% SDS, NaCl scan, 25 °C, 35°C.

Volume, mL					Weight, g						Wt%			Emulsion type	
SDS stock	NaCl stock	H_2O	C_8	Hexane	SDS	NaCl	H_2O	C_8	Hexane	H_2O+C_6	SDS	SDS+C_8	NaCl	25 °C	35°C
2.00	0.40	2.60	0.655	4.34	0.3982	0.100	5.00	0.597	2.863	7.863	5.06	12.65	1.27	I	I
2.00	0.42	2.58	0.655	4.34	0.3982	0.105	5.00	0.597	2.863	7.863	5.06	12.65	1.34	IV	I
2.00	0.44	2.56	0.655	4.34	0.3982	0.110	5.00	0.597	2.863	7.863	5.06	12.65	1.40	IV	I
2.00	0.46	2.54	0.655	4.34	0.3982	0.115	5.00	0.597	2.863	7.863	5.06	12.65	1.47	IV	IV
2.00	0.50	2.50	0.655	4.34	0.3982	0.125	5.00	0.597	2.863	7.863	5.06	12.65	1.59	IV	IV
2.00	0.54	2.46	0.655	4.34	0.3982	0.135	5.00	0.597	2.863	7.863	5.06	12.65	1.72	IV	IV
2.00	0.80	2.20	0.655	4.34	0.3982	0.200	5.00	0.597	2.863	7.863	5.06	12.65	2.55	II	IV
2.00	0.84	2.16	0.655	4.34	0.3982	0.210	5.00	0.597	2.863	7.863	5.06	12.65	2.67	II	IV
2.00	0.88	2.12	0.655	4.34	0.3982	0.220	5.00	0.597	2.863	7.863	5.06	12.65	2.80	II	II
2.00	0.90	2.10	0.655	4.34	0.3982	0.225	5.00	0.597	2.863	7.863	5.06	12.65	2.86	II	N/A

Table A-9 Data of sample preparation for 5.60% SDS, NaCl scan, 25 ^{o}C, 35^{o}C.

Volume, mL					Weight, g						Wt%			Emulsion type	
SDS stock	NaCl stock	H_2O	C_8	Hexane	SDS	NaCl	H_2O	C_8	Hexane	H_2O+C_6	SDS	SDS+C_8	NaCl	25 ^{o}C	35^{o}C
2.20	0.30	2.50	0.72	4.28	0.4380	0.075	5.00	0.657	2.821	7.821	5.60	14.00	0.96	I	I
2.20	0.34	2.46	0.72	4.28	0.4380	0.085	5.00	0.657	2.821	7.821	5.60	14.00	1.09	IV	I
2.20	0.38	2.42	0.72	4.28	0.4380	0.095	5.00	0.657	2.821	7.821	5.60	14.00	1.22	IV	IV
2.20	0.40	2.40	0.72	4.28	0.4380	0.100	5.00	0.657	2.821	7.821	5.60	14.00	1.28	IV	IV
2.20	0.54	2.26	0.72	4.28	0.4380	0.135	5.00	0.657	2.821	7.821	5.60	14.00	1.73	IV	IV
2.20	0.56	2.24	0.72	4.28	0.4380	0.140	5.00	0.657	2.821	7.821	5.60	14.00	1.79	IV	IV
2.20	0.60	2.20	0.72	4.28	0.4380	0.150	5.00	0.657	2.821	7.821	5.60	14.00	1.92	IV	N/A
2.20	0.64	2.16	0.72	4.28	0.4380	0.160	5.00	0.657	2.821	7.821	5.60	14.00	2.05	IV	IV
2.20	0.70	2.10	0.72	4.28	0.4380	0.175	5.00	0.657	2.821	7.821	5.60	14.00	2.24	II	IV
2.20	0.80	2.00	0.72	4.28	0.4380	0.200	5.00	0.657	2.821	7.821	5.60	14.00	2.56	II	II

Table A-10 Data of sample preparation for 6.42% SDS, NaCl scan, 25 °C, 35°C.

Volume, mL					Weight, g						Wt%			Emulsion type	
SDS stock	NaCl stock	H_2O	C_8	Hexane	SDS	NaCl	H_2O	C_8	Hexane	H_2O+C_6	SDS	SDS+C_8	NaCl	25 °C	35°C
2.50	0.20	2.30	0.82	4.18	0.4977	0.050	5.00	0.747	2.755	7.755	6.42	16.04	0.65	I	I
2.50	0.22	2.28	0.82	4.18	0.4977	0.055	5.00	0.747	2.755	7.755	6.42	16.04	0.71	I	I
2.50	0.24	2.26	0.82	4.18	0.4977	0.060	5.00	0.747	2.755	7.755	6.42	16.04	0.78	IV	IV
2.50	0.30	2.20	0.82	4.18	0.4977	0.075	5.00	0.747	2.755	7.755	6.42	16.04	0.97	IV	IV
2.50	0.36	2.14	0.82	4.18	0.4977	0.090	5.00	0.747	2.755	7.755	6.42	16.04	1.16	IV	N/A
2.50	0.42	2.08	0.82	4.18	0.4977	0.105	5.00	0.747	2.755	7.755	6.42	16.04	1.36	IV	N/A
2.50	0.48	2.02	0.82	4.18	0.4977	0.120	5.00	0.747	2.755	7.755	6.42	16.04	1.55	IV	IV
2.50	0.54	1.96	0.82	4.18	0.4977	0.135	5.00	0.747	2.755	7.755	6.42	16.04	1.74	IV g	N/A
2.50	0.56	1.94	0.82	4.18	0.4977	0.140	5.00	0.747	2.755	7.755	6.42	16.04	1.81	IV g	IV
2.50	0.58	1.92	0.82	4.18	0.4977	0.145	5.00	0.747	2.755	7.755	6.42	16.04	1.87	IV g	IV
2.50	0.60	1.90	0.82	4.18	0.4977	0.150	5.00	0.747	2.755	7.755	6.42	16.04	1.94	II	IV
2.50	0.68	1.82	0.82	4.18	0.4977	0.170	5.00	0.747	2.755	7.755	6.42	16.04	2.19	II	II
2.50	0.80	1.70	0.82	4.18	0.4977	0.200	5.00	0.747	2.755	7.755	6.42	16.04	2.58	II	N/A

APPENDIX B: EXPERIMENT DATA FOR PHASE BEHAVIOR STUDY

Effect of Equilibrium Time

Sodium dodecyl sulfate	=	1.22% - 7.81 %
Initial oil/water volume ratio	=	1/1
Weight ratio of SDS/Octanoic acid	=	40/60
Temperature	=	25 ^{o}C
Electrolyte (NaCl)	=	0.32% – 4.28 %
Density of octanoic acid (C8)	=	0.91 g/cc
Density of hexane	=	0.659 g/cc

Table B-1 Data of sample preparation for 1.22% SDS, NaCl scan, 2 weeks and 2 months equilibrium at 25°C.

Volume, mL					Weight, g						Wt%			Emulsion Type 2weeks	Emulsion Type 2 months
SDS stock	NaCl Stock	H_2O	C_8	Hexane	SDS	NaCl	H_2O	C_8	Hexane	H_2O+C_6	SDS	SDS+C_8	NaCl		
0.50	0.20	4.30	0.165	4.84	0.0995	0.050	5.00	0.1493	3.1863	8.1863	1.22	3.04	0.61	I	I
0.50	0.40	4.10	0.165	4.84	0.0995	0.100	5.00	0.1493	3.1863	8.1863	1.22	3.04	1.22	I	I
0.50	0.60	3.90	0.165	4.84	0.0995	0.150	5.00	0.1493	3.1863	8.1863	1.22	3.04	1.83	I	I
0.50	0.70	3.80	0.165	4.84	0.0995	0.175	5.00	0.1493	3.1863	8.1863	1.22	3.04	2.14	I	I
0.50	0.80	3.70	0.165	4.84	0.0995	0.200	5.00	0.1493	3.1863	8.1863	1.22	3.04	2.44	I	I
0.50	0.90	3.60	0.165	4.84	0.0995	0.225	5.00	0.1493	3.1863	8.1863	1.22	3.04	2.75	I	I
0.50	0.96	3.54	0.165	4.84	0.0995	0.240	5.00	0.1493	3.1863	8.1863	1.22	3.04	2.93	I	I
0.50	0.98	3.52	0.165	4.84	0.0995	0.245	5.00	0.1493	3.1863	8.1863	1.22	3.04	2.99	I	I
0.50	1.00	3.50	0.165	4.84	0.0995	0.250	5.00	0.1493	3.1863	8.1863	1.22	3.04	3.05	III	III
0.50	1.02	3.48	0.165	4.84	0.0995	0.255	5.00	0.1493	3.1863	8.1863	1.22	3.04	3.11	III	III
0.50	1.08	3.42	0.165	4.84	0.0995	0.270	5.00	0.1493	3.1863	8.1863	1.22	3.04	3.30	III	III
0.50	1.10	3.40	0.165	4.84	0.0995	0.275	5.00	0.1493	3.1863	8.1863	1.22	3.04	3.36	III	III
0.50	1.12	3.38	0.165	4.84	0.0995	0.280	5.00	0.1493	3.1863	8.1863	1.22	3.04	3.42	III	III
0.50	1.14	3.36	0.165	4.84	0.0995	0.285	5.00	0.1493	3.1863	8.1863	1.22	3.04	3.48	II	III
0.50	1.16	3.34	0.165	4.84	0.0995	0.290	5.00	0.1493	3.1863	8.1863	1.22	3.04	3.54	II	III

0.50	1.20	3.30	0.165	4.84	0.0995	0.300	5.00	0.1493	3.1863	8.1863	1.22	3.04	3.66	II	III
0.50	1.28	3.22	0.165	4.84	0.0995	0.320	5.00	0.1493	3.1863	8.1863	1.22	3.04	3.90	II	III
0.50	1.40	3.10	0.165	4.84	0.0995	0.350	5.00	0.1493	3.1863	8.1863	1.22	3.04	4.26	II	II

Table B-2 Data of sample preparation for 3.74% SDS, NaCl scan, 2 weeks and 2 months equilibrium at 25°C

Volume, mL					Weight, g						Wt%			Emulsion Type 2weeks	Emulsion Type 2 months
SDS stock	NaCl stock	H_2O	C_8	Hexane	SDS	NaCl	H_2O	C_8	Hexane	H_2O+C_6	SDS	SDS+C_8	NaCl		
1.50	0.10	3.40	0.490	4.51	0.2986	0.025	5.00	0.4479	2.9721	7.9721	3.74	9.364	0.31	I	I
1.50	0.20	3.30	0.490	4.51	0.2986	0.050	5.00	0.4479	2.9721	7.9721	3.74	9.364	0.63	I	I
1.50	0.40	3.10	0.490	4.51	0.2986	0.100	5.00	0.4479	2.9721	7.9721	3.74	9.364	1.25	I	I
1.50	0.60	2.90	0.490	4.51	0.2986	0.150	5.00	0.4479	2.9721	7.9721	3.74	9.364	1.88	I	I
1.50	0.66	2.84	0.490	4.51	0.2986	0.165	5.00	0.4479	2.9721	7.9721	3.74	9.364	2.07	I	I
1.50	0.70	2.80	0.490	4.51	0.2986	0.175	5.00	0.4479	2.9721	7.9721	3.74	9.364	2.20	I	I
1.50	0.71	2.79	0.490	4.51	0.2986	0.178	5.00	0.4479	2.9721	7.9721	3.74	9.364	2.22	I	I
1.50	0.72	2.78	0.490	4.51	0.2986	0.180	5.00	0.4479	2.9721	7.9721	3.74	9.364	2.26	I	I
1.50	0.74	2.76	0.490	4.51	0.2986	0.185	5.00	0.4479	2.9721	7.9721	3.74	9.364	2.32	I	III
1.50	0.75	2.75	0.490	4.51	0.2986	0.188	5.00	0.4479	2.9721	7.9721	3.74	9.364	2.35	I	III
1.50	0.76	2.74	0.490	4.51	0.2986	0.190	5.00	0.4479	2.9721	7.9721	3.74	9.364	2.38	II	III
1.50	0.78	2.72	0.490	4.51	0.2986	0.195	5.00	0.4479	2.9721	7.9721	3.74	9.364	2.44	II	III
1.50	0.80	2.70	0.490	4.51	0.2986	0.200	5.00	0.4479	2.9721	7.9721	3.74	9.364	2.51	II	III
1.50	0.82	2.68	0.490	4.51	0.2986	0.205	5.00	0.4479	2.9721	7.9721	3.74	9.364	2.57	II	II
1.50	1.00	2.50	0.490	4.51	0.2986	0.250	5.00	0.4479	2.9721	7.9721	3.74	9.364	3.14	II	II

Table B-3 Data of sample preparation for 4.01% SDS, NaCl scan, 2 weeks and 2 months equilibrium at 25°C.

Volume, mL					Weight, g						Wt%			Emulsion	Emulsion
SDS stock	NaCl stock	H_2O	C_8	Hexane	SDS	NaCl	H_2O	C_8	Hexane	H_2O+C_6	SDS	SDS+C_8	NaCl	Type 2weeks	Type 2 months
1.60	0.46	2.94	0.525	4.48	0.3185	0.115	5.00	0.4778	2.9490	7.9490	4.01	10.02	1.45	I	I
1.60	0.60	2.80	0.525	4.48	0.3185	0.150	5.00	0.4778	2.9490	7.9490	4.01	10.02	1.89	I	I
1.60	0.70	2.70	0.525	4.48	0.3185	0.175	5.00	0.4778	2.9490	7.9490	4.01	10.02	2.20	I	I
1.60	0.72	2.68	0.525	4.48	0.3185	0.180	5.00	0.4778	2.9490	7.9490	4.01	10.02	2.26	I	III
1.60	0.74	2.66	0.525	4.48	0.3185	0.185	5.00	0.4778	2.9490	7.9490	4.01	10.02	2.33	I	III
1.60	0.75	2.65	0.525	4.48	0.3185	0.188	5.00	0.4778	2.9490	7.9490	4.01	10.02	2.36	II	III
1.60	0.76	2.64	0.525	4.48	0.3185	0.190	5.00	0.4778	2.9490	7.9490	4.01	10.02	2.39	II	III
1.60	0.80	2.60	0.525	4.48	0.3185	0.200	5.00	0.4778	2.9490	7.9490	4.01	10.02	2.52	II	III
1.60	0.82	2.58	0.525	4.48	0.3185	0.205	5.00	0.4778	2.9490	7.9490	4.01	10.02	2.58	II	II
1.60	1.00	2.40	0.525	4.48	0.3185	0.250	5.00	0.4778	2.9490	7.9490	4.01	10.02	3.15	II	II
1.60	1.20	2.20	0.525	4.48	0.3185	0.300	5.00	0.4778	2.9490	7.9490	4.01	10.02	3.77	II	II

Table B-4 Data of sample preparation for 4.27% SDS, NaCl scan, 2 weeks and 2 months equilibrium at 25°C.

Volume, mL					Weight, g						Wt%			Emulsion	Emulsion
SDS stock	NaCl stock	H_2O	C_8	Hexane	SDS	NaCl	H_2O	C_8	Hexane	H_2O+C_6	SDS	$SDS+C_8$	NaCl	Type 2weeks	Type 2 months
1.70	0.40	2.90	0.555	4.45	0.3384	0.100	5.00	0.5076	2.9293	7.9293	4.27	10.67	1.26	I	I
1.70	0.46	2.84	0.555	4.45	0.3384	0.125	5.00	0.5076	2.9293	7.9293	4.27	10.67	1.45	I	I
1.70	0.50	2.80	0.555	4.45	0.3384	0.140	5.00	0.5076	2.9293	7.9293	4.27	10.67	1.57	I	I
1.70	0.56	2.74	0.555	4.45	0.3384	0.150	5.00	0.5076	2.9293	7.9293	4.27	10.67	1.77	I	I
1.70	0.60	2.70	0.555	4.45	0.3384	0.155	5.00	0.5076	2.9293	7.9293	4.27	10.67	1.89	IV	I
1.70	0.62	2.68	0.555	4.45	0.3384	0.160	5.00	0.5076	2.9293	7.9293	4.27	10.67	1.95	IV	I
1.70	0.64	2.66	0.555	4.45	0.3384	0.170	5.00	0.5076	2.9293	7.9293	4.27	10.67	2.02	IV	I
1.70	0.68	2.62	0.555	4.45	0.3384	0.175	5.00	0.5076	2.9293	7.9293	4.27	10.67	2.14	IV	III
1.70	0.70	2.60	0.555	4.45	0.3384	0.185	5.00	0.5076	2.9293	7.9293	4.27	10.67	2.21	IV	III
1.70	0.74	2.56	0.555	4.45	0.3384	0.200	5.00	0.5076	2.9293	7.9293	4.27	10.67	2.33	II	II
1.70	0.80	2.50	0.555	4.45	0.3384	0.250	5.00	0.5076	2.9293	7.9293	4.27	10.67	2.52	II	II
1.70	1.00	2.30	0.555	4.45	0.3384	0.500	5.00	0.5076	2.9293	7.9293	4.27	10.67	3.15	II	II

Table B-5 Data of sample preparation for 4.53% SDS, NaCl scan, 2 weeks and 2 months equilibrium at 25°C.

Volume, mL					Weight, g						Wt%			Emulsion	Emulsion
SDS stock	NaCl Stock	H_2O	C_8	Hexane	SDS	NaCl	H_2O	C_8	Hexane	H_2O+C_6	SDS	SDS+C_8	NaCl	Type 2weeks	Type 2 months
1.80	0.10	3.10	0.590	4.41	0.3583	0.025	5.00	0.5375	2.9062	7.9062	4.53	11.33	0.32	I	I
1.80	0.20	3.00	0.590	4.41	0.3583	0.050	5.00	0.5375	2.9062	7.9062	4.53	11.33	0.63	I	I
1.80	0.30	2.90	0.590	4.41	0.3583	0.075	5.00	0.5375	2.9062	7.9062	4.53	11.33	0.95	I	I
1.80	0.40	2.80	0.590	4.41	0.3583	0.100	5.00	0.5375	2.9062	7.9062	4.53	11.33	1.26	I	I
1.80	0.46	2.74	0.590	4.41	0.3583	0.115	5.00	0.5375	2.9062	7.9062	4.53	11.33	1.45	I	I
1.80	0.48	2.72	0.590	4.41	0.3583	0.120	5.00	0.5375	2.9062	7.9062	4.53	11.33	1.52	I	I
1.80	0.50	2.70	0.590	4.41	0.3583	0.125	5.00	0.5375	2.9062	7.9062	4.53	11.33	1.58	I	I
1.80	0.60	2.60	0.590	4.41	0.3583	0.150	5.00	0.5375	2.9062	7.9062	4.53	11.33	1.90	I	I
1.80	0.64	2.56	0.590	4.41	0.3583	0.160	5.00	0.5375	2.9062	7.9062	4.53	11.33	2.02	IV	I
1.80	0.68	2.52	0.590	4.41	0.3583	0.170	5.00	0.5375	2.9062	7.9062	4.53	11.33	2.15	IV	III
1.80	0.70	2.50	0.590	4.41	0.3583	0.175	5.00	0.5375	2.9062	7.9062	4.53	11.33	2.21	IV	III
1.80	0.76	2.44	0.590	4.41	0.3583	0.190	5.00	0.5375	2.9062	7.9062	4.53	11.33	2.40	IV	II
1.80	0.77	2.43	0.590	4.41	0.3583	0.193	5.00	0.5375	2.9062	7.9062	4.53	11.33	2.43	II	II
1.80	0.78	2.42	0.590	4.41	0.3583	0.195	5.00	0.5375	2.9062	7.9062	4.53	11.33	2.46	II	II
1.80	0.80	2.40	0.590	4.41	0.3583	0.200	5.00	0.5375	2.9062	7.9062	4.53	11.33	2.53	II	II

1.80	0.82	2.38	0.590	4.41	0.3583	0.410	5.00	0.5375	2.9062	7.9062	4.53	11.33	2.60	II	II
1.80	1.00	2.20	0.590	4.41	0.3583	0.500	5.00	0.5375	2.9062	7.9062	4.53	11.33	3.16	II	II

Figure B-6 Data of sample preparation for 5.60% SDS, NaCl scan, 2 weeks and 2 months equilibrium at 25°C

Volume, mL					Weight, g						Wt%			Emulsion	Emulsion
SDS stock	NaCl Stock	H_2O	C_8	Hexane	SDS	NaCl	H_2O	C_8	Hexane	H_2O+C_6	SDS	SDS+C_8	NaCl	Type 2weeks	Type 2 months
2.20	0.16	2.64	0.720	4.28	0.438	0.040	5.00	0.6570	2.8205	7.8205	5.60	14.00	0.51	I	I
2.20	0.24	2.56	0.720	4.28	0.438	0.060	5.00	0.6570	2.8205	7.8205	5.60	14.00	0.77	I	I
2.20	0.30	2.50	0.720	4.28	0.438	0.075	5.00	0.6570	2.8205	7.8205	5.60	14.00	0.96	I	I
2.20	0.36	2.44	0.720	4.28	0.438	0.090	5.00	0.6570	2.8205	7.8205	5.60	14.00	1.15	I	I
2.20	0.38	2.42	0.720	4.28	0.438	0.095	5.00	0.6570	2.8205	7.8205	5.60	14.00	1.21	I	I
2.20	0.40	2.40	0.720	4.28	0.438	0.100	5.00	0.6570	2.8205	7.8205	5.60	14.00	1.28	I	I
2.20	0.54	2.26	0.720	4.28	0.438	0.135	5.00	0.6570	2.8205	7.8205	5.60	14.00	1.73	IV	I
2.20	0.56	2.24	0.720	4.28	0.438	0.140	5.00	0.6570	2.8205	7.8205	5.60	14.00	1.79	IV	IV
2.20	0.58	2.22	0.720	4.28	0.438	0.145	5.00	0.6570	2.8205	7.8205	5.60	14.00	1.85	IV	IV
2.20	0.60	2.20	0.720	4.28	0.438	0.130	5.00	0.6570	2.8205	7.8205	5.60	14.00	1.92	IV	IV
2.20	0.74	2.06	0.720	4.28	0.438	0.185	5.00	0.6570	2.8205	7.8205	5.60	14.00	2.07	IV	IV
2.20	0.76	2.04	0.720	4.28	0.438	0.190	5.00	0.6570	2.8205	7.8205	5.60	14.00	2.43	IV	IV
2.20	0.78	2.02	0.720	4.28	0.438	0.195	5.00	0.6570	2.8205	7.8205	5.60	14.00	2.49	II	IV
2.20	0.80	2.00	0.720	4.28	0.438	0.200	5.00	0.6570	2.8205	7.8205	5.60	14.00	2.56	II	II
2.20	0.84	1.96	0.720	4.28	0.438	0.210	5.00	0.6570	2.8205	7.8205	5.60	14.00	2.69	II	II

Table B-7 Data of sample preparation for 7.81% SDS, NaCl scan, 2 weeks and 2 months equilibrium at 25°C

Volume, mL					Weight, g						Wt%			Emulsion	Emulsion
SDS stock	NaCl stock	H_2O	C_8	Hexane	SDS	NaCl	H_2O	C_8	Hexane	H_2O+C_6	SDS	SDS+C_8	NaCl	Type 2weeks	Type 2 months
3.00	0.10	1.90	0.985	4.02	0.5972	0.025	5.00	0.8958	2.6459	7.6459	7.81	19.53	0.33	IV g	IVg
3.00	0.20	1.80	0.985	4.02	0.5972	0.050	5.00	0.8958	2.6459	7.6459	7.81	19.53	0.65	IV g	IVg
3.00	0.24	1.76	0.985	4.02	0.5972	0.060	5.00	0.8958	2.6459	7.6459	7.81	19.53	0.78	IV g	IVg
3.00	0.26	1.74	0.985	4.02	0.5972	0.065	5.00	0.8958	2.6459	7.6459	7.81	19.53	0.83	IV	IV
3.00	0.30	1.70	0.985	4.02	0.5972	0.075	5.00	0.8958	2.6459	7.6459	7.81	19.53	0.98	IV	IV
3.00	0.40	1.60	0.985	4.02	0.5972	0.100	5.00	0.8958	2.6459	7.6459	7.81	19.53	1.31	IV	IV
3.00	0.46	1.54	0.985	4.02	0.5972	0.115	5.00	0.8958	2.6459	7.6459	7.81	19.53	1.50	IV	IV
3.00	0.48	1.52	0.985	4.02	0.5972	0.120	5.00	0.8958	2.6459	7.6459	7.81	19.53	1.56	IV	IV
3.00	0.50	1.50	0.985	4.02	0.5972	0.125	5.00	0.8958	2.6459	7.6459	7.81	19.53	1.63	IV	IV
3.00	0.54	1.46	0.985	4.02	0.5972	0.135	5.00	0.8958	2.6459	7.6459	7.81	19.53	1.77	IV	IV
3.00	0.58	1.42	0.985	4.02	0.5972	0.145	5.00	0.8958	2.6459	7.6459	7.81	19.53	1.90	IV	II
3.00	0.60	1.40	0.985	4.02	0.5972	0.150	5.00	0.8958	2.6459	7.6459	7.81	19.53	1.96	II	II
3.00	0.80	1.20	0.985	4.02	0.5972	0.200	5.00	0.8958	2.6459	7.6459	7.81	19.53	2.62	II	II
3.00	1.00	1.00	0.985	4.02	0.5972	0.250	5.00	0.8958	2.6459	7.6459	7.81	19.53	3.27	II	II
3.00	1.06	0.94	0.985	4.02	0.5972	0.265	5.00	0.8958	2.6459	7.6459	7.81	19.53	3.47	II	II

3.00	1.16	0.84	0.985	4.02	0.5972	0.290	5.00	0.8958	2.6459	7.6459	7.81	19.53	3.80	II	II
3.00	1.20	0.80	0.985	4.02	0.5972	0.300	5.00	0.8958	2.6459	7.6459	7.81	19.53	3.92	II	II

APPENDIX C :

EXPERIMENTAL DATA OF RELATIVE VOLUME AND SOLUBILIZATION STUDY

Effect of Temperature (25 °C)

Sodium dodecyl sulfate	=	1.22% – 6.42 %
Initial oil/water volume ratio	=	1/1
Ratio of SDS/Octanoic acid	=	40/60
Temperature	=	25 °C
Electrolyte (NaCl)	=	0.65% - 4.28%

Example for calculation of solubilization parameter

Table C-1 1.22% SDS

Type	%NaCl	Total phase volume (mL)	Water volume solubilized (mL)	SP_W (mL/g)	Oil volume solubilized (mL)	SP_O(mL/g)
I	2.93	9.60	9.60/2 = 4.80	4.80/0.0995 = 48.22	9.50 - 4.80 = 4.70	4.70/0.0995 = 47.22
III	3.27	11.00	(11.00/2)-5.00 = 0.50	0.50/0.0995 = 5.02	7.30-(11.00/2) = 1.80	1.80/0.0995 = 18.08
II	3.48	9.50	(9.50/2) - 3.80 = 0.95	0.95/0.0995 = 9.54	9.50/2 = 4.75	4.75/0.0995 = 47.72

Example for calculation of relative volume (Table C1)

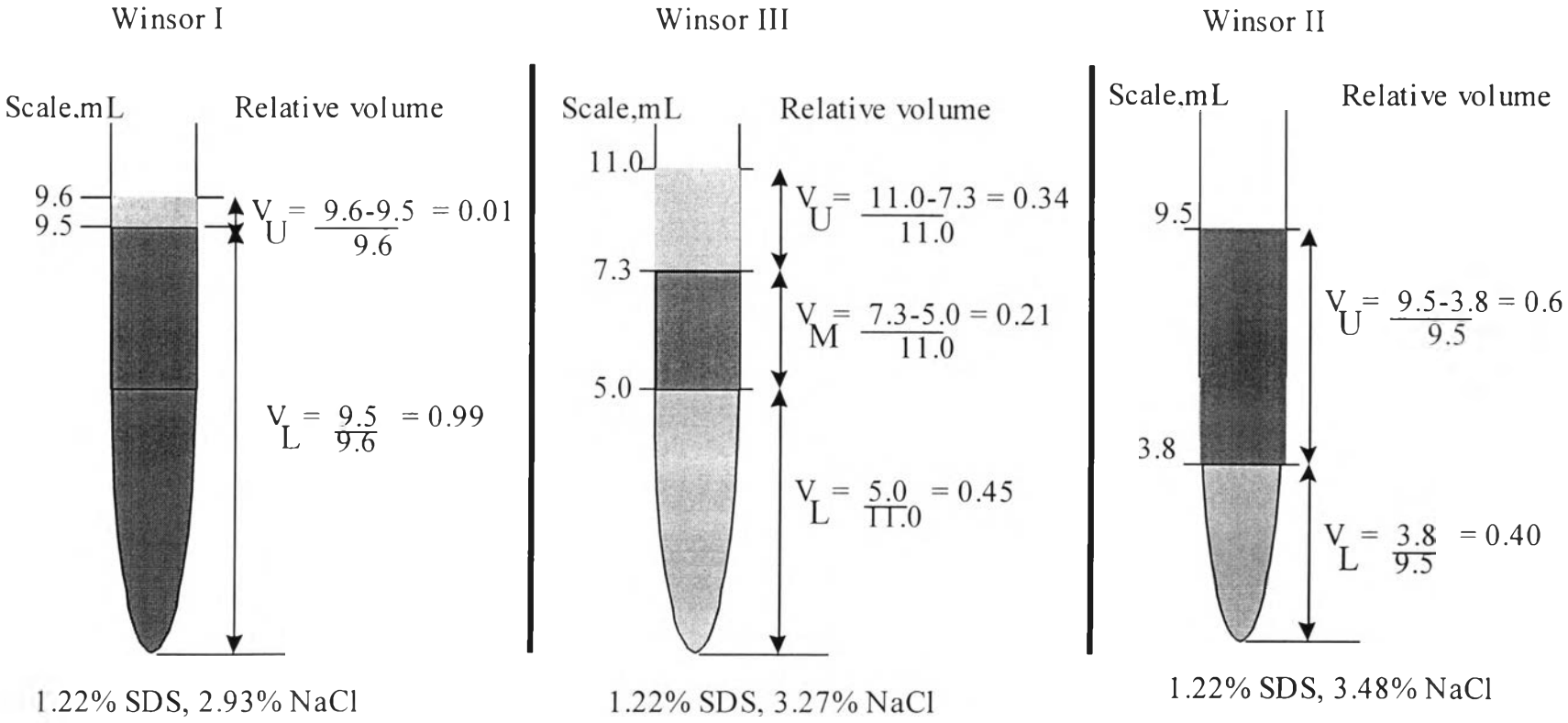

Table C-1 Relative volume and solubilization parameter for 1.22% SDS, 25 °C.

		Scale of phase on centrifuge (mL)			Relative volume			Vw	Vo	Ms	Solubilization Parameter	
%NaCl	type	lower	middle	upper	lower	middle	upper	(mL)	(mL)	(g)	SPw (mL/g)	SPo (mL/g)
2.93	I	3.60	9.50	9.60	0.99	0.00	0.01	4.80	4.70	0.0995	48.22	47.22
3.05	I	4.20	5.60	9.40	0.60	0.00	0.40	4.70	0.90	0.0995	47.22	9.04
3.24	I	4.50	9.90	10.00	0.99	0.00	0.01	5.00	4.90	0.0995	50.23	49.23
3.27	III	5.00	7.30	11.00	0.45	0.21	0.34	0.50	1.80	0.0995	5.02	18.08
3.30	III	4.50	6.00	10.50	0.43	0.14	0.43	0.75	0.75	0.0995	7.53	7.53
3.42	III	4.30	6.40	11.00	0.39	0.19	0.42	1.20	0.90	0.0995	12.06	9.04
3.48	II	3.80	5.40	9.50	0.40	0.00	0.60	0.95	4.75	0.0995	9.54	47.72
3.66	II	4.20	5.20	9.70	0.43	0.00	0.57	0.65	4.85	0.0995	6.53	48.72
3.97	II	4.00	4.80	9.50	0.42	0.00	0.58	0.75	4.75	0.0995	7.53	47.72
4.28	II	4.00	4.60	9.60	0.42	0.00	0.58	0.80	4.80	0.0995	8.04	48.22

Table C-2 Relative volume and solubilization parameter for 2.46% SDS, 25 ^{o}C.

		Scale of phase on centrifuge (mL)			Relative volume			Vw	Vo	Ms	Solubilization Parameter	
%NaCl	type	lower	middle	upper	lower	middle	upper	(mL)	(mL)	(g)	SPw (mL/g)	SPo (mL/g)
2.42	I	5.50	8.40	9.20	0.91	0.00	0.09	4.60	3.80	0.1991	23.11	19.09
2.48	III	3.70	6.00	10.00	0.37	0.23	0.40	1.30	1.00	0.1991	6.53	5.02
2.54	III	3.50	6.00	9.60	0.36	0.26	0.38	1.30	1.20	0.1991	6.53	6.03
2.57	III	4.50	7.00	11.00	0.41	0.23	0.36	1.00	1.50	0.1991	5.02	7.53
2.60	II	2.00	7.00	10.40	0.19	0.00	0.81	3.20	5.20	0.1991	16.07	26.12
2.63	II	3.80	6.50	9.70	0.39	0.00	0.61	1.05	4.85	0.1991	5.27	24.36
2.66	II	4.00	6.00	9.80	0.41	0.00	0.59	0.90	4.90	0.1991	4.52	24.61
2.73	II	3.60	6.20	9.60	0.38	0.00	0.63	1.20	4.80	0.1991	6.03	24.11
2.79	II	3.70	4.30	9.20	0.40	0.00	0.60	0.90	4.60	0.1991	4.52	23.11

Table C-3 Relative volume and solubilization parameter for 3.23% SDS, 25 ^{o}C.

		Scale of phase on centrifuge (mL)			Relative volume			Vw	Vo	Ms	Solubilization Parameter	
%NaCl	type	lower	middle	upper	lower	middle	upper	(mL)	(mL)	(g)	SPw (mL/g)	SPo (mL/g)
2.18	I	6.40	9.60	9.80	0.98	0.00	0.02	4.90	4.70	0.2588	18.93	18.16
2.25	I	7.40	9.60	9.80	0.98	0.00	0.02	4.90	4.70	0.2588	18.93	18.16
2.31	I	3.70	6.50	9.60	0.68	0.00	0.32	4.80	1.70	0.2588	18.55	6.57
2.33	I	3.60	6.00	9.30	0.65	0.00	0.35	4.65	1.35	0.2588	17.97	5.22
2.35	III	3.10	6.50	9.50	0.33	0.36	0.32	1.65	1.75	0.2588	6.38	6.76
2.37	II	3.80	5.50	9.50	0.40	0.00	0.60	0.95	4.75	0.2588	3.67	18.35
2.50	II	3.60	4.70	9.20	0.39	0.00	0.61	1.00	4.60	0.2588	3.86	17.77
2.62	II	4.10	5.30	9.70	0.42	0.00	0.58	0.75	4.85	0.2588	2.90	18.74

Table C-4 Relative volume and solubilization parameter for 3.74% SDS, 25 ^{o}C.

		Scale of phase on centrifuge (mL)			Relative volume			Vw	Vo	Ms	Solubilization Parameter	
%NaCl	type	lower	middle	upper	lower	middle	upper	(mL)	(mL)	(g)	SPw (mL/g)	SPo (mL/g)
2.07	I	7.70	0.00	9.80	0.79	0.00	0.21	4.90	2.80	0.2986	16.41	9.38
2.20	I	3.50	7.70	9.80	0.79	0.00	0.21	4.90	2.80	0.2986	16.41	9.38
2.23	I	3.60	8.10	9.60	0.84	0.00	0.16	4.80	3.30	0.2986	16.07	11.05
2.25	II	3.90	8.50	9.30	0.42	0.00	0.58	0.75	4.65	0.2986	2.51	15.57
2.26	II	3.50	0.00	9.50	0.37	0.00	0.63	1.25	4.75	0.2986	4.19	15.91
2.38	II	4.00	5.00	9.50	0.42	0.00	0.58	0.75	4.75	0.2986	2.51	15.91
2.45	II	3.60	5.00	9.20	0.39	0.00	0.61	1.00	4.60	0.2986	3.35	15.40

Table C-5 Relative volume and solubilization parameter for 4.01% SDS, 25 °C.

		Scale of phase on centrifuge (mL)			Relative volume			Vw	Vo	Ms	Solubilization Parameter	
%NaCl	type	lower	middle	upper	lower	middle	upper	(mL)	(mL)	(g)	SPw (mL/g)	SPo (mL/g)
1.76	I	10.10	0.00	11.00	0.92	0.00	0.08	5.50	4.60	0.3185	17.27	14.44
2.01	I	9.40	0.00	9.50	0.99	0.00	0.01	4.75	4.65	0.3185	14.91	14.60
2.14	I	9.50	0.00	9.60	0.99	0.00	0.01	4.80	4.70	0.3185	15.07	14.76
2.20	I	4.00	8.50	10.70	0.79	0.00	0.21	5.35	3.15	0.3185	16.80	9.89
2.26	II	4.50	5.40	10.80	0.42	0.00	0.58	0.90	5.40	0.3185	2.83	16.95
2.33	II	3.50	4.60	9.50	0.37	0.00	0.63	1.25	4.75	0.3185	3.92	14.91
2.39	II	3.20	4.40	9.10	0.35	0.00	0.65	1.35	4.55	0.3185	4.24	14.28

Table C-6 Relative volume and solubilization parameter for 4.27%SDS, 25 ^{o}C.

		Scale of phase on centrifuge (mL)			Relative volume			Vw	Vo	Ms	Solubilization Parameter	
%NaCl	type	lower	middle	upper	lower	middle	upper	(mL)	(mL)	(g)	SPw (mL/g)	SPo (mL/g)
1.58	I	8.60	9.20	9.30	0.99	0.00	0.01	4.65	4.55	0.3384	13.74	13.44
1.77	I	9.30	0.00	9.40	0.99	0.00	0.01	4.70	4.60	0.3384	13.89	13.59
1.89	I	9.20	0.00	9.30	0.99	0.00	0.01	4.65	4.55	0.3384	13.74	13.44
2.08	I	9.80	0.00	10.00	0.98	0.00	0.02	5.00	4.80	0.3384	14.77	14.18
2.15	II	2.30	8.00	9.60	0.24	0.00	0.76	2.50	4.80	0.3384	7.39	14.18
2.21	II	1.90	4.60	9.30	0.20	0.00	0.80	2.75	4.65	0.3384	8.13	13.74

Table C-7 Relative volume and solubilization parameter for 4.61% SDS, 25 °C.

		Scale of phase on centrifuge (mL)			Relative volume			Vw	Vo	Ms	Solubilization Parameter	
%NaCl	type	lower	middle	upper	lower	middle	upper	(mL)	(mL)	(g)	SPw (mL/g)	SPo (mL/g)
1.27	I	8.20	0.00	10.50	0.78	0.00	0.22	5.25	2.95	0.3643	14.38	8.08
1.39	I	9.00	0.00	9.20	0.98	0.00	0.02	4.60	4.40	0.3643	12.60	12.06
1.46	IV	0.00	10.20	0.00	0.00	1.00	0.00	5.10	5.10	0.3643	13.97	13.97
1.52	IV	0.00	10.30	0.00	0.00	1.00	0.00	5.15	5.15	0.3643	14.11	14.11
1.58	IV	0.00	9.40	0.00	0.00	1.00	0.00	4.70	4.70	0.3643	12.88	12.88
1.65	IV	0.00	9.40	0.00	0.00	1.00	0.00	4.70	4.70	0.3643	12.88	12.88
2.47	IV	0.00	9.50	0.00	0.00	1.00	0.00	4.75	4.75	0.3643	13.01	13.01
2.53	II	4.00	6.20	9.10	0.44	0.00	0.56	0.55	4.55	0.3643	1.51	12.47
2.72	II	2.10	8.00	10.50	0.20	0.00	0.80	3.15	5.25	0.3643	8.63	14.38
2.79	II	2.80	8.30	10.50	0.27	0.00	0.73	2.45	5.25	0.3643	6.71	14.38
2.85	II	2.00	4.60	9.50	0.21	0.00	0.79	2.75	4.75	0.3643	7.53	13.01

Table C-8 Relative volume and solubilization parameter for 5.06% SDS, 25 °C.

		Scale of phase on centrifuge (mL)			Relative volume			Vw	Vo	Ms	Solubilization Parameter	
%NaCl	type	lower	middle	Upper	lower	middle	Upper	(mL)	(mL)	(g)	SPw (mL/g)	SPo (mL/g)
1.27	I	8.90	9.50	9.60	0.93	0.00	0.07	4.80	4.70	0.3982	12.06	11.80
1.34	IV	0.00	10.20	0.00	0.00	1.00	0.00	5.10	5.10	0.3982	12.81	12.81
1.40	IV	0.00	10.70	0.00	0.00	1.00	0.00	5.35	5.35	0.3982	13.44	13.44
1.47	IV	0.00	10.50	0.00	0.00	1.00	0.00	5.25	5.25	0.3982	13.19	13.19
1.59	IV	0.00	10.10	0.00	0.00	1.00	0.00	5.05	5.05	0.3982	12.68	12.68
1.72	IV	0.00	10.20	0.00	0.00	1.00	0.00	5.10	5.10	0.3982	12.81	12.81
2.55	II	3.60	6.00	9.50	0.38	0.00	0.62	1.15	4.75	0.3982	2.89	11.93
2.67	II	1.40	6.90	9.20	0.15	0.00	0.85	3.20	4.60	0.3982	8.04	11.55
2.80	II	2.00	6.00	10.40	0.19	0.00	0.81	3.20	5.20	0.3982	8.04	13.06
2.86	II	1.80	4.60	9.60	0.19	0.00	0.81	3.00	4.80	0.3982	7.53	12.06

Table C-9 Relative volume and solubilization parameter for 5.60% SDS, 25 ^{o}C.

		Scale of phase on centrifuge (mL)			Relative volume			Vw	Vo	Ms	Solubilization Parameter	
%NaCl	type	Lower	middle	upper	lower	middle	Upper	(mL)	(mL)	(g)	SPw (mL/g)	SPo (mL/g)
0.96	I	6.10	0.00	10.40	0.59	0.00	0.41	5.20	0.90	0.4380	11.87	2.05
1.09	IV	0.00	10.20	0.00	0.00	1.00	0.00	5.10	5.10	0.4380	11.64	11.64
1.22	IV	9.60	10.70	0.00	0.00	1.00	0.00	5.35	5.35	0.4380	12.22	12.22
1.28	IV	7.50	9.10	0.00	0.00	1.00	0.00	4.55	4.55	0.4380	10.39	10.39
1.73	IV	5.00	10.40	0.00	0.00	1.00	0.00	5.20	5.20	0.4380	11.87	11.87
1.79	IV	0.00	9.80	0.00	0.00	1.00	0.00	4.90	4.90	0.4380	11.19	11.19
1.92	IV	1.00	9.60	0.00	0.00	1.00	0.00	4.80	4.80	0.4380	10.96	10.96
2.05	IV	0.00	10.50	0.00	0.00	1.00	0.00	5.25	5.25	0.4380	11.99	11.99
2.24	II	3.00	0.00	10.00	0.30	0.00	0.70	2.00	5.00	0.4380	4.57	11.42
2.56	II	2.70	0.00	10.00	0.27	0.00	0.73	2.30	5.00	0.4380	5.25	11.42

Table C-10 Relative volume and solubilization parameter for 6.42% SDS, 25 ^{o}C.

		Scale of phase on centrifuge (mL)			Relative volume			Vw	Vo	Ms	Solubilization Parameter	
%NaCl	Type	lower	middle	upper	lower	middle	upper	(mL)	(mL)	(g)	SPw (mL/g)	SPo (mL/g)
0.65	I	6.50	0.00	11.00	0.59	0.00	0.41	5.50	1.00	0.4977	11.05	2.01
0.71	I	10.20	0.00	11.00	0.93	0.00	0.07	5.50	4.70	0.4977	11.05	9.44
0.78	IV	0.00	10.00	0.00	0.00	1.00	0.00	5.00	5.00	0.4977	10.05	10.05
0.97	IV	0.00	10.20	0.00	0.00	1.00	0.00	5.10	5.10	0.4977	10.25	10.25
1.16	IV	0.00	10.00	0.00	0.00	1.00	0.00	5.00	5.00	0.4977	10.05	10.05
1.36	IV	8.80	10.10	0.00	0.00	1.00	0.00	5.05	5.05	0.4977	10.15	10.15
1.55	IV	2.00	9.10	0.00	0.00	1.00	0.00	4.55	4.55	0.4977	9.14	9.14
1.74	IV	0.60	10.80	0.00	0.00	1.00	0.00	5.40	5.40	0.4977	10.85	10.85
1.81	IV	0.30	10.00	0.00	0.00	1.00	0.00	5.00	5.00	0.4977	10.05	10.05
1.87	IV	0.70	10.50	0.00	0.00	1.00	0.00	5.25	5.25	0.4977	10.55	10.55
1.94	II	1.30	0.00	10.00	0.13	0.00	0.87	3.70	5.00	0.4977	7.43	10.05
2.19	II	1.60	0.00	9.80	0.16	0.00	0.84	3.30	4.90	0.4977	6.63	9.85
2.58	II	2.80	0.00	10.20	0.27	0.00	0.73	2.30	5.10	0.4977	4.62	10.25

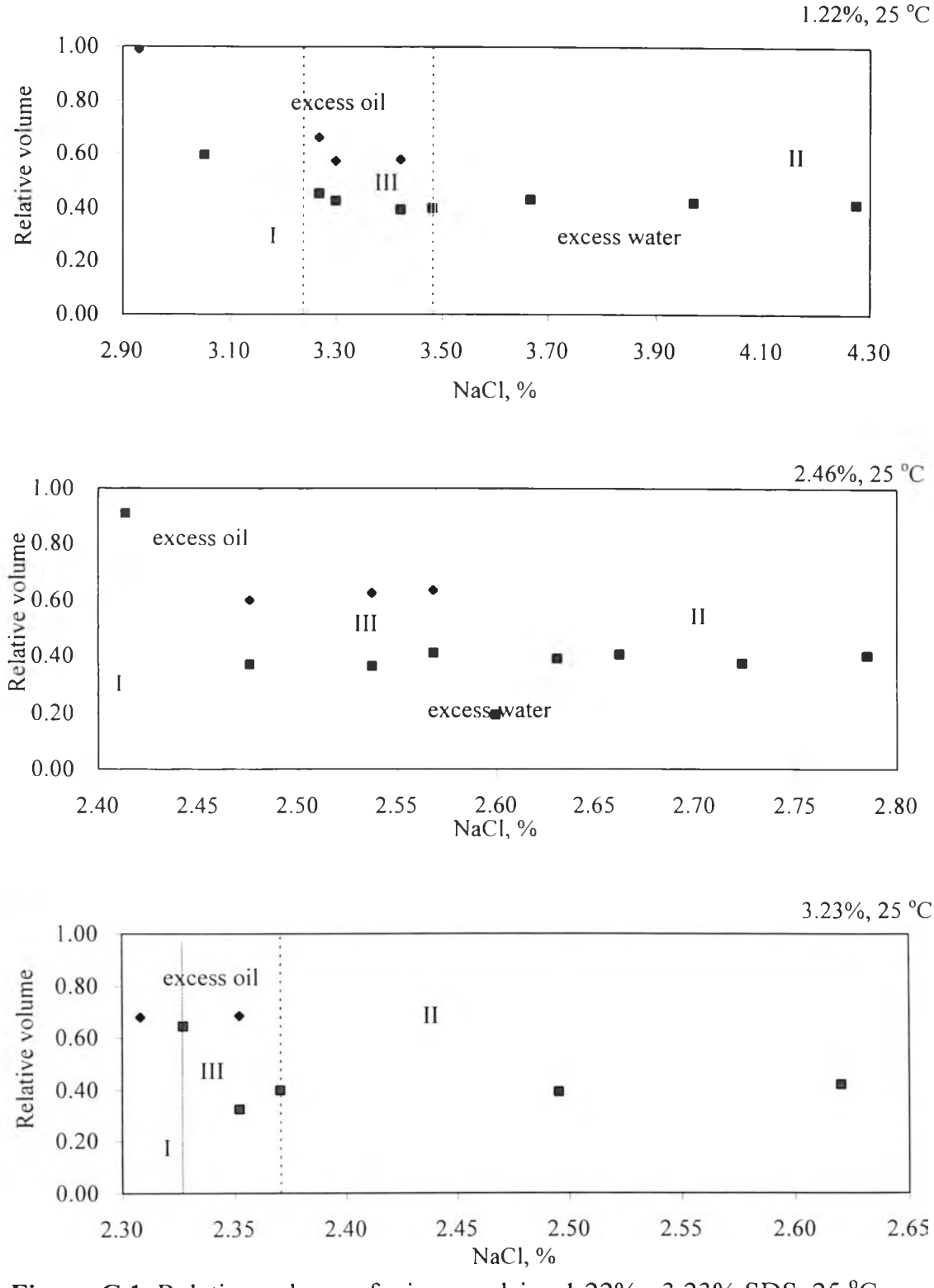

Figure C.1 Relative volume of microemulsion 1.22% - 3.23% SDS, 25 °C.

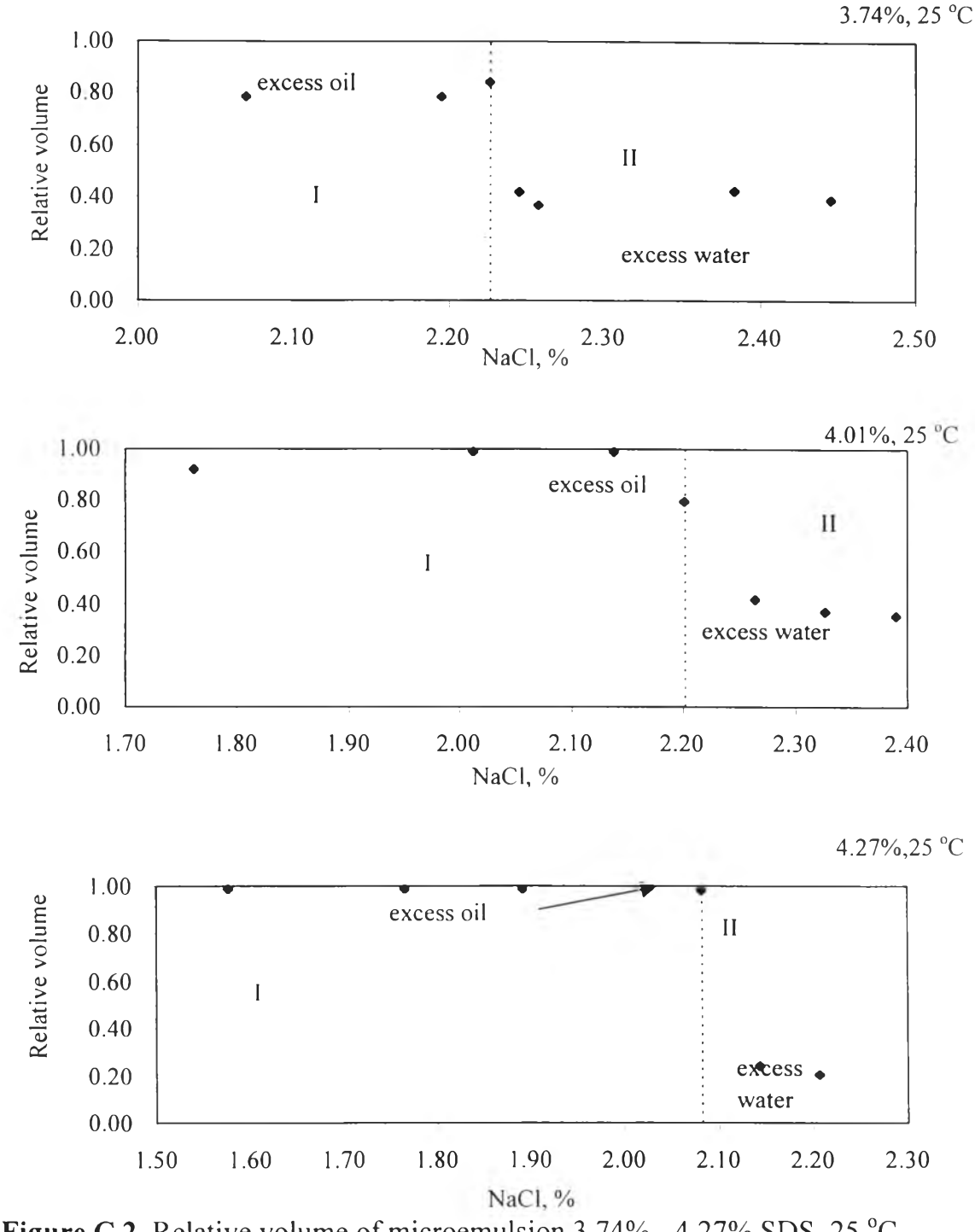

Figure C.2 Relative volume of microemulsion 3.74% - 4.27% SDS, 25 °C.

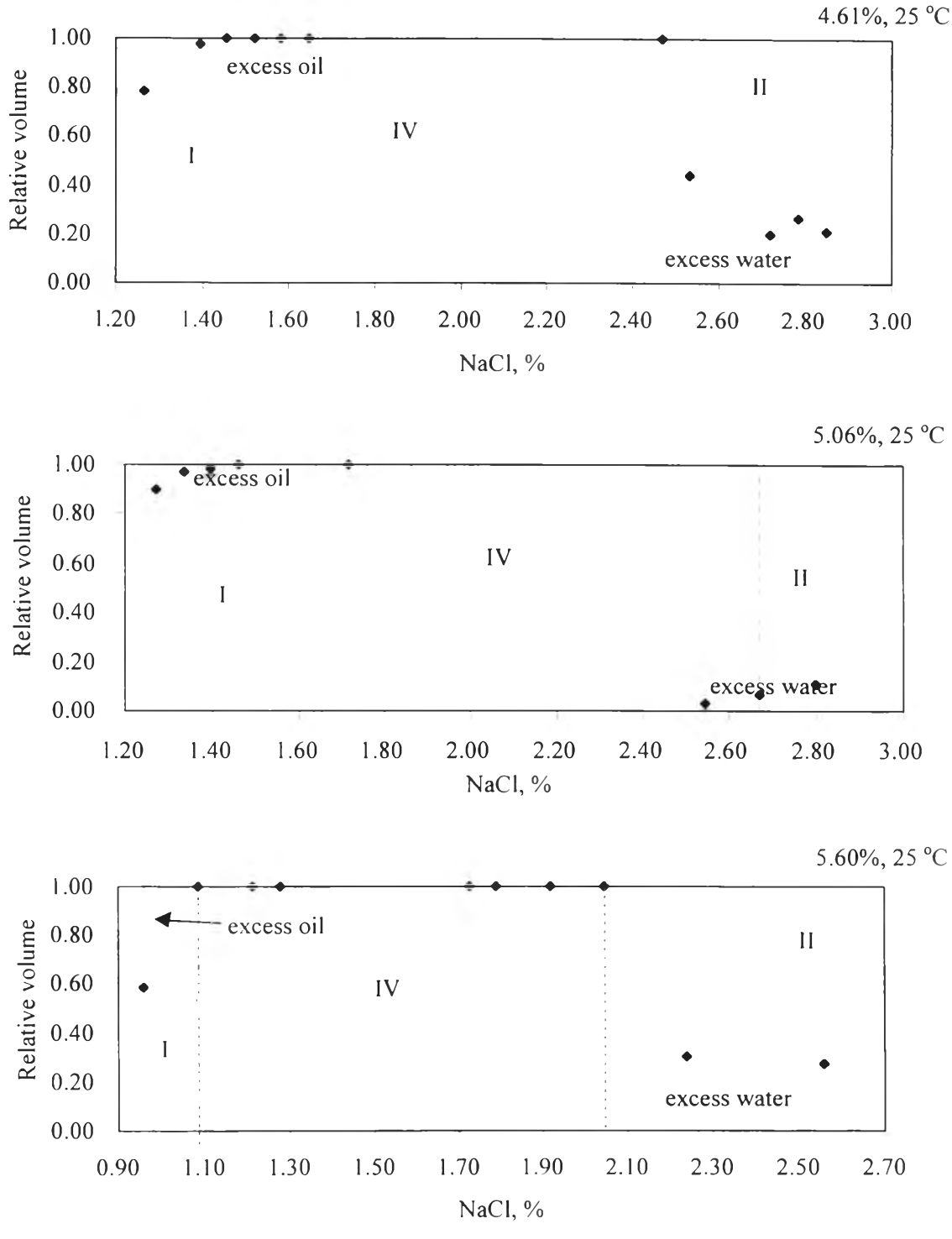

Figure C.3 Relative volume of microemulsion 4.61% -5.60% SDS, 25 °C.

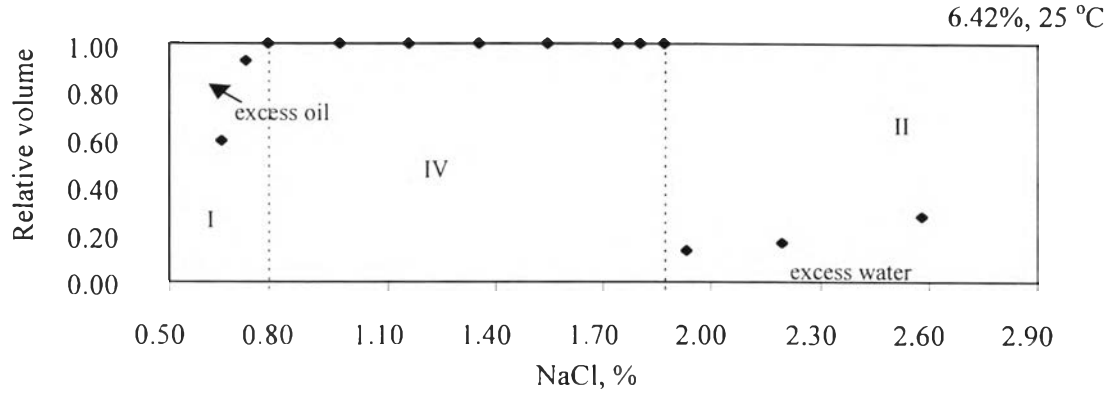

Figure C.4 Relative volume of microemulsion 6.42% SDS, 25 °C.

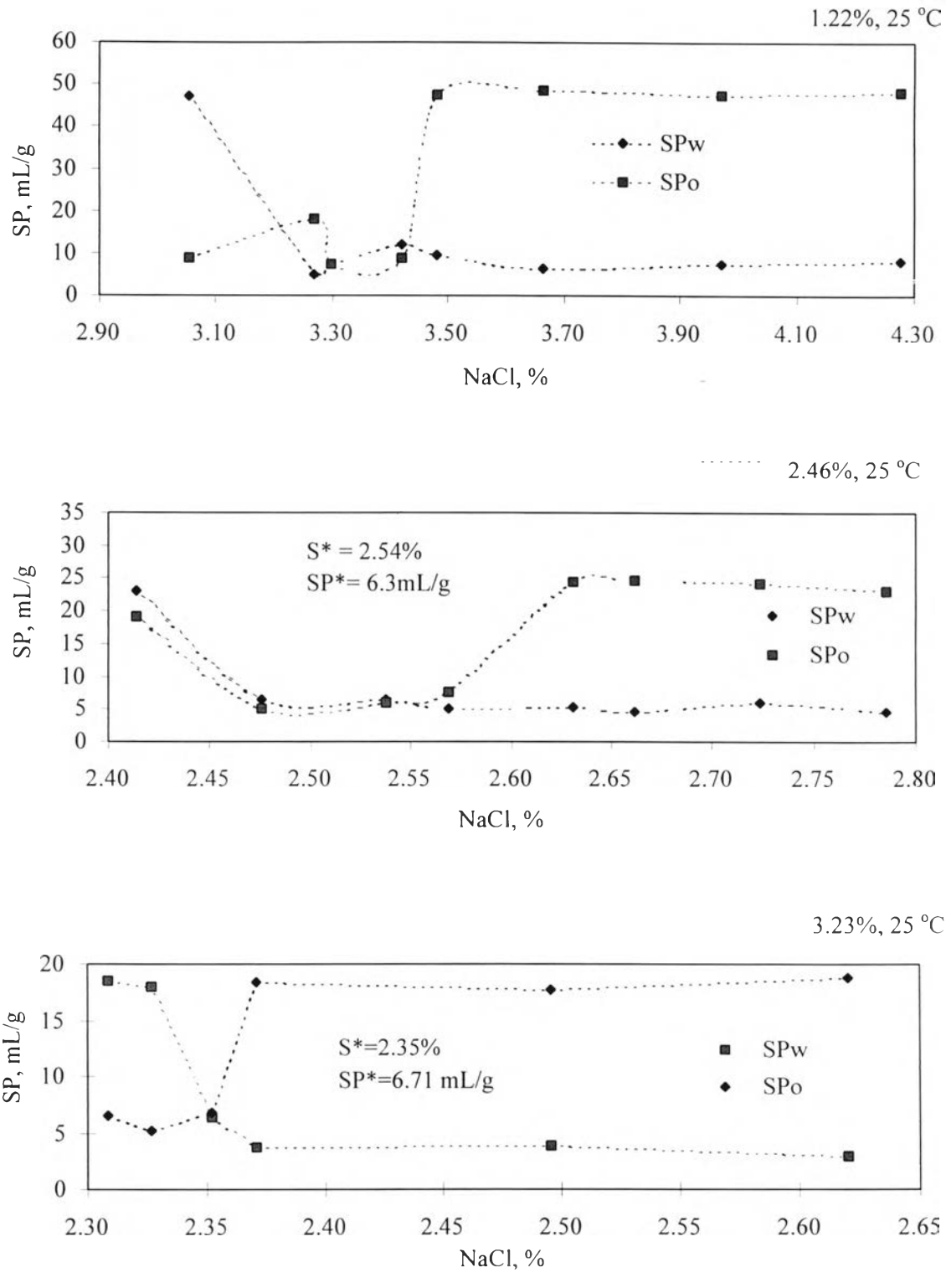

Figure C.5 Solubilization parameter of microemulsion 1.22% - 3.23% SDS, 25 °C.

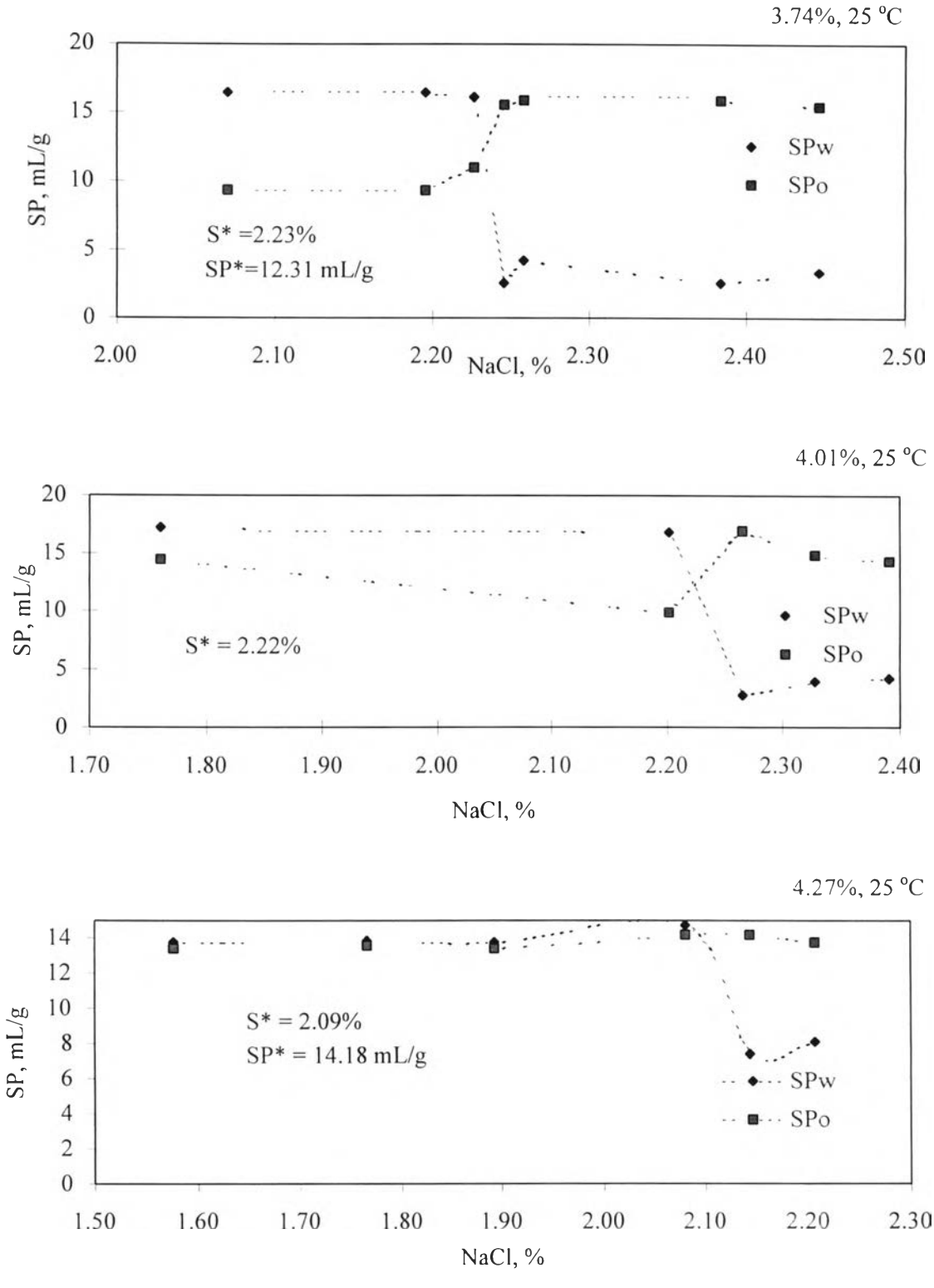

Figure C.6 Solubilization parameter of microemulsion 3.74% - 4.27% SDS, 25 °C.

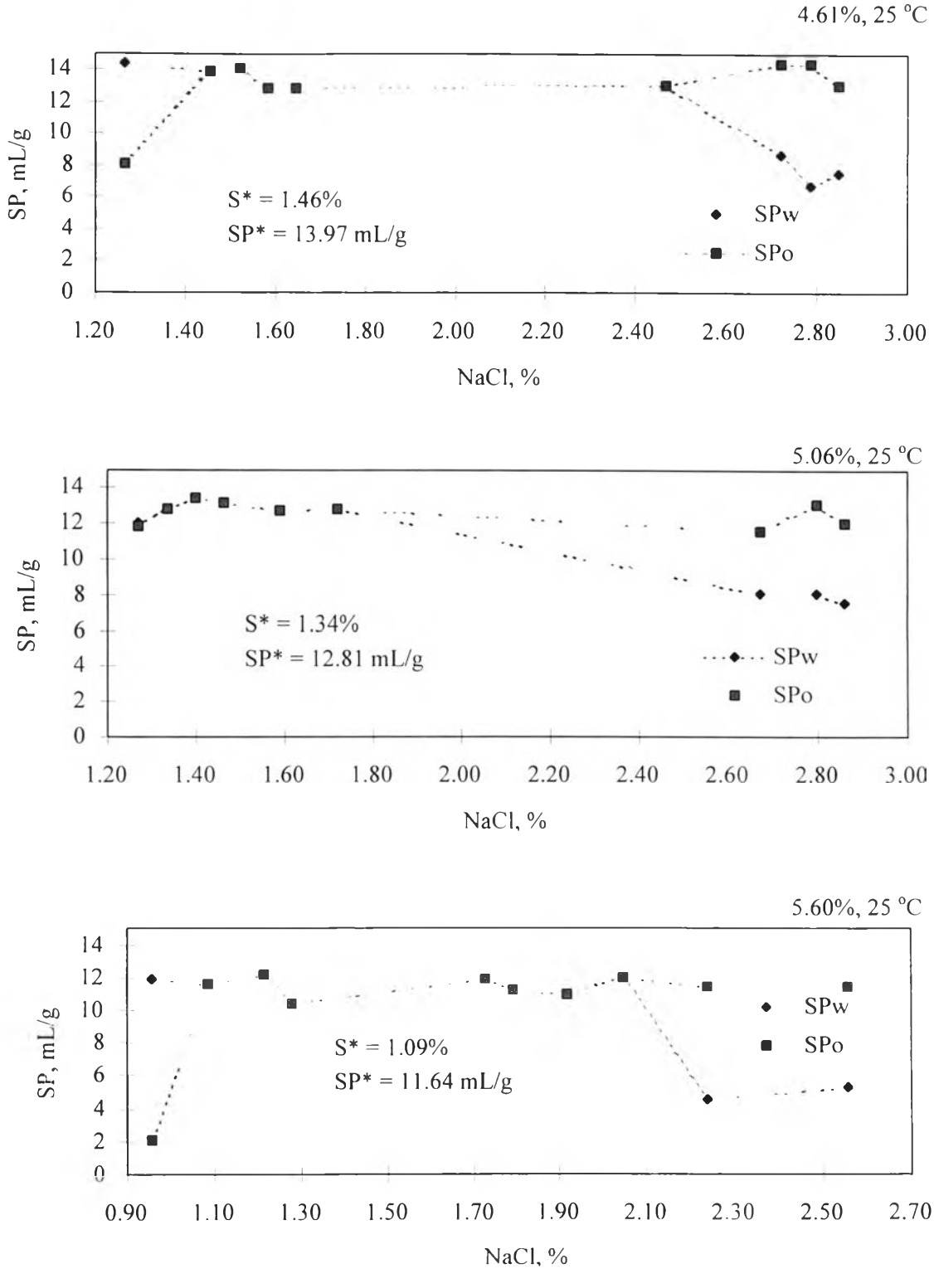

Figure C.7 Solubilization parameter of microemulsion 4.61% - 5.60% SDS, 25 °C.

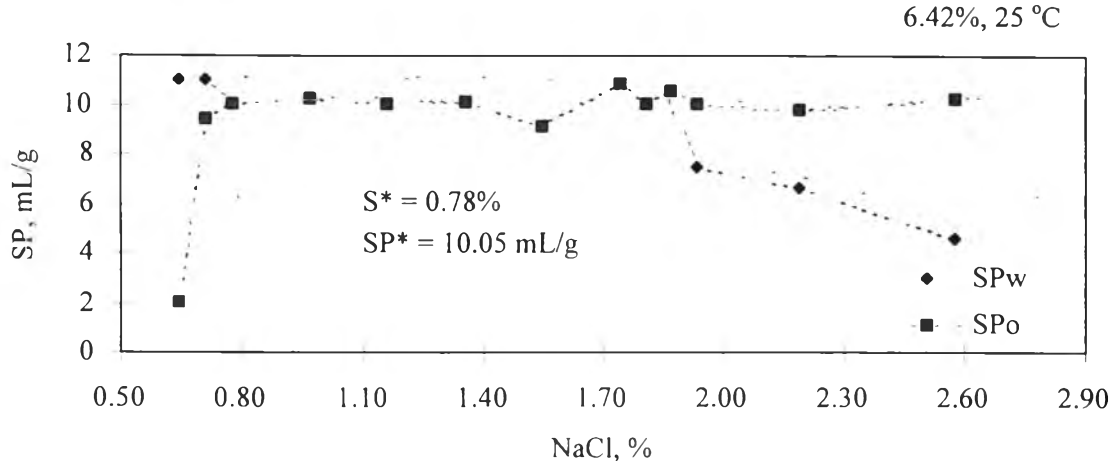

Figure C.8 Solubilization parameter of microemulsion 6.42% SDS, 25 °C.

APPENDIX D

EXPERIMENTAL DATA OF RELATIVE VOLUME AND SOLUBILIZATION STUDY

Effect of Temperature (35°C)

Sodium dodecyl sulfate	= 1.22% – 6.42 %
Initial oil/water volume ratio	= 1/1
Ratio of SDS/Octanoic acid	= 40/60
Temperature	= 35 °C
Electrolyte	= 0.65% - 4.28%

Table D-1 Relative volume and solubilization parameter for 1.22% SDS, 35 °C.

%NaCl	Type	scale of phase on centrifuge (mL)			Relative volume			Vw	Vo	Ms	Solubilization Parameter	
		lower	middle	upper	lower	middle	upper	mL	mL	g	SPw	SPo
2.93	I	4.70	6.00	9.50	0.63	0.00	0.38	4.80	1.20	0.0995	48.22	12.06
3.24	I	5.20	6.80	10.00	0.68	0.00	0.32	5.00	1.80	0.0995	50.23	18.08
3.27	I	5.90	6.710	11.20	0.60	0.00	0.40	5.60	1.10	0.0995	56.26	11.05
3.30	I	5.40	5.950	10.60	0.56	0.00	0.44	5.30	0.60	0.0995	53.24	6.034
3.42	I	5.80	6.590	11.00	0.59	0.00	0.41	5.50	1.00	0.0995	55.25	10.05
3.66	I	5.00	6.20	9.70	0.64	0.00	0.36	4.85	1.35	0.0995	48.72	13.56
3.97	I	4.10	4.90	9.50	0.52	0.00	0.48	4.75	0.15	0.0995	47.72	1.51
4.28	III	2.60	5.00	9.60	0.27	0.25	0.48	4.80	0.15	0.0995	48.22	1.51

Table D-2 Relative volume and solubilization parameter for 2.46% SDS, 35 °C.

%NaCl	Type	scale of phase on centrifuge (mL)			Relative volume			Vw	Vo	Ms	Solubilization Parameter	
		lower	middle	upper	lower	middle	upper	mL	mL	g	SPw	SPo
2.48	I	6.00	9.50	10.00	0.95	0.00	0.05	5.00	4.50	0.1991	25.12	22.60
2.54	I	4.50	6.00	9.70	0.62	0.00	0.38	4.85	1.15	0.1991	24.36	5.78
2.57	I	4.50	7.00	11.00	0.64	0.00	0.36	5.50	1.50	0.1991	27.63	7.53
2.60	I	5.00	6.00	10.40	0.58	0.00	0.42	5.20	0.8	0.1991	26.12	4.02
2.63	I	4.50	6.50	9.70	0.67	0.00	0.33	4.85	1.65	0.1991	24.36	8.29
2.66	I	4.00	6.8	9.8	0.66	0.00	0.34	4.90	1.60	0.1991	24.61	8.04
2.79	I	3.50	6.00	9.50	0.63	0.00	0.37	4.75	1.25	0.1991	23.86	6.28

Table D-3 Relative volume and solubilization parameter for 3.23% SDS, 35 °C.

%NaCl	Type	scale of phase on centrifuge (mL)			Relative volume			Vw	Vo	Ms	Solubilization Parameter	
		lower	middle	upper	lower	middle	upper	mL	mL	g	SPw	SPo
2.18	I	6.00	9.60	9.80	0.98	0.00	0.02	4.90	4.70	0.2588	18.93	18.16
2.25	I	6.00	9.70	9.80	0.99	0.00	0.01	4.90	4.80	0.2588	18.93	18.55
2.33	I	4.00	7.90	9.30	0.85	0.00	0.15	4.65	3.25	0.2588	17.97	12.56
2.35	I	4.00	7.10	9.50	0.75	0.00	0.25	4.75	3.25	0.2588	18.35	9.08
2.50	I	4.00	8.00	9.20	0.87	0.00	0.13	4.60	3.40	0.2588	17.77	13.14

Table D-4 Relative volume and solubilization parameter for 3.74% SDS, 35 °C.

%NaCl	Type	scale of phase on centrifuge (mL)			Relative volume			Vw	Vo	Ms	Solubilization Parameter	
		lower	middle	upper	lower	middle	upper	mL	mL	g	SPw	SPo
2.07	I	7.50	0.00	9.80	0.77	0.00	0.23	4.90	2.60	0.2986	16.41	8.71
2.20	I	7.30	0.00	9.80	0.74	0.00	0.26	4.90	2.40	0.2986	16.41	8.04
2.26	I	8.00	0.00	9.50	0.84	0.00	0.16	4.75	3.25	0.2986	15.91	10.88
2.45	III	1.10	8.80	9.20	0.12	0.84	0.04	350	4.20	0.2986	11.72	14.06

Table D-5 Relative volume and solubilization parameter for 4.01% SDS, 35 °C.

%NaCl	Type	scale of phase on centrifuge (mL)			Relative volume			Vw	Vo	Ms	Solubilization Parameter	
		lower	middle	upper	lower	middle	upper	mL	mL	g	SPw	SPo
1.76	I	8.60	0.00	11.00	0.78	0.00	0.22	5.50	2.70	0.3185	17.27	8.48
2.01	I	8.60	0.00	9.50	0.91	0.00	0.09	4.75	3.65	0.3185	14.91	11.46
2.20	I	8.50	0.00	10.70	0.79	0.00	0.21	5.35	5.35	0.3185	16.80	16.80
2.26	I	9.10	0.00	10.80	0.84	0.00	0.16	5.40	5.40	0.3185	16.95	16.95
2.33	III	0.20	8.50	9.50	0.02	0.87	0.11	4.75	4.75	0.3185	14.91	14.91
2.39	III	0.10	8.80	9.00	0.01	0.97	0.02	4.55	4.55	0.3185	14.28	14.28

Table D-6 Relative volume and solubilization parameter for 4.27% SDS, 35 °C.

%NaCl	Type	scale of phase on centrifuge (mL)			Relative volume			Vw	Vo	Ms	Solubilization Parameter	
		lower	middle	upper	lower	middle	upper	mL	mL	g	SPw	SPo
1.576	I	7.6	0	9.3	0.82	0.00	0.18	4.65	2.95	0.3384	13.74	8.72
1.766	I	8.7	0	9.4	0.93	0.00	0.07	4.70	4.00	0.3384	13.89	11.82
2.081	I	9.7	0	10	0.97	0.00	0.03	5.00	4.70	0.3384	14.77	13.89
2.207	I	8.9	0	9.3	0.96	0.00	0.04	4.65	4.25	0.3384	13.74	12.56

Table D-7 Relative volume and solubilization parameter for 4.61% SDS, 35 °C.

%NaCl	Type	scale of phase on centrifuge (mL)			Relative volume			Vw	Vo	Ms	Solubilization Parameter	
		lower	middle	upper	lower	middle	upper	mL	mL	g	SPw	SPo
1.27	I	7.9	0	10.5	0.75	0.00	0.25	5.25	2.65	0.3650	14.38	7.26
1.39	I	7.9	0	9.2	0.86	0.00	0.14	4.60	3.30	0.3650	12.60	9.04
1.46	I	9	0	10.2	0.88	0.00	0.12	5.10	3.90	0.3650	13.97	10.69
1.52	I	9	0	10.3	0.87	0.00	0.13	5.15	3.85	0.3650	14.11	10.55
1.58	I	8.5	0	9.4	0.90	0.00	0.10	4.70	3.80	0.3650	12.88	10.41
1.65	I	8.5	0	9.2	0.92	0.00	0.08	4.60	3.90	0.3650	12.60	10.69
2.47	I	9.2	0	9.4	0.98	0.00	0.02	4.70	4.50	0.3650	12.88	12.33
2.53	II	0.1	0	9.5	0.01	0.00	0.99	4.65	4.75	0.3650	12.74	13.01
2.72	II	0.1	0	10.4	0.01	0.00	0.99	5.10	5.20	0.3650	13.97	14.25
2.78	II	0.1	0	10.5	0.01	0.00	0.99	5.15	5.25	0.3650	14.11	14.38
2.85	II	1	0	9.5	0.11	0.00	0.89	3.75	4.75	0.3650	10.27	13.01

Table D-8 Relative volume and solubilization parameter for 5.06% SDS, 35 °C.

%NaCl	Type	scale of phase on centrifuge (mL)			Relative volume			Vw	Vo	Ms	Solubilization Parameter	
		lower	middle	upper	lower	middle	upper	mL	mL	g	SPw	SPo
1.27	I	8.60	0.00	9.60	0.90	0.00	0.10	4.80	3.80	0.3982	12.06	9.54
1.34	I	9.90	0.00	10.20	0.97	0.00	0.03	5.10	4.80	0.3982	12.81	12.06
1.40	I	10.50	0.00	10.70	0.98	0.00	0.02	5.35	5.15	0.3982	13.44	12.93
1.46	IV	0.00	0.00	10.50	0.00	0.00	1.00	5.10	5.10	0.3982	12.81	12.81
1.72	IV	0.00	0.00	10.20	0.00	0.00	1.00	5.25	5.25	0.3982	13.19	13.19
2.54	IV	0.30	0.00	9.50	0.00	0.00	1.00	5.05	5.05	0.3982	12.68	12.68
2.67	IV	0.60	0.00	9.20	0.00	0.00	1.00	5.10	5.10	0.3982	12.81	12.81
2.80	II	1.10	0.00	10.40	0.11	0.00	0.89	4.10	5.20	0.3982	10.30	13.06

Table D-9 Relative volume and solubilization parameter for 5.60% SDS, 35 °C.

%NaCl	Type	scale of phase on centrifuge (mL)			Relative volume			Vw	Vo	Ms	Solubilization Parameter	
		lower	middle	upper	lower	middle	upper	mL	mL	g	SPw	SPo
0.96	I	6.20	10.00	10.40	0.60	0.00	0.40	5.20	1.00	0.438	11.87	2.28
1.09	I	9.50	0.00	10.20	0.93	0.00	0.07	5.10	4.40	0.438	11.64	10.05
1.21	IV	0.00	0.00	10.70	0.00	0.00	1.00	5.35	5.35	0.438	12.22	12.22
1.28	IV	0.00	0.00	9.10	0.00	0.00	1.00	4.55	4.55	0.438	10.39	10.39
1.73	IV	0.00	0.00	10.40	0.00	0.00	1.00	5.20	5.20	0.438	11.87	11.87
1.79	IV	4.20	0.00	9.80	0.00	0.00	1.00	4.90	4.90	0.438	11.19	11.19
2.05	IV	5.50	0.00	10.50	0.00	0.00	1.00	5.25	5.25	0.438	11.99	11.99
2.24	IV	0.00	0.00	10.00	0.00	0.00	1.00	5.00	5.00	0.438	11.42	11.42
2.56	II	0.80	1.10	10.00	0.08	0.00	0.92	4.20	5.00	0.438	9.59	11.42

Table D-10 Relative volume and solubilization parameter for 6.42% SDS, 35 °C.

%NaCl	Type	scale of phase on centrifuge (mL)			Relative volume			Vw	Vo	Ms	Solubilization Parameter	
		lower	middle	upper	lower	middle	upper	mL	mL	g	SPw	SPo
0.64	I	6.00	0.00	11.00	0.55	0.00	0.45	5.50	0.50	0.4977	11.05	1.00
0.71	I	8.00	0.00	11.00	0.73	0.00	0.27	5.50	2.50	0.4977	11.05	5.02
0.77	IV	0.10	0.00	10.00	0.00	0.00	1.00	5.00	5.00	0.4977	10.05	10.05
0.97	IV	0.00	0.00	10.20	0.00	0.00	1.00	5.10	5.10	0.4977	10.25	10.25
1.55	IV	4.00	0.00	9.10	0.00	0.00	1.00	4.55	4.55	0.4977	9.14	9.14
1.81	IV	2.60	0.00	10.00	0.00	0.00	1.00	5.00	5.00	0.4977	10.05	10.05
1.87	IV	0.00	0.00	10.50	0.00	0.00	1.00	5.25	5.25	0.4977	10.55	10.55
1.93	IV	0.80	0.00	10.00	0.00	0.00	1.00	5.00	5.00	0.4977	10.05	10.05
2.19	II	0.90	1.40	9.80	0.09	0.00	0.91	4.00	4.90	0.4977	8.04	9.85

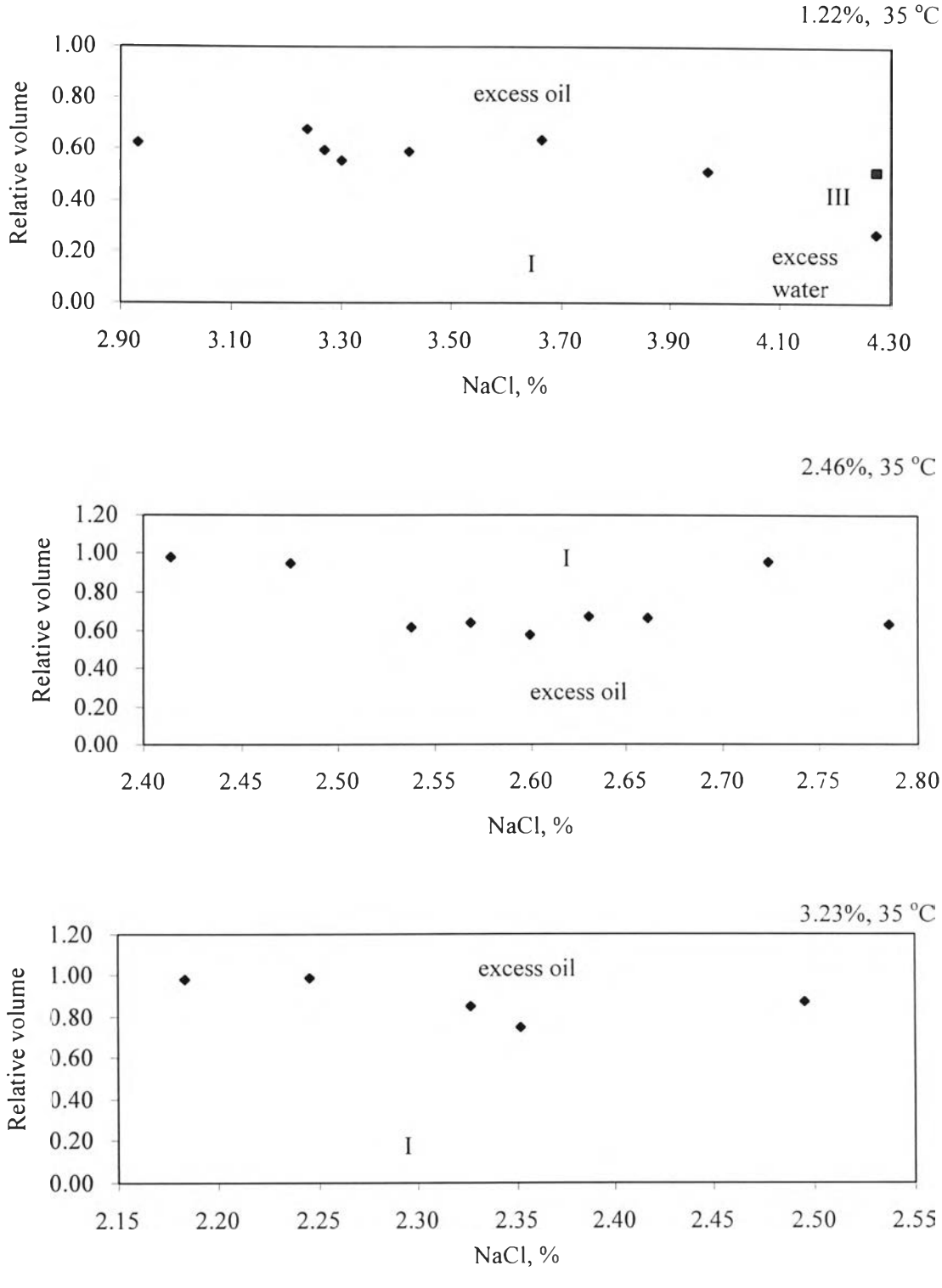

Figure D.1 Relative volume of microemulsion 1.22% - 3.23% SDS, 35 °C.

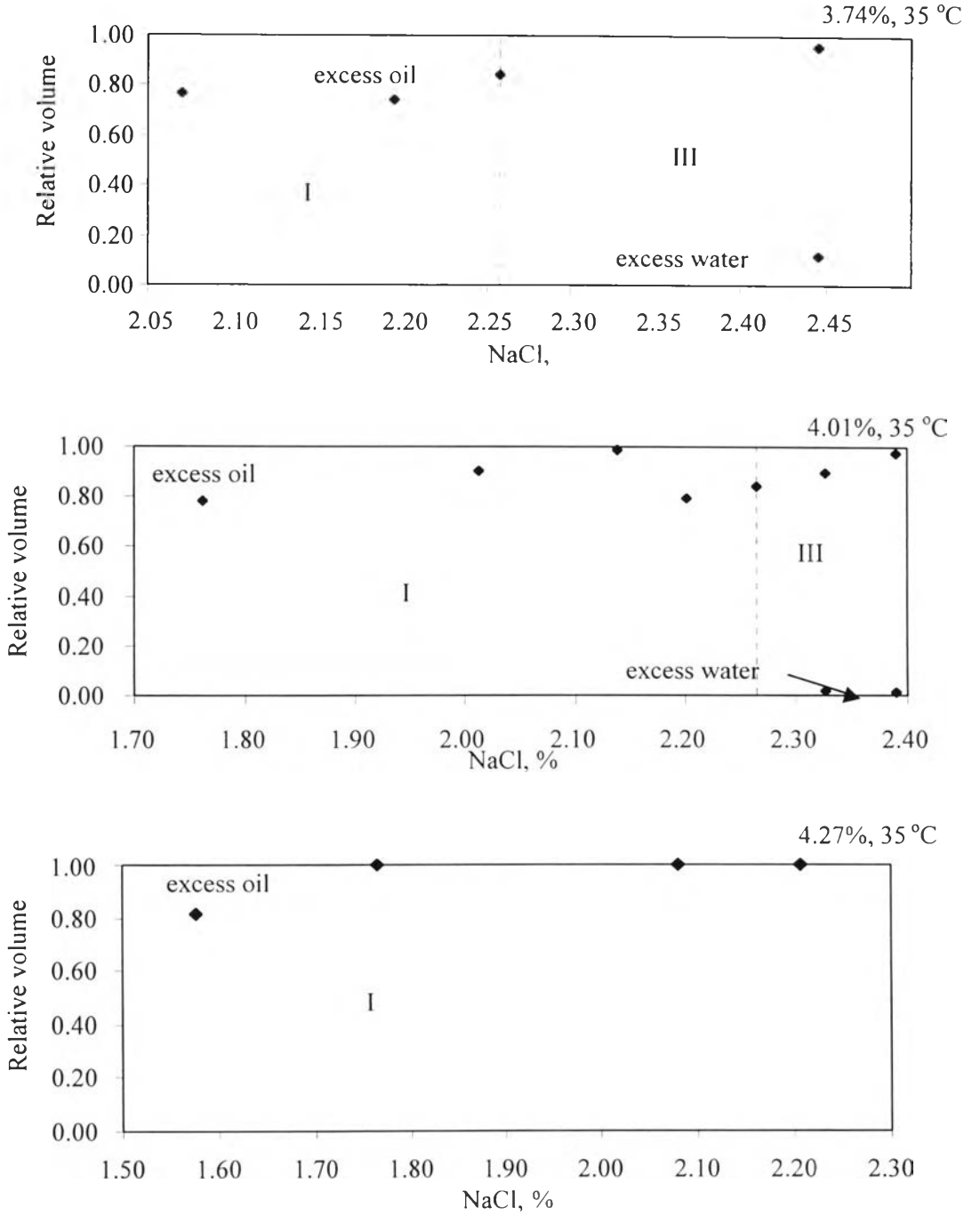

Figure D.2 Relative volume of microemulsion 3.74% - 4.27% SDS, 35 °C.

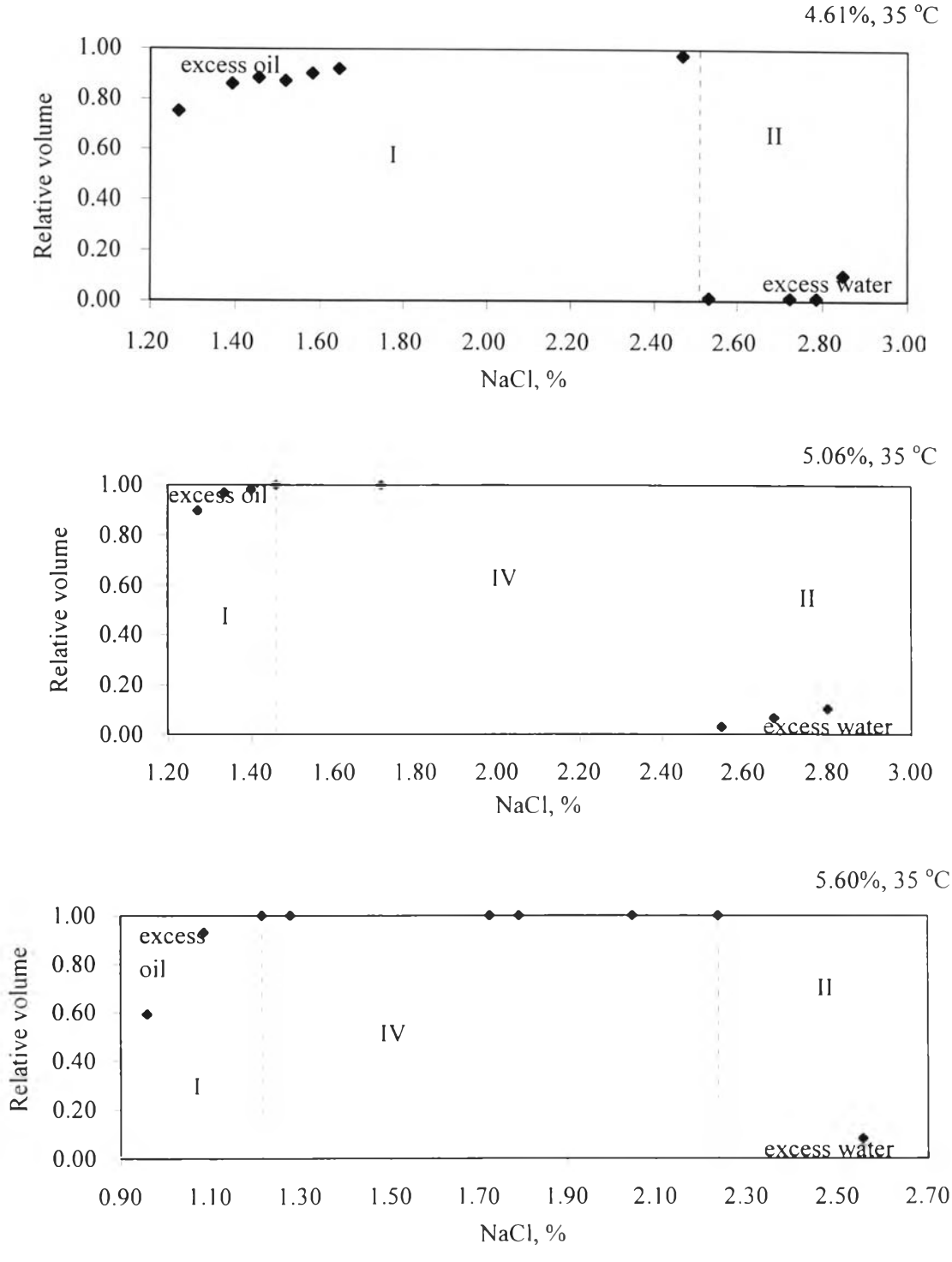

Figure D.3 Relative volume of microemulsion 4.61% - 5.60% SDS, 35 °C.

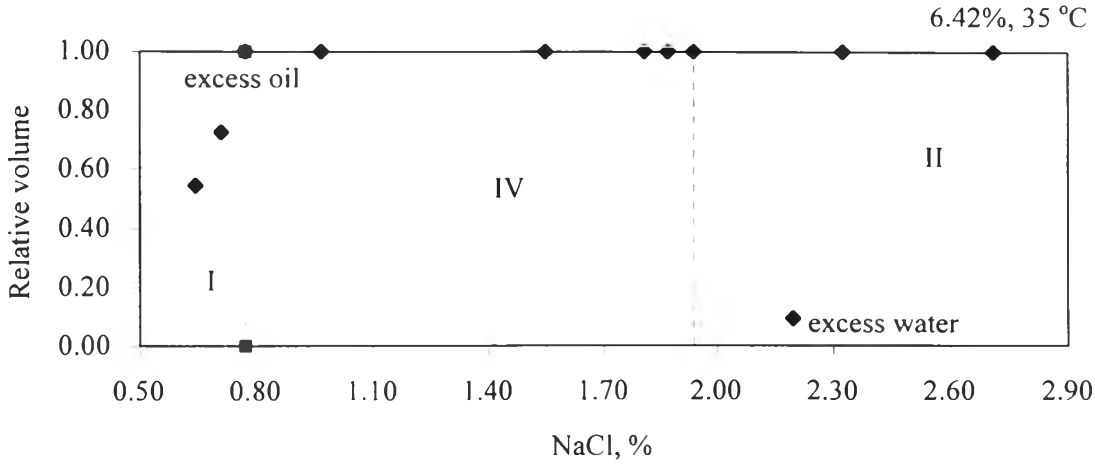

Figure D.4 Relative volume of microemulsion 6.42% SDS, 35 °C.

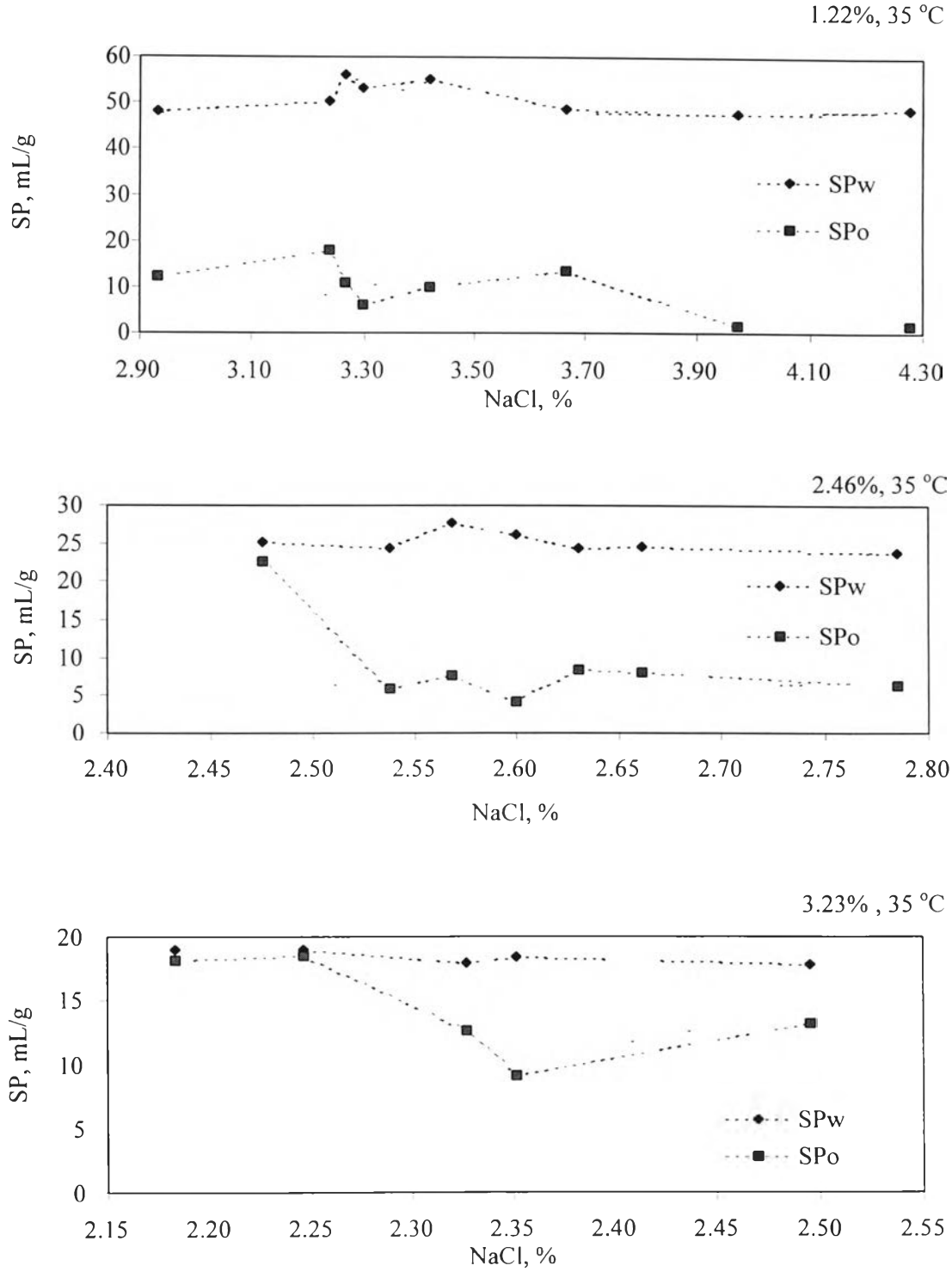

Figure D.5 Solubilization parameter of microemulsion 1.22% - 3.23% SDS, 35 °C.

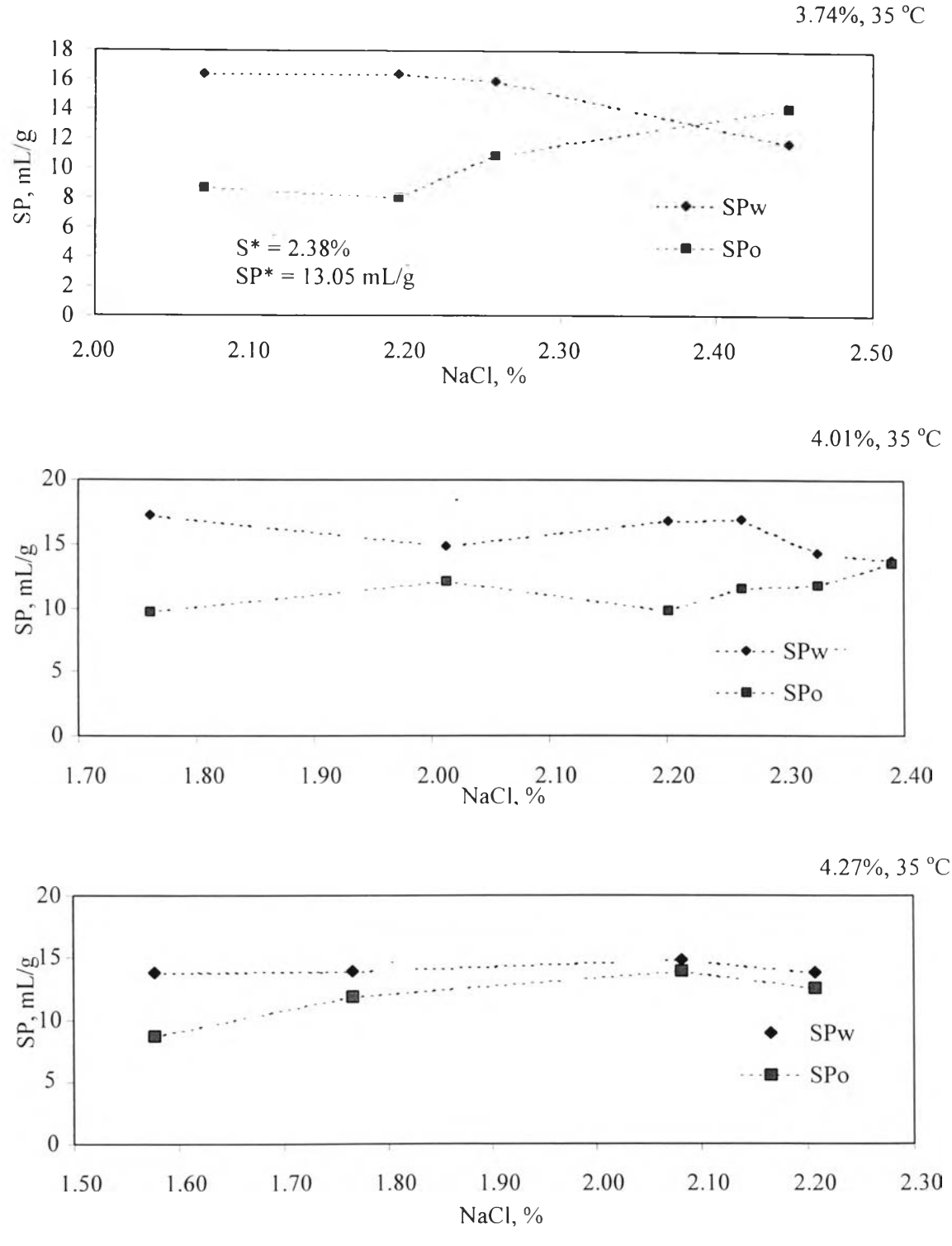

Figure D.6 Solubilization parameter of microemulsion 3.74% - 4.27% SDS, 35 °C.

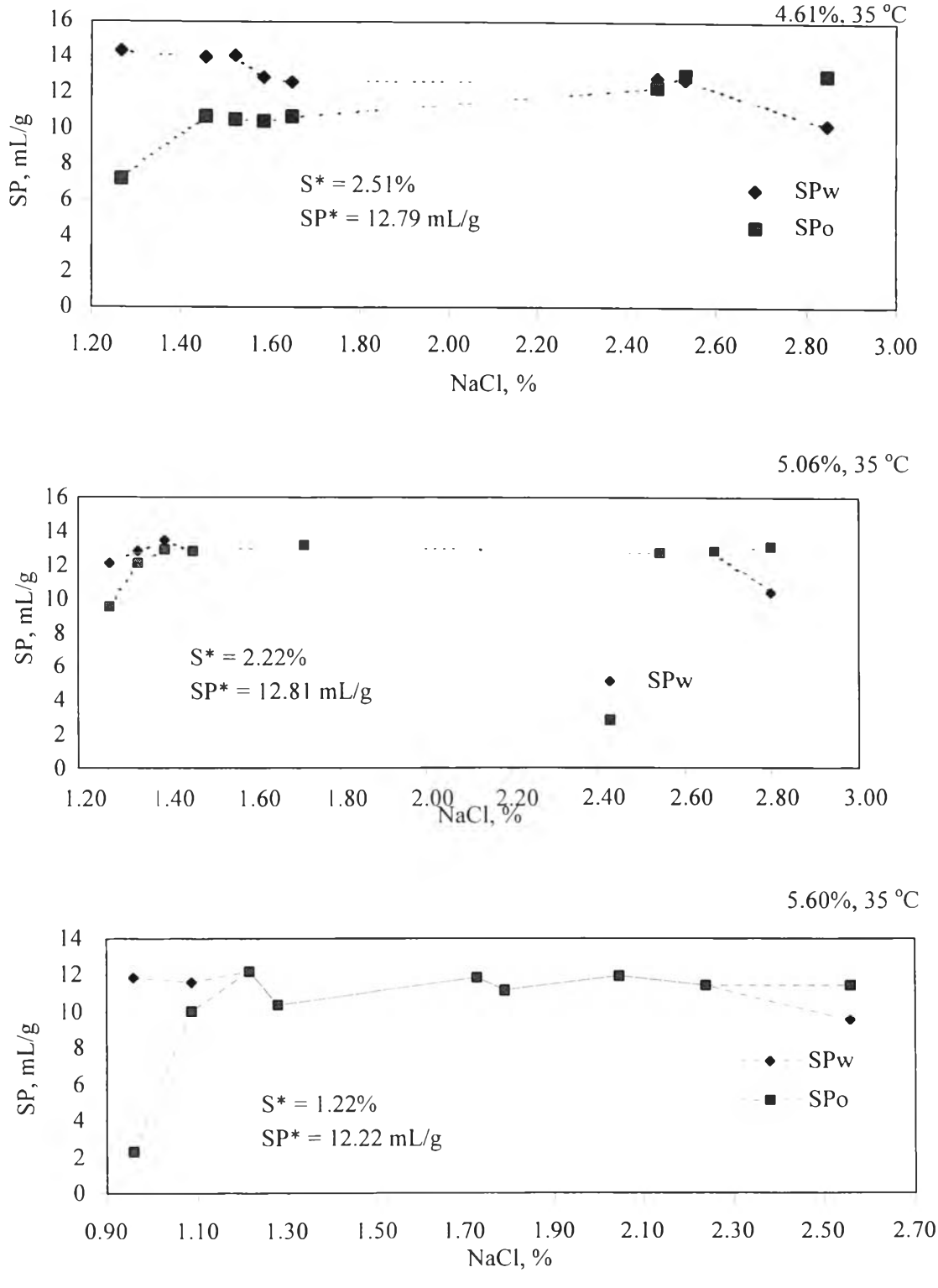

Figure D.7 Solubilization parameter of microemulsion 4.61% - 5.60% SDS, 35 °C

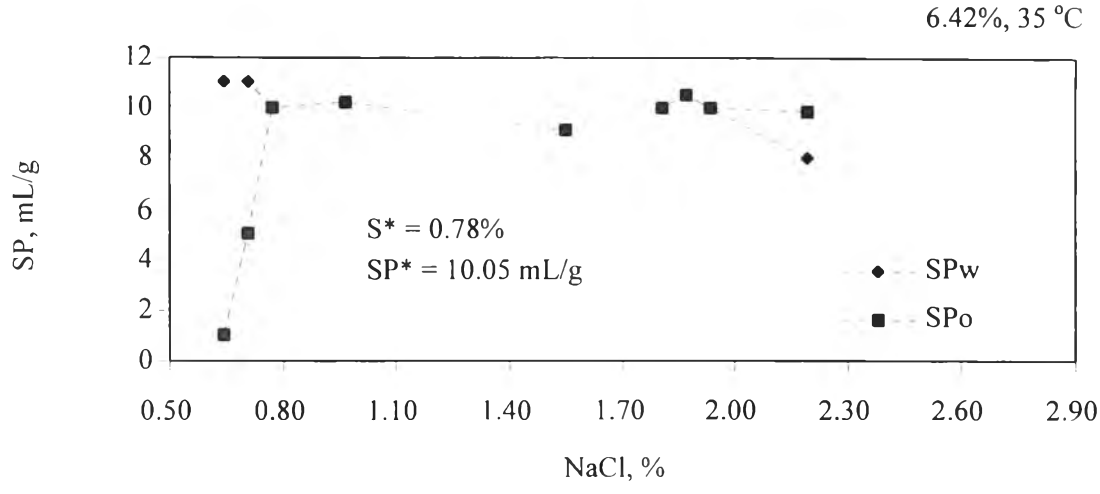

Figure D.8 Solubilization parameter of microemulsion 6.42% SDS, 35 °C.

APPENDIX E

EXPERIMENTAL DATA OF RELATIVE VOLUME AND SOLUBILIZATION STUDY

(EQUILIBRIUM TIME 2 WEEKS - 2 MONTHS)

Sodium dodecyl sulfate	= 1.22% – 7.81%
Initial oil/water volume ratio	= 1/1
Ratio of SDS/Octanoic acid	= 40/60
Temperature	= 25 ^{o}C
Electrolyte	= 0.32% - 4.28%
Equilibrium time	= 2 weeks – 2 months

Table E-1 Relative volume and solubility parameter for 1.22% SDS, 2 weeks and 2 months equilibrium at 25 °C.

NaC (%)	2 weeks											2 months									
		Scale of centrifuge (mL)			Relative volume								Scale of centrifuge (mL)			Relative volume					
	typ	Lowe	middle	upper	lowe	middl	uppe	Vw	Vo	SPw	SPo	type	lower	middl	upper	lower	middl	upper	Vw	Vo	SPw	SPo
0.61	I	4.60	0.00	10.00							gel	I	4.60	0.00	10.00							gel
1.22	I	4.70	0.00	10.00							gel	I	4.70	0.00	10.00							gel
1.83	I	5.00	7.50	10.10	0.74	0.00	0.26	5.05	2.45	50.73	24.61	I	5.00	6.00	10.00	0.60	0.00	0.40	5.00	1.00	50.23	10.05
2.14	I	4.60	9.00	9.50	0.95	0.00	0.05	4.75	4.25	47.72	42.70	I	4.60	6.10	9.30	0.66	0.00	0.34	4.65	1.45	46.71	14.57
2.44	I	4.30	9.50	9.80	0.97	0.00	0.03	4.90	4.60	49.23	46.21	I	4.70	6.40	9.70	0.66	0.00	0.34	4.85	1.55	48.72	15.57
2.75	I	3.80	10.00	10.10	0.99	0.00	0.01	5.05	4.95	50.73	49.73	I	4.60	5.70	10.10	0.56	0.00	0.44	5.05	0.65	50.73	6.53
2.93	I	3.50	9.30	9.40	0.99	0.00	0.01	4.70	4.60	47.22	46.21	I	4.50	5.80	9.70	0.60	0.00	0.40	4.85	0.95	48.72	9.54
2.99	I	4.00	10.00	10.20	0.98	0.00	0.02	5.10	4.90	51.24	49.23	I	4.60	5.90	10.00	0.59	0.00	0.41	5.00	0.90	50.23	9.04
3.05	III	4.40	5.10	9.40	0.47	0.07	0.46	0.30	0.40	3.01	4.02	III	4.10	5.90	10.00	0.41	0.18	0.41	0.90	0.90	9.04	9.04
3.11	III	4.90	5.90	10.30	0.48	0.10	0.43	0.25	0.75	2.51	7.53	III	4.80	5.50	10.20	0.47	0.07	0.46	0.30	0.40	3.01	4.02
3.30	III	4.50	5.20	10.00	0.45	0.07	0.48	0.50	0.20	5.02	2.01	III	4.50	5.20	10.00	0.45	0.07	0.48	0.50	0.20	5.02	2.01
3.36	III	3.90	6.90	9.70	0.40	0.31	0.29	0.95	2.05	9.54	20.59	III	4.20	5.30	10.00	0.42	0.11	0.47	0.80	0.30	8.04	3.01
3.42	III	4.20	6.30	10.50	0.40	0.20	0.40	1.05	1.05	10.55	10.55	III	4.20	6.30	10.50	0.40	0.20	0.40	1.05	1.05	10.55	10.55
3.48	II	4.30	5.60	10.70	0.40	0.00	0.60	1.05	5.35	10.55	53.75	III	5.00	5.60	10.70	0.47	0.06	0.48	0.35	0.25	3.52	2.51
3.54	II	4.70	6.20	10.10	0.47	0.00	0.53	0.35	5.05	3.52	50.73	III	4.40	5.50	10.70	0.41	0.10	0.49	0.95	0.15	9.54	1.51
3.66	II	4.50	5.10	9.80	0.46	0.00	0.54	0.40	4.90	4.02	49.23	III	4.20	5.50	9.80	0.43	0.13	0.44	0.70	0.60	7.03	6.03
3.90	II	4.40	5.50	10.50	0.42	0.00	0.58	0.85	5.25	8.54	52.74	III	4.70	5.50	10.50	0.45	0.08	0.48	0.55	0.25	5.53	2.51
4.26	II	5.20	6.00	11.10	0.47	0.00	0.53	0.35	5.55	3.52	55.76	II	4.80	6.00	11.10	0.43	0.00	0.57	0.75	5.55	7.53	55.76

Table E-2 Relative volume and solubility parameter for 3.74%SDS, 2 weeks and 2 months equilibrium at 25 °C.

NaCl (%)	2 weeks											2 months										
	type	Scale of centrifuge (mL)			Relative volume			Vw	Vo	SPw	SPo	type	Scale of centrifuge (mL)			Relative volume			Vw	Vo	SPw	SPo
		lower	middle	upper	lower	middle	upper						lower	middle	upper	lower	middle	upper				
0.31	I	4.20	0.00	10.00							gel	I	4.60	0.00	10.00							gel
0.63	I	4.20	0.00	9.80							gel	I	4.90	0.00	9.60							gel
1.25	I	5.40	0.00	10.50							gel	I	6.50	0.00	10.00							gel
1.88	I	6.70	9.30	9.40	0.99	0.00	0.01	4.70	4.60	15.74	15.40	I	7.80	9.20	9.60							gel
2.07	I	6.80	10.10	10.20	0.99	0.00	0.01	5.10	5.00	17.08	16.74	I	7.60	9.00	10.20							gel
2.20	I	6.10	9.30	9.70	0.96	0.00	0.04	4.85	4.45	16.24	14.90	I	7.70	0.00	9.50							gel
2.22	I	8.70	10.30	10.90	0.94	0.00	0.06	5.45	4.85	18.25	16.24	I	5.50	8.50	10.90	0.78	0.00	0.22	5.45	3.05	18.25	10.21
2.26	I	3.90	7.40	10.10	0.73	0.00	0.27	5.05	2.35	16.91	7.87	I	4.70	8.90	10.00	0.89	0.00	0.11	5.00	3.90	16.74	13.06
2.32	I	4.70	9.10	10.90	0.83	0.00	0.17	5.45	3.65	18.25	12.22	III	4.70	9.10	10.90	0.43	0.40	0.17	0.75	3.65	2.51	12.22
2.35	I	4.30	7.50	10.70	0.70	0.00	0.30	5.35	2.15	17.92	7.20	III	4.30	9.30	10.70	0.40	0.47	0.13	1.05	3.95	3.52	13.23
2.38	II	3.60	6.50	9.80	0.37	0.00	0.63	1.30	4.90	4.35	16.41	III	3.90	9.60	9.60	0.41	0.59	0.00	0.90	4.80	3.01	16.07
2.44	II	3.30	7.60	9.60	0.34	0.00	0.66	1.50	4.80	5.02	16.07	III	3.60	9.70	10.00	0.36	0.61	0.03	1.40	4.70	4.69	15.74
2.51	II	4.00	4.60	9.50	0.42	0.00	0.58	0.75	4.75	2.51	15.91	III	3.90	9.70	10.20	0.38	0.57	0.05	1.20	4.60	4.02	15.40
2.57	II	4.10	5.30	10.00	0.41	0.00	0.59	0.90	5.00	3.01	16.74	II	3.90	6.00	10.00	0.39	0.00	0.61	1.10	5.00	3.68	16.74
3.14	II	3.80	5.50	9.50	0.40	0.00	0.60	0.95	4.75	3.18	15.91	II	3.50	6.40	9.40	0.37	0.00	0.63	1.20	4.70	4.02	15.74

Table E-3 Relative volume and solubility parameter for 4.01% SDS, 2 weeks and 2 months equilibrium at 25 °C.

NaCl (%)	2 weeks											2 months										
	type	Scale of centrifuge (mL)			Relative volume							Type	Scale of centrifuge (mL)			Relative volume						
		lower	iddle	upper	lower	middle	upper	Vw	Vo	SPw	SPo		lower	middle	upper	lower	middle	upper	Vw	Vo	SPw	SPo
1.45	I	5.20	0.00	10.00	0.52	0.00	0.48	5.00	.20	5.70	0.63	I	6.10	0.00	10.00	0.61	0.00	0.39	5.00	1.10	15.70	3.45
1.89	I	6.40	0.00	10.10	0.63	0.00	0.37	5.05	.35	5.85	4.24	I	6.90	7.40	10.00	0.74	0.00	0.26	5.00	2.40	15.70	7.53
2.20	I	9.40	0.00	9.80	0.96	0.00	0.04	4.90	.50	5.38	14.13	I	4.00	8.80	9.70	0.91	0.00	0.09	4.85	3.95	15.23	12.40
2.26	I	3.60	7.90	10.10	0.78	0.00	0.22	5.05	.85	5.85	8.95	III	3.60	7.20	10.80	0.33	0.33	0.33	1.80	1.80	5.65	5.65
2.33	I	3.70	7.10	10.20	0.70	0.00	0.30	5.10	.00	6.01	6.28	III	3.30	6.50	10.20	0.32	0.31	0.36	1.80	1.40	5.65	4.40
2.36	II	4.40	6.80	10.20	0.67	0.00	0.33	0.70	.10	2.20	16.01	III	4.40	7.30	10.20	0.43	0.28	0.28	0.70	2.20	2.20	6.91
2.39	II	3.10	7.60	9.70	0.78	0.00	0.22	1.75	.85	5.49	15.23	III	3.70	6.90	9.90	0.37	0.32	0.30	1.25	1.95	3.92	6.12
2.52	II	4.00	5.30	10.00	0.53	0.00	0.47	1.00	.00	3.14	15.70	III	4.00	6.50	10.00	0.40	0.25	0.35	1.00	1.50	3.14	4.71
2.58	II	3.50	7.00	9.70	0.72	0.00	0.28	1.35	.85	4.24	15.23	II	3.50	6.40	9.80	0.65	0.00	0.35	1.40	4.90	4.40	15.38
3.15	II	3.50	6.10	9.80	0.62	0.00	0.38	1.40	.90	4.40	15.38	II	3.60	6.30	9.80	0.64	0.00	0.36	1.30	4.90	4.08	15.38
3.77	II	2.30	6.50	10.00	0.23	0.00	0.77	2.70	.00	8.48	15.70	II	3.50	6.40	9.80	0.36	0.00	0.64	1.40	4.90	4.40	15.38

Table E-4 Relative volume and solubility parameter for 4.27% SDS, 2 weeks and 2 months equilibrium at 25 ^{o}C.

NaCl (%)	2 weeks											2 months										
	type	Scale of centrifuge (mL)			Relative volume							type	Scale of centrifuge (mL)			Relative volume						
		lower	middle	upper	lower	middle	upper	Vw	Vo	SPw	SPo		lower	middle	upper	lower	middle	upper	Vw	Vo	SPw	SPo
1.26	I	8.00	0.00	10.00	0.80	0.00	0.20	5.00	3.00	14.77	8.86	I	8.00	0.00	10.00	0.80	0.00	0.20	5.00	3.00	14.77	8.86
1.45	I	8.80	0.00	10.00	0.88	0.00	0.12	5.00	3.80	14.77	11.23	I	9.30	0.00	10.00	0.93	0.00	0.07	5.00	4.30	14.77	12.71
1.57	I	8.60	0.00	10.50	0.82	0.00	0.18	5.25	3.35	15.51	9.90	I	8.60	9.80	10.50	0.93	0.00	0.07	5.25	4.55	15.51	13.44
1.77	I	8.30	10.00	10.10	0.99	0.00	0.01	5.05	4.95	14.92	14.63	I	8.30	9.90	10.10	0.98	0.00	0.02	5.05	4.85	14.92	14.33
1.89	IV	0.00	0.00	10.30	0.00	0.00	1.00	5.15	5.15	15.22	15.22	I	7.50	8.60	10.30	0.83	0.00	0.17	5.15	3.45	15.22	10.19
1.95	IV	0.00	0.00	10.00	0.00	0.00	1.00	5.00	5.00	14.77	14.77	I	5.20	7.10	10.00	0.71	0.00	0.29	5.00	2.10	14.77	6.21
2.02	IV	0.00	0.00	10.60	0.00	0.00	1.00	5.30	5.30	15.66	15.66	I	4.50	5.70	10.50	0.54	0.00	0.46	5.25	0.45	15.51	1.33
2.14	IV	0.00	0.00	10.80	0.00	0.00	1.00	5.40	5.40	15.96	15.96	III	3.20	9.80	10.80	0.30	0.61	0.09	2.20	4.40	6.50	13.00
2.21	IV	0.00	0.00	10.50	0.00	0.00	1.00	5.25	5.25	15.51	15.51	III	4.20	8.80	10.50	0.40	0.44	0.16	1.05	3.55	3.10	10.49
2.33	II	3.70	6.50	9.90	0.37	0.00	0.63	1.25	4.95	3.69	14.63	II	3.70	7.70	9.90	0.37	0.00	0.63	1.25	4.95	3.69	14.63
2.52	II	4.40	6.00	10.40	0.42	0.00	0.58	0.80	5.20	2.36	15.36	II	4.30	7.30	9.20	0.47	0.00	0.53	0.30	4.60	0.89	13.59
3.15	II	3.00	5.00	9.90	0.30	0.00	0.70	1.95	4.95	5.76	14.63	II	3.00	5.00	9.90	0.30	0.00	0.70	1.95	4.95	5.76	14.63

Table E-5 Relative volume and solubility parameter for 4.53% SDS, 2 weeks and 2 months equilibrium at 25 °C.

NaCl (%)	2 weeks											2 months										
	type	Scale of centrifuge (mL)			Relative volume							type	Scale of centrifuge (mL)			Relative volume						
		lower	middle	upper	lower	middle	upper	Vw	Vo	SPw	SPo		lower	middle	upper	lower	middle	upper	Vw	Vo	SPw	SPo
0.32	I	4.00	0.00	10.20							gel	I	5.10	0.00	10.00							gel
0.63	I	5.10	0.00	9.50							gel	I	5.60	0.00	9.50							gel
0.95	I	6.10	0.00	9.70							gel	I	6.70	0.00	9.70							gel
1.26	I	6.00	0.00	10.00							gel	I	7.10	0.00	10.00							gel
1.45	I	9.50	0.00	10.30							gel	I	9.50	0.00	10.30							gel
1.52	I	7.50	0.00	10.00	0.75	0.00	0.25	5.00	2.50	13.95	6.98	I	9.10	0.00	10.00	0.91	0.00	0.09	5.00	4.10	13.95	11.44
1.58	I	9.20	9.40	9.50	0.99	0.00	0.01	4.75	4.65	13.26	12.98	I	9.20	0.00	9.50	0.97	0.00	0.03	4.75	4.45	13.26	12.42
1.90	I	9.00	9.50	9.80	0.97	0.00	0.03	4.90	4.60	13.67	12.84	I	9.20	0.00	9.50	0.97	0.00	0.03	4.75	4.45	13.26	12.42
2.02	IV	0.00	0.00	9.60	0.00	0.00	1.00	4.80	4.80	13.39	13.39	I	9.20	0.00	9.60	0.96	0.00	0.04	4.80	4.40	13.39	12.28
2.15	IV	0.00	0.00	9.50	0.00	0.00	1.00	4.75	4.75	13.26	13.26	III	0.50	9.10	9.50	0.05	0.91	0.04	4.25	4.35	11.86	12.14
2.21	IV	0.00	0.00	9.70	0.00	0.00	1.00	4.85	4.85	13.53	13.53	III	0.50	9.20	9.70	0.05	0.90	0.05	4.35	4.35	12.14	12.14
2.40	IV	0.00	0.00	9.50	0.00	0.00	1.00	4.75	4.75	13.26	13.26	II	2.80	8.60	10.60	0.26	0.00	0.74	2.50	5.30	6.98	14.79
2.43	II	3.30	8.00	10.40	0.32	0.00	0.68	1.90	5.20	5.30	14.51	II	3.30	8.40	10.40	0.32	0.00	0.68	1.90	5.20	5.30	14.51
2.46	II	2.30	6.00	9.60	0.24	0.00	0.76	2.50	4.80	6.98	13.39	II	0.40	6.00	9.60	0.04	0.00	0.96	4.40	4.80	12.28	13.39
2.53	II	3.30	6.50	10.00	0.33	0.00	0.67	1.70	5.00	4.74	13.95	II	2.10	7.40	10.00	0.21	0.00	0.79	2.90	5.00	8.09	13.95
2.60	II	3.90	6.00	10.40	0.38	0.00	0.63	1.30	5.20	3.63	14.51	II	3.90	5.90	10.40	0.38	0.00	0.63	1.30	5.20	3.63	14.51
3.16	II	3.20	6.80	10.00	0.32	0.00	0.68	1.80	5.00	5.02	13.95	II	2.80	7.00	10.00	0.28	0.00	0.72	2.20	5.00	6.14	13.95

Table E-6 Relative volume and solubility parameter for 5.60% SDS, 2 weeks and 2 months equilibrium at 25 °C.

NaCl (%)	2 weeks											2 months										
	type	Scale of centrifuge (mL)			Relative volume							type	Scale of centrifuge (mL)			Relative volume						
		lowe	middl	upper	lower	middle	upper	Vw	Vo	SPw	SPo		lower	middle	upper	lower	middle	upper	Vw	Vo	SPw	SPo
0.51	I	4.00	0.00	10.40							gel	I	5.90	0.00	10.10							gel
0.77	I	6.50	0.00	10.30	0.63	0.00	0.37	5.15	1.35	11.76	3.08	I	7.80	0.00	10.00	0.78	0.00	0.22	5.00	2.80	11.42	6.39
0.96	I	7.20	8.30	10.30	0.81	0.00	0.19	5.15	3.15	11.76	7.19	I	7.70	0.00	10.20	0.75	0.00	0.25	5.10	2.60	11.64	5.94
1.15	I	7.70	9.00	10.20	0.88	0.00	0.12	5.10	3.90	11.64	8.90	I	7.60	0.00	10.00	0.76	0.00	0.24	5.00	2.60	11.42	5.94
1.21	I	8.00	8.40	10.00	0.84	0.00	0.16	5.00	3.40	11.42	7.76	I	7.70	8.30	10.30	0.81	0.00	0.19	5.15	3.15	11.76	7.19
1.28	I	8.20	8.60	9.70	0.89	0.00	0.11	4.85	3.75	11.07	8.56	I	8.30	8.50	9.70	0.88	0.00	0.12	4.85	3.65	11.07	8.33
1.73	IV	0.00	0.00	10.00	0.00	0.00	1.00	5.00	5.00	11.42	11.42	I	9.50	0.00	10.00	0.95	0.00	0.05	5.00	4.50	11.42	10.27
1.79	IV	0.00	0.00	10.10	0.00	0.00	1.00	5.05	5.05	11.53	11.53	IV	0.00	0.00	10.10	0.00	0.00	1.00	5.05	5.05	11.53	11.53
1.85	IV	0.00	0.00	9.90	0.00	0.00	1.00	4.95	4.95	11.30	11.30	IV	0.00	0.00	9.90	0.00	0.00	1.00	4.95	4.95	11.30	11.30
1.92	IV	0.40	0.00	10.20	0.00	0.00	1.00	5.10	5.10	11.64	11.64	IV	0.00	0.00	10.10	0.00	0.00	1.00	5.05	5.05	11.53	11.53
2.07	IV	1.60	0.00	10.00	0.00	0.00	1.00	5.00	5.00	11.42	11.42	IV	7.30	0.00	10.00	0.00	0.00	1.00	5.00	5.00	11.42	11.42
2.43	IV	1.60	0.00	10.50	0.00	0.00	1.00	5.25	5.25	11.99	11.99	IV	1.30	0.00	10.50	0.00	0.00	1.00	5.25	5.25	11.99	11.99
2.49	II	1.10	0.00	9.40	0.12	0.00	0.88	3.60	4.70	8.22	10.73	IV	0.40	0.00	9.40	0.00	0.00	1.00	4.70	4.70	10.73	10.73
2.56	II	4.00	0.00	9.20	0.43	0.00	0.57	0.60	4.60	1.37	10.50	II	4.70	0.00	9.80	0.48	0.00	0.52	0.20	4.90	0.46	11.19
2.69	II	4.00	0.00	9.70	0.41	0.00	0.59	0.85	4.85	1.94	11.07	II	4.20	0.00	9.90	0.42	0.00	0.58	0.75	4.95	1.71	11.30

Table E-7 Relative volume and solubility parameter for 7.81% SDS, 2 weeks and 2 months equilibrium at 25 °C.

NaCl (%)	2 weeks											2 months										
	type	Scale of centrifuge (mL)			Relative volume			Vw	Vo	SPw	SPo	type	Scale of centrifuge (mL)			Relative volume			Vw	Vo	SPw	SPo
		lower	middle	upper	lower	middle	upper						lower	middle	upper	lower	middle	upper				
0.33	IV g	0.00	0.00	9.70							gel	IV g	0.00	0.00	10.00							gel
0.65	IV g	0.00	0.00	10.00							gel	IV g	0.70	0.00	10.70							gel
0.78	IV g	0.00	0.00	10.70							gel	IV g	0.00	0.00	9.70							gel
0.83	IV	0.00	0.00	9.70	0.00	0.00	1.00	4.85	4.85	8.12	8.12	IV	0.00	0.00	9.70	0.00	0.00	1.00	4.85	4.85	8.12	8.12
0.98	IV	0.00	0.00	9.70	0.00	0.00	1.00	4.85	4.85	8.12	8.12	IV	0.00	0.00	10.00	0.00	0.00	1.00	5.00	5.00	8.37	8.37
1.31	IV	0.00	0.00	10.10	0.00	0.00	1.00	5.05	5.05	8.46	8.46	IV	0.00	0.00	11.00	0.00	0.00	1.00	5.50	5.50	9.21	9.21
1.50	IV	0.30	0.00	11.00	0.00	0.00	1.00	5.50	5.50	9.21	9.21	IV	0.20	0.00	9.50	0.00	0.00	1.00	4.75	4.75	7.95	7.95
1.56	IV	0.80	0.00	9.50	0.00	0.00	1.00	4.75	4.75	7.95	7.95	IV	0.10	0.00	9.70	0.00	0.00	1.00	4.85	4.85	8.12	8.12
1.63	IV	0.40	0.00	9.70	0.00	0.00	1.00	4.85	4.85	8.12	8.12	IV	0.10	0.00	9.50	0.00	0.00	1.00	4.75	4.75	7.95	7.95
1.77	IV	0.10	0.00	9.50	0.00	0.00	1.00	4.75	4.75	7.95	7.95	IV	0.80	0.00	10.90	0.00	0.00	1.00	5.45	5.45	9.13	9.13
1.90	IV	0.40	0.00	10.90	0.00	0.00	1.00	5.45	5.45	9.13	9.13	II	0.30	0.00	9.80	0.03	0.00	0.97	4.60	4.90	7.70	8.20
1.96	II	0.50	0.00	9.80	0.05	0.00	0.95	4.40	4.90	7.37	8.20	II	1.30	0.00	9.60	0.14	0.00	0.86	3.50	4.80	5.86	8.04
2.62	II	2.80	0.00	9.60	0.29	0.00	0.71	2.00	4.80	3.35	8.04	II	2.80	0.00	9.50	0.29	0.00	0.71	1.95	4.75	3.27	7.95
3.27	II	2.80	0.00	9.50	0.29	0.00	0.71	1.95	4.75	3.27	7.95	II	3.60	0.00	10.50	0.34	0.00	0.66	1.65	5.25	2.76	8.79
3.47	II	3.60	0.00	10.50	0.34	0.00	0.66	1.65	5.25	2.76	8.79	II	3.40	0.00	10.50	0.32	0.00	0.68	1.85	5.25	3.10	8.79
3.80	II	4.30	0.00	10.50	0.41	0.00	0.59	0.95	5.25	1.59	8.79	II	3.00	0.00	9.70	0.31	0.00	0.69	1.85	4.85	3.10	8.12
3.92	II	3.50	0.00	9.70	0.36	0.00	0.64	1.35	4.85	2.26	8.12	II	3.80	0.00	10.20	0.37	0.00	0.63	1.30	5.10	2.18	8.54

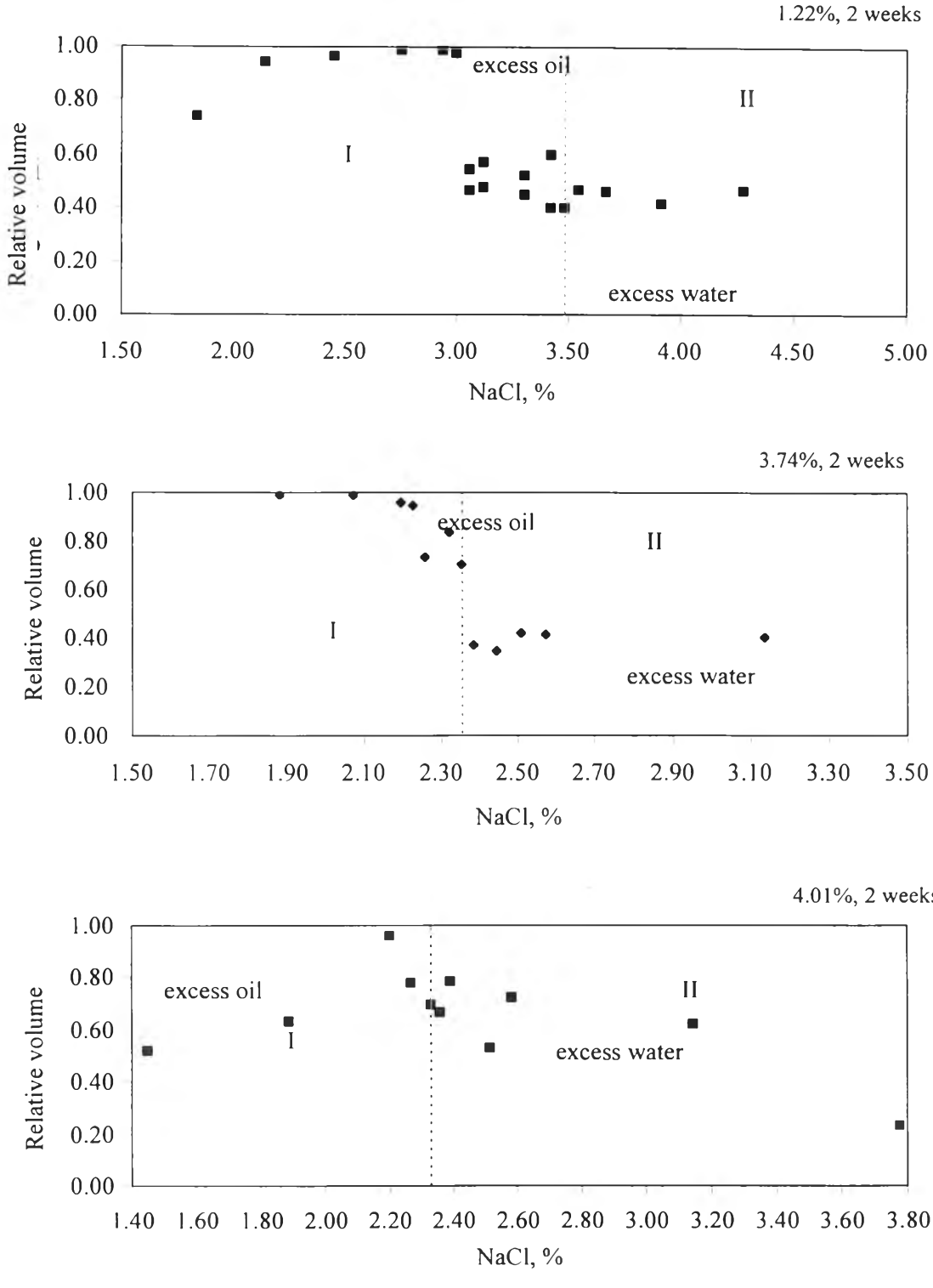

Figure E.1 Relative volume of microemulsion 1.22% - 4.01% SDS, 2 weeks.

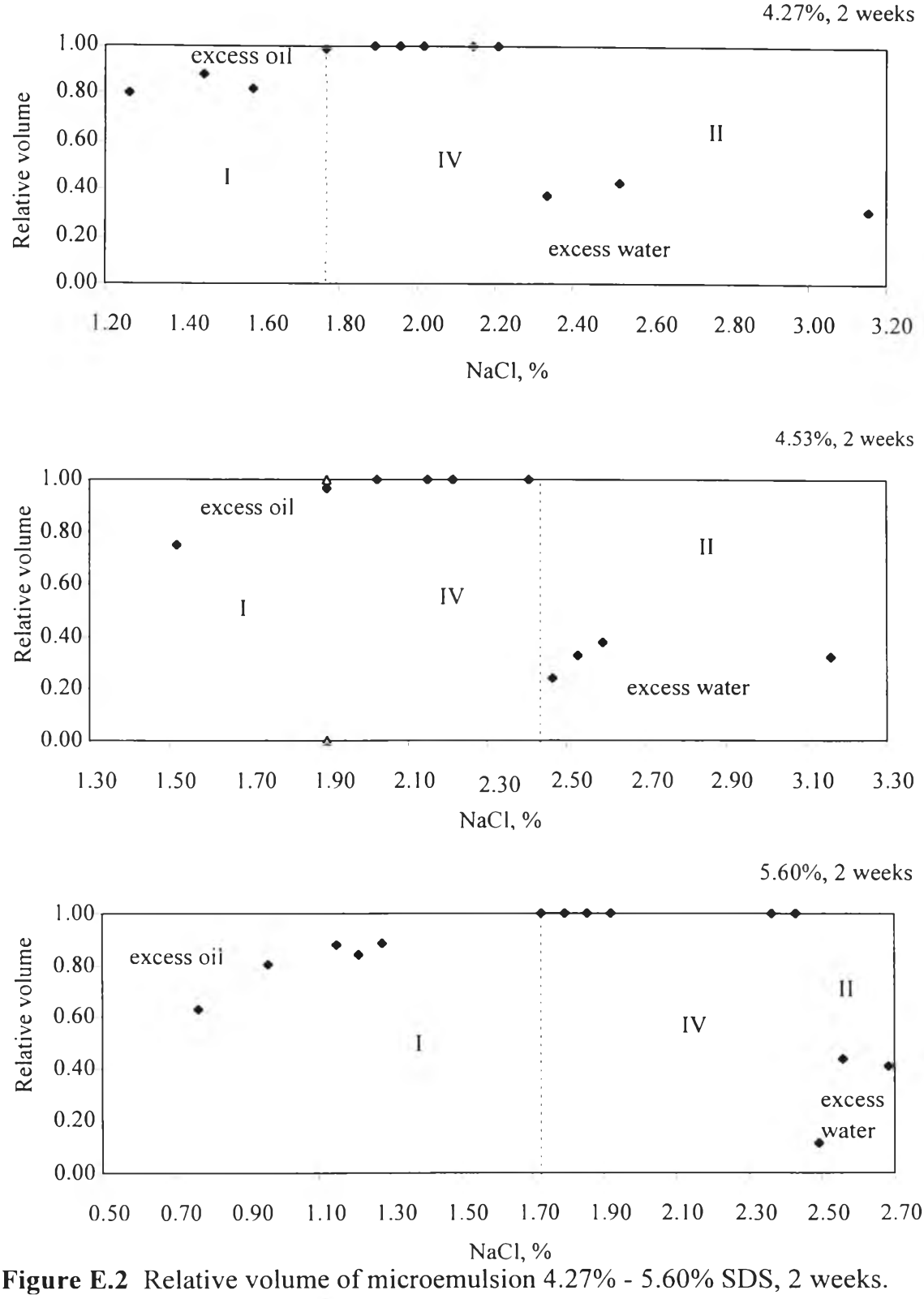

Figure E.2 Relative volume of microemulsion 4.27% - 5.60% SDS, 2 weeks.

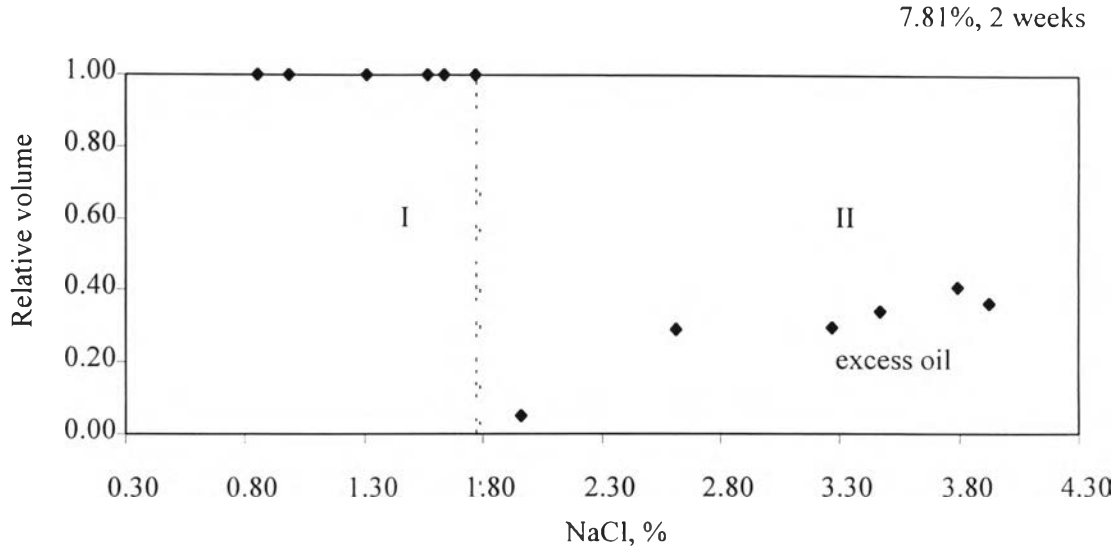

Figure E.3 Relative volume of microemulsion 7.81% SDS, 2 weeks.

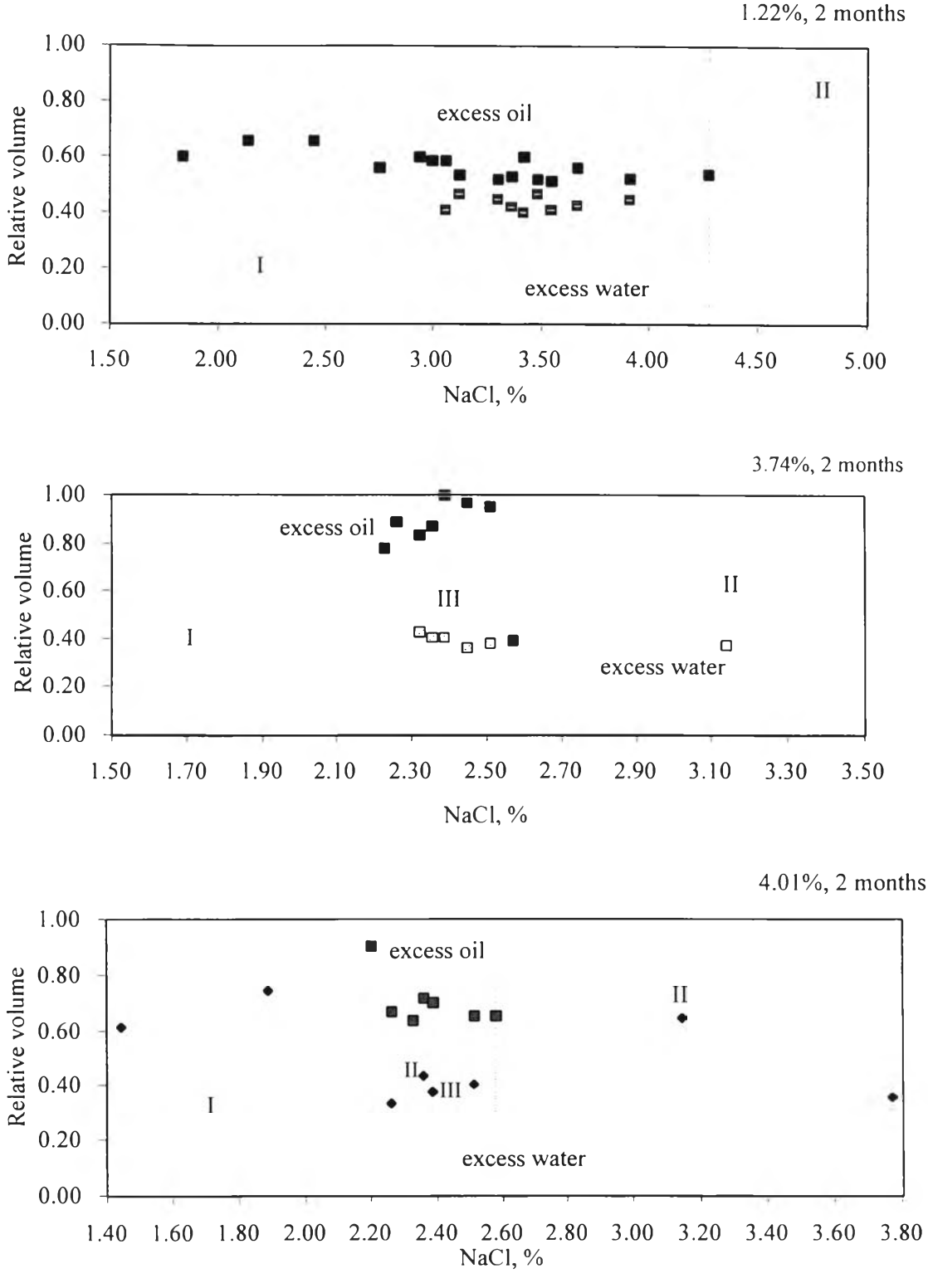

Figure E.4 Relative volume of microemulsion 1.22% - 4.01% SDS, 2 months.

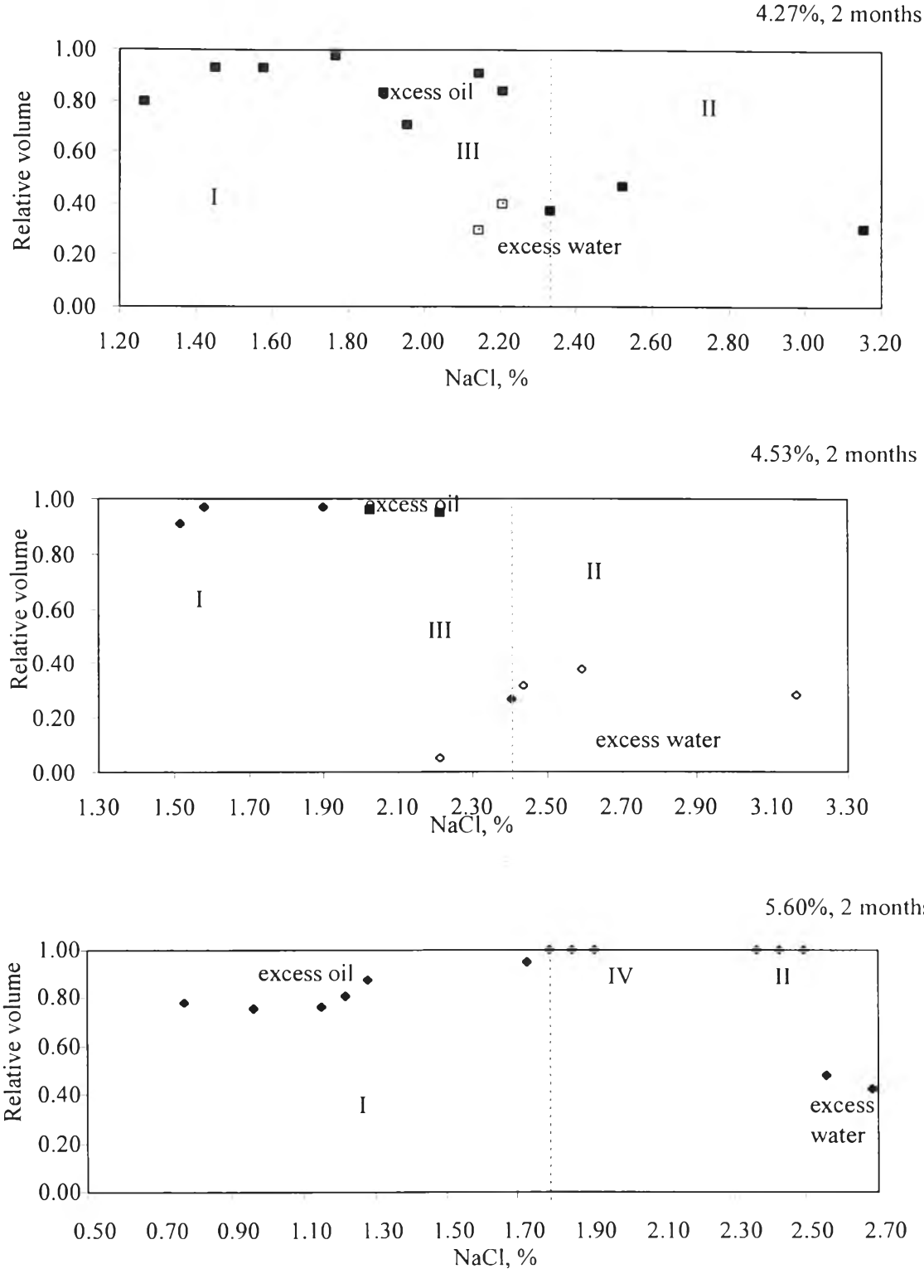

Figure E.5 Relative volume of microemulsion 4.27% - 5.60% SDS, 2 months.

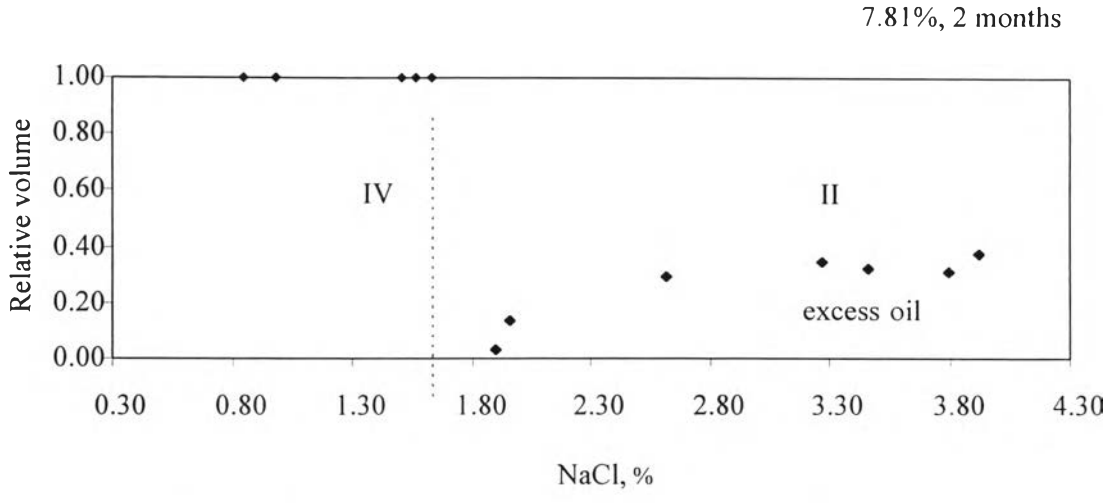

Figure E.6 Relative volume of microemulsion 7.81% SDS, 2 months.

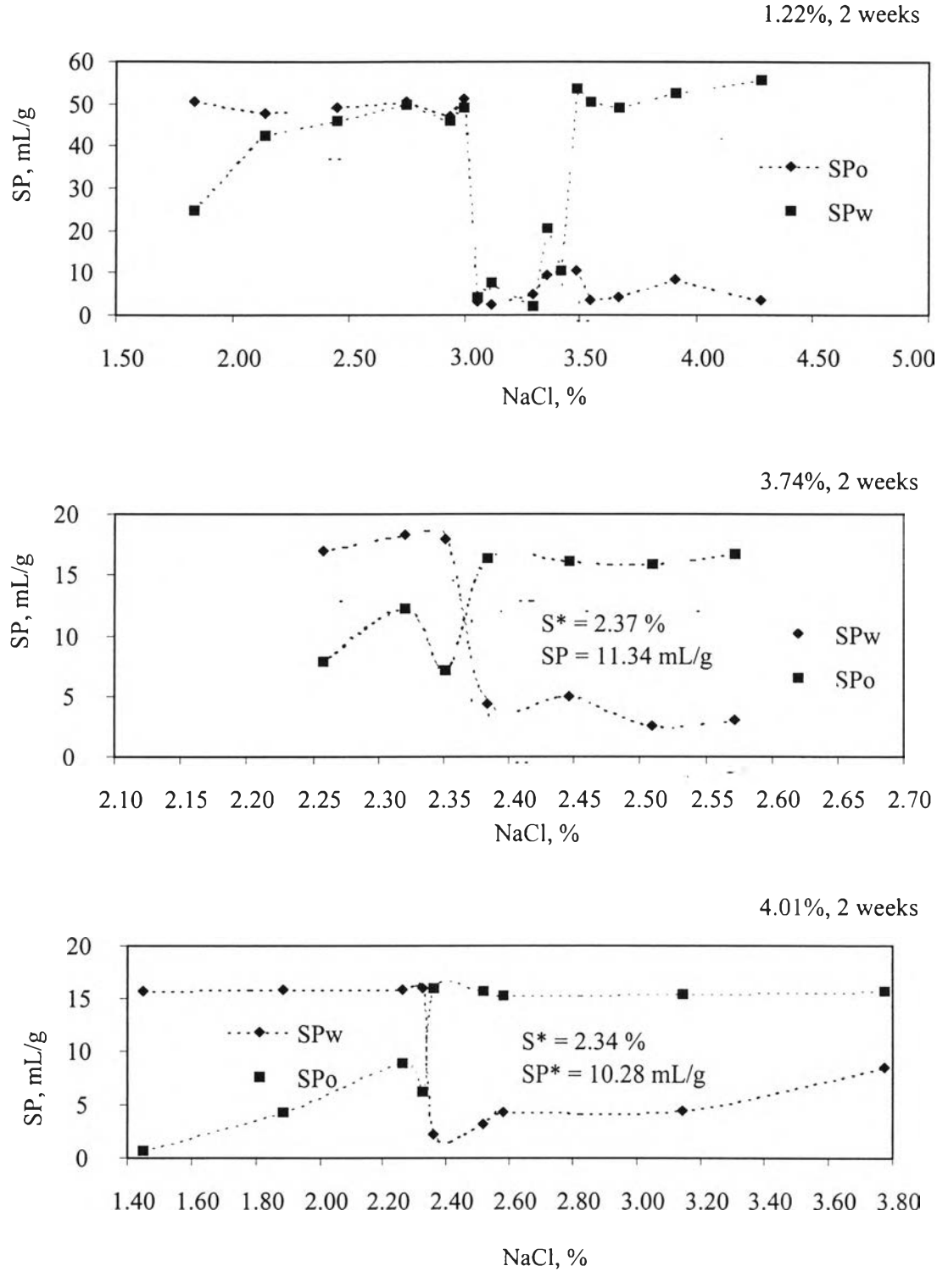

Figure E.7 Solubilization parameter of microemulsion, 1.22% - 4.01%SDS, 2 weeks.

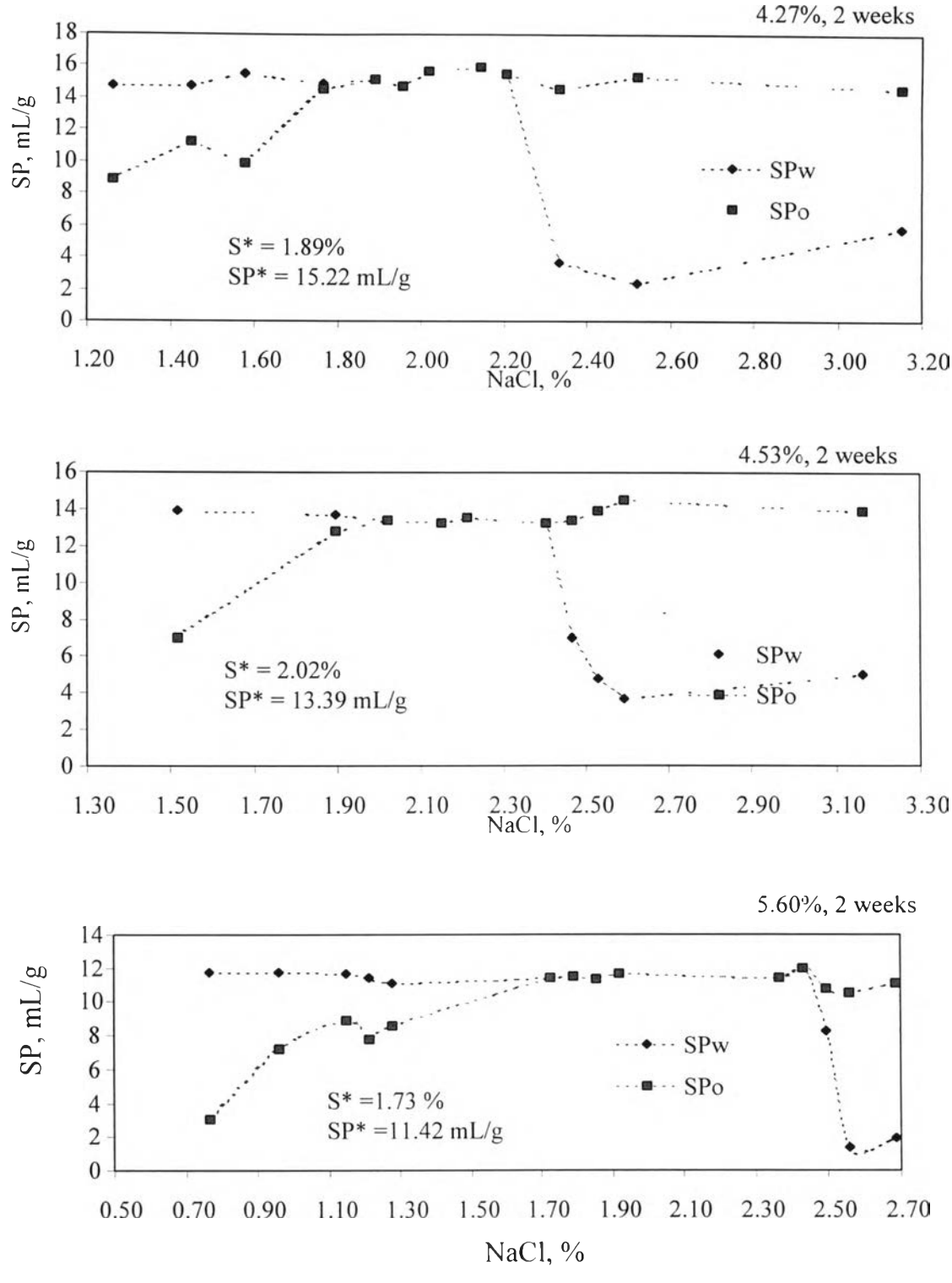

Figure E.8 Solubilization parameter of microemulsion, 4.27% - 5.60%SDS, 2 weeks.

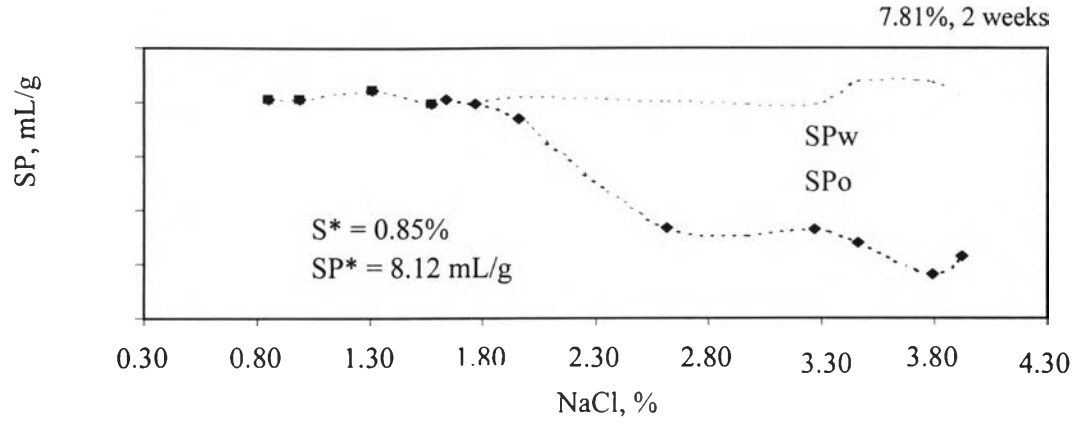

Figure E.9 Solubilization parameter of microemulsion, 7.81% SDS, 2 weeks.

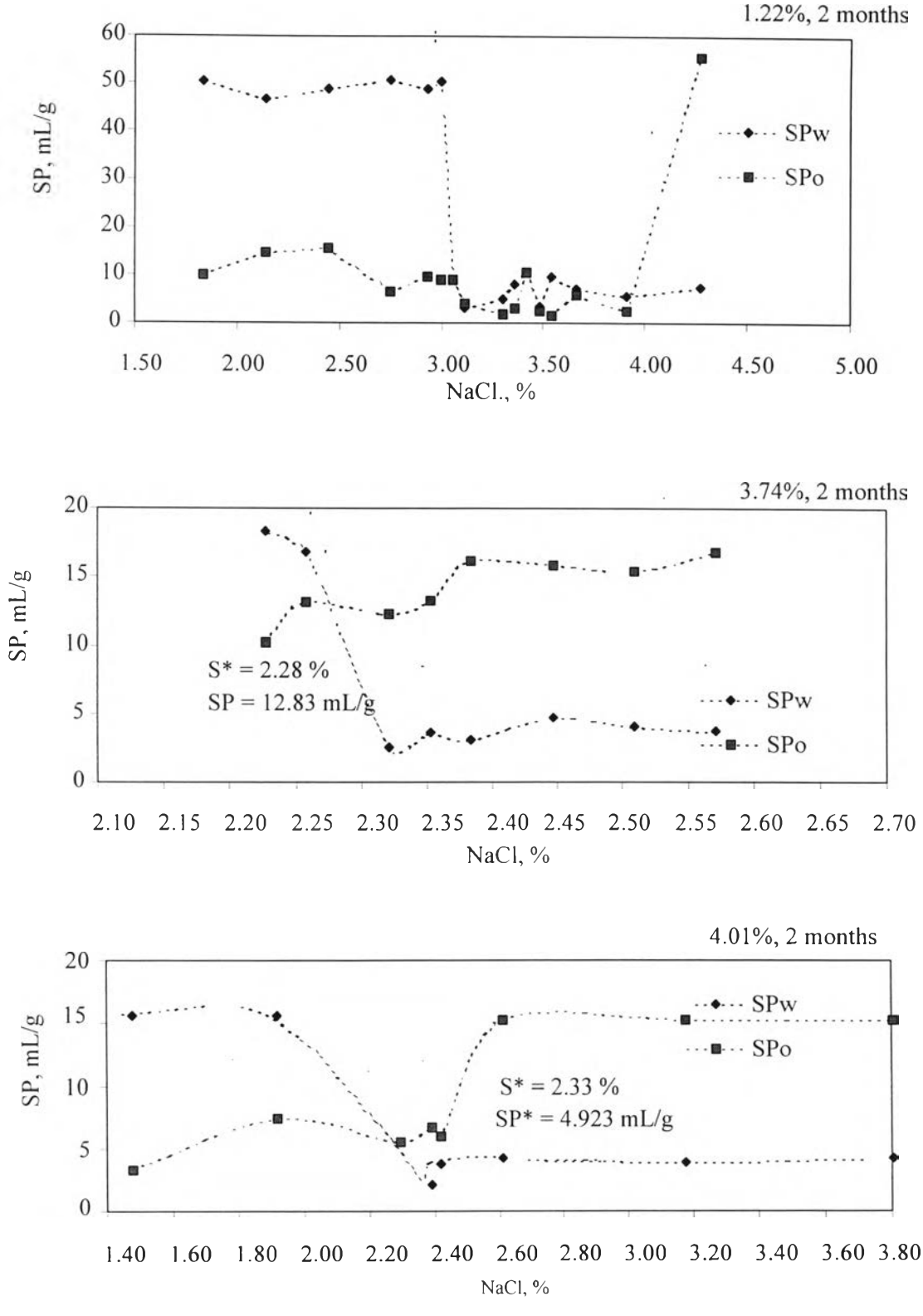

Figure E.10 Solubilization parameter of microemulsion, 1.22% - 4.01%SDS, 2 months.

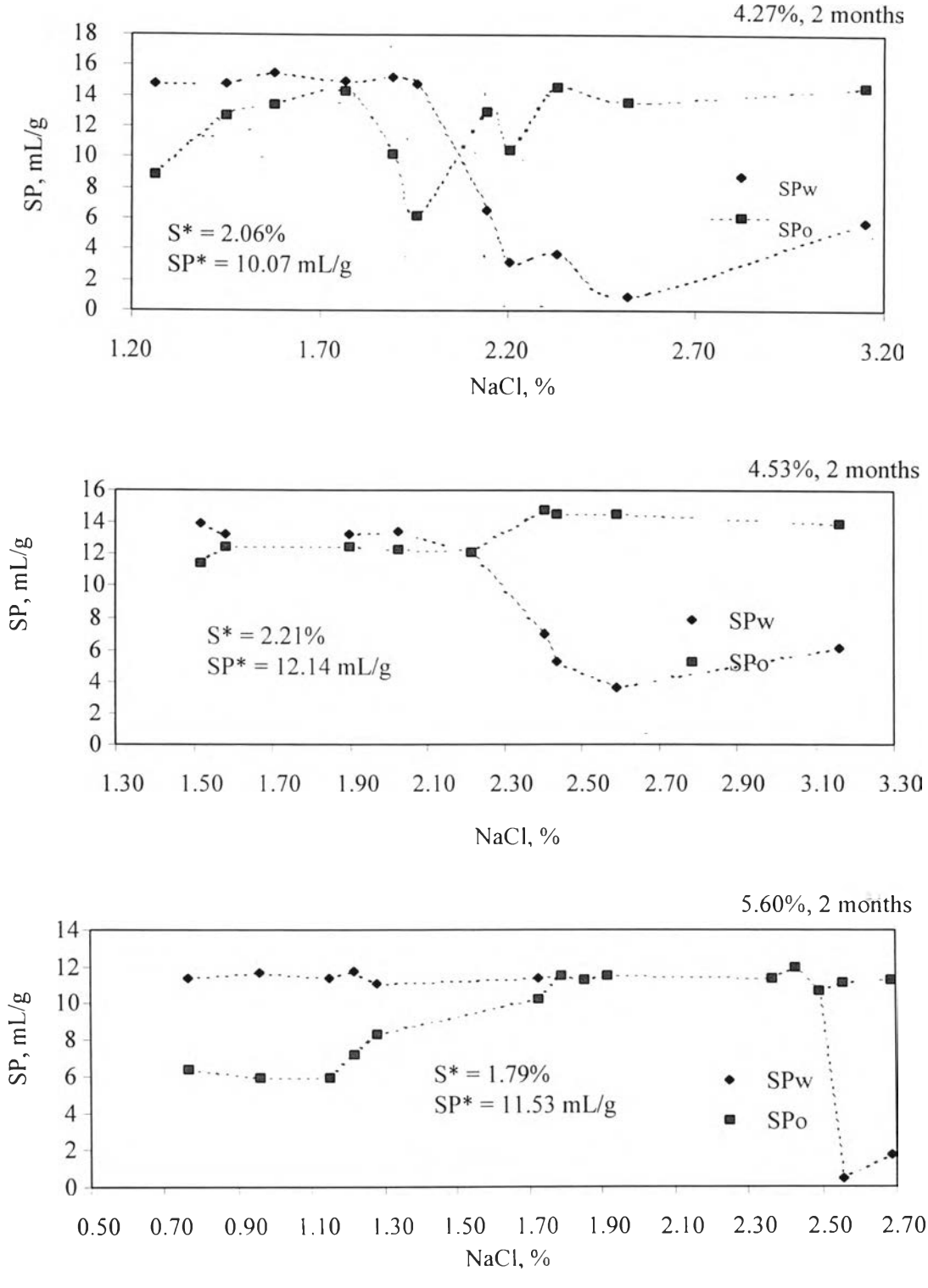

Figure E.11 Solubilization parameter of microemulsion, 4.27% - 5.60%SDS, 2 months.

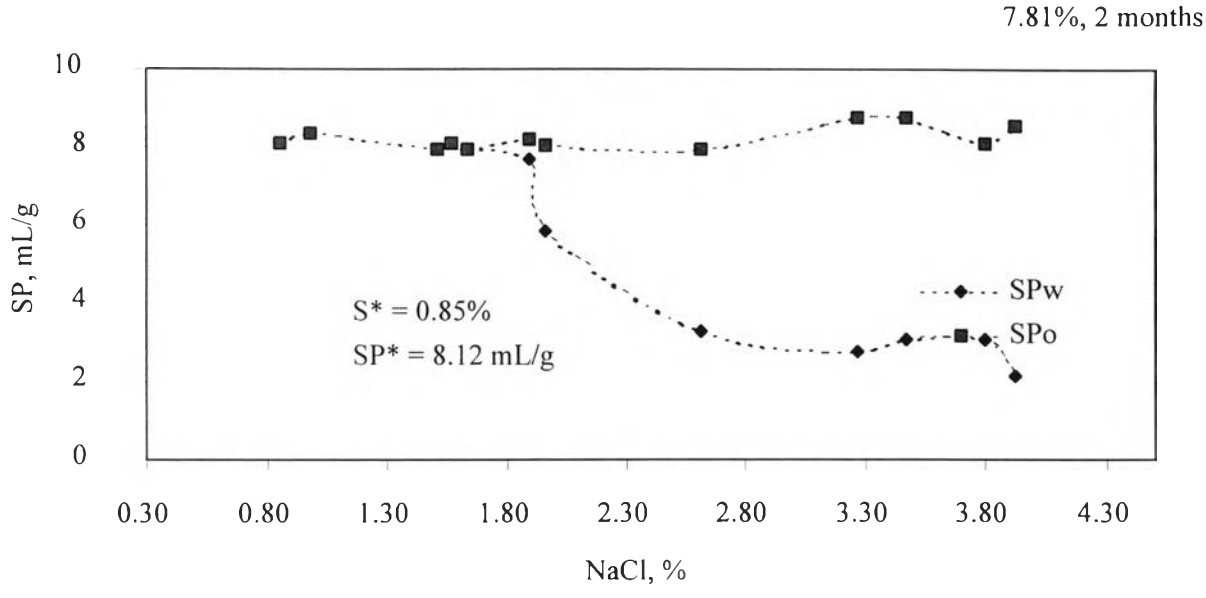

Figure E.12 Solubilization parameter of microemulsion, 7.81% SDS, 2 months.

APPENDIX F

EXPERIMENTAL DATA OF ELECTRICAL CONDUCTIVITY AND INTERFACIAL TENSION

Sodium dodecyl sulfate	= 1.22% - 4.53%
Initial oil/water volume ratio	= 1/1
Ratio of SDS/Octanoic acid	= 40/60
Temperature	= 25 ^{o}C
Electrolyte	= 1.26% - 4.28%
Equilibrium time	= 2 months

Table F-1 Data of electrical conductivity and interfacial tension for 1.22% SDS.

%NaCl	Type	Conductivity		density		aver.	Drop size	IFT
		Peak area	mS/cm	g/CC		rpm	Sdv	mN/m
1.83	I	1551.68	63.70	m/o	0.34	3171	1.99	0.27
				m/w	N/A	N/A	N/A	N/A
				w/o	N/A	N/A	N/A	N/A
2.14	I	1558.00	63.98	m/o	0.31	2799	1.98	0.19
				m/w	N/A	N/A	N/A	N/A
				w/o	N/A	N/A	N/A	N/A
2.44	I	2175.09	53.72	m/o	0.35	2379	1.81	0.12
				m/w	N/A	N/A	N/A	N/A
				w/o	N/A	N/A	N/A	N/A
2.75	I	2016.28	47.16	m/o	N/A	N/A	N/A	N/A
				m/w	N/A	N/A	N/A	N/A
				w/o	N/A	N/A	N/A	N/A
2.93	I	2111.16	51.04	m/o	0.28	2464	1.67	0.08
				m/w	N/A	N/A	N/A	N/A
				w/o	N/A	N/A	N/A	N/A
2.99	I	2147.59	52.56	m/o	0.36	2802	1.85	0.18
				m/w	N/A	N/A	N/A	N/A
				w/o	N/A	N/A	N/A	N/A
3.05	III	2187.84	54.26	m/o	N/A	N/A	N/A	0.05
				m/w	0.05	3328	2.27	0.07
				w/o	0.31	2855	3.01	0.12
3.11	III	1899.00	79.06	m/o	N/A	N/A	N/A	0.01
				m/w	0.64	3364	1.99	0.10
				w/o	0.32	2567	3.08	0.10
3.30	III	1329.61	54.00	m/o	N/A	N/A	N/A	N/A
				m/w	0.34	4487	2.32	0.08
				w/o	N/A	N/A	N/A	N/A
3.48	III	946.11	37.52	m/o	N/A	N/A	N/A	N/A
				m/w	0.35	3466	2.91	0.18
				w/o	N/A	N/A	N/A	N/A
3.91	III	45.51	1.46	m/o	N/A	N/A	N/A	N/A
				m/w	0.35	5099	3.21	0.51
				w/o	N/A	N/A	N/A	N/A
4.28	II	35.92	1.13	m/o	N/A	N/A	N/A	N/A
				m/w	0.33	3106	2.20	0.35
				w/o	N/A	N/A	N/A	N/A

Table F-2 Data of electrical conductivity and interfacial tension for 3.74% SDS.

%NaCl	Type	Conductivity		density		aver.	Drop size	IFT
		Peak area	mS/cm	g/CC		rpm	sdv	mN/m
2.22	I	1198.21	48.31	m/o	0.35	2350	2.13	0.19
				m/w	N/A	N/A	N/A	N/A
				w/o	N/A	N/A	N/A	N/A
2.26	I	1420.87	57.97	m/o	0.35	1774	2.10	0.10
				m/w	N/A	N/A	N/A	N/A
				w/o	N/A	N/A	N/A	N/A
2.35	III	1191.84	48.04	m/o	N/A	N/A	N/A	0.19
				m/w	0.12	3533	1.38	0.04
				w/o	0.34	2747	2.16	0.23
2.44	III	868.29	34.23	m/o	N/A	N/A	N/A	0.01
				m/w	0.39	3791	1.07	0.01
				w/o	0.34	2735	1.85	0.02
2.57	II	31.79	0.99	m/o	N/A	N/A	N/A	N/A
				m/w	0.3031	2635	1.83	0.11
				w/o	N/A	N/A	N/A	N/A
3.14	II	27.17	0.84	m/o	N/A	N/A	N/A	N/A
				m/w	0.32	4001	1.60	0.20
				w/o	N/A	N/A	N/A	N/A

Table F-3 Data of electrical conductivity and interfacial tension for 4.27% SDS.

%NaCl	Type	Conductivity		density		aver.	Drop size	IFT
		Peak area	mS/cm	g/CC		rpm	sdv	mN/m
1.26	I	772.46	30.21	m/o	0.02	2895	1.62	0.01
				m/w	N/A	N/A	N/A	N/A
				w/o	N/A	N/A	N/A	N/A
1.57	I	796.13	31.20	m/o	0.16	2395	2.17	0.08
				m/w	N/A	N/A	N/A	N/A
				w/o	N/A	N/A	N/A	N/A
1.77	I	829.95	32.62	m/o	0.03	4188	1.53	0.03
				m/w	N/A	N/A	N/A	N/A
				w/o	N/A	N/A	N/A	N/A
1.95	I	1227.53	49.58	m/o	0.31	2397	1.00	0.02
				m/w	N/A	N/A	N/A	N/A
				w/o	N/A	N/A	N/A	N/A
2.02	I	980.10	38.96	m/o	N/A	N/A	N/A	0.01
				m/w	0.21	2563	0.60	0.00
				w/o	0.28	2120	0.94	0.01
2.14	III	879.57	34.71	m/o	N/A	N/A	N/A	0.01
				m/w	0.23	2546	0.61	0.00
				w/o	0.29	2112	0.94	0.01
2.21	III	849.22	33.43	m/o	N/A	N/A	N/A	0.00
				m/w	0.04	2778	1.37	0.01
				w/o	0.28	3258	0.69	0.01
2.33	II	789.81	30.32	m/o	N/A	N/A	N/A	0.01
				m/w	0.07	4147	1.65	0.05
				w/o	0.33	2892	1.42	0.05
2.52	II	148.54	5.18	m/o	N/A	N/A	N/A	N/A
				m/w	0.27	3419	1.38	0.08
				w/o	N/A	N/A	N/A	N/A
3.15	II	34.39	1.083	m/o	N/A	N/A	N/A	N/A
				m/w	0.30	3423	1.57	0.13
				w/o	N/A	N/A	N/A	N/A

Table F-4 Data of electrical conductivity and interfacial tension for 4.53% SDS.

%NaCl	Type	Conductivity		density		aver.	Drop size	IFT
		Peak area	mS/cm	g/CC		Rpm	sdv	mN/m
1.45	I	779.18	30.49	m/o	0.18	3197	2.27	0.22
				m/w	N/A	N/A	N/A	N/A
				w/o	N/A	N/A	N/A	N/A
1.52	I	828.55	32.56	m/o	0.16	2820	2.67	0.21
				m/w	N/A	N/A	N/A	N/A
				w/o	N/A	N/A	N/A	N/A
1.90	I	858.39	33.81	m/o	0.20	3216	1.97	0.15
				m/w	N/A	N/A	N/A	N/A
				w/o	N/A	N/A	N/A	N/A
2.02	I	1025	40.88	m/o	0.27	2973	1.59	0.09
				m/w	N/A	N/A	N/A	N/A
				w/o	N/A	N/A	N/A	N/A
2.15	III	1071.4	42.86	m/o	N/A	N/A	N/A	0.003
				m/w	0.17	2456	0.53	0.0004
				w/o	0.25	2438	1.04	0.0033
2.21	III	998.71	39.76	m/o	N/A	N/A	N/A	0.01
				m/w	0.23	2546	0.61	0.00
				w/o	0.29	2112	0.94	0.01
2.40	II	50.51	1.63	m/o	N/A	N/A	N/A	N/A
				m/w	0.29	2674	1.22	0.04
				w/o	N/A	N/A	N/A	N/A
2.53	II	44.22	1.42	m/o	N/A	N/A	N/A	N/A
				m/w	0.31	3173	1.63	0.12
				w/o	N/A	N/A	N/A	N/A
3.16	II	22.18	0.68	m/o	N/A	N/A	N/A	N/A
				m/w	0.42	2927	1.99	0.28
				w/o	N/A	N/A	N/A	N/A

APPENDIX G: EXPERIMENT DATA ON PHASE BEHAVIOR STUDY (ALCOHOL COSURFACTANT)

Sodium dodecyl sulfate	=	0.73% - 3.76%
Initial oil/water volume ratio	=	1/1
Weight ratio of SDS/Octanol	=	40/60
Temperature	=	25 ^{o}C
Electrolyte (NaCl)	=	0.13% – 2.43%
Density of octanol (C_8OH)	=	0.824 g/cc
Density of hexane	=	0.659 g/cc

Table G-1 Data of sample preparation for 0.73% SDS, NaCl scan.

Volume, mL					Weight, g						Wt%			Emulsion
SDS stock	NaCl stock	H_2O	C_8OH	Hexane	SDS	NaCl	H_2O	C_8OH	Hexane	H_2O+C_6	SDS	SDS+C_8OH	NaCl	type
0.30	0.20	4.50	0.11	4.89	0.0597	0.050	5.00	0.0896	3.2234	8.2234	0.73	1.82	0.61	I
0.30	0.28	4.42	0.11	4.89	0.0597	0.070	5.00	0.0896	3.2234	8.2234	0.73	1.82	0.85	I
0.30	0.38	4.32	0.11	4.89	0.0597	0.095	5.00	0.0896	3.2234	8.2234	0.73	1.82	1.16	I
0.30	0.50	4.20	0.11	4.89	0.0597	0.125	5.00	0.0896	3.2234	8.2234	0.73	1.82	1.52	I
0.30	0.60	4.10	0.11	4.89	0.0597	0.150	5.00	0.0896	3.2234	8.2234	0.73	1.82	1.82	I
0.30	0.70	4.00	0.11	4.89	0.0597	0.175	5.00	0.0896	3.2234	8.2234	0.73	1.82	2.13	II
0.30	0.80	3.90	0.11	4.89	0.0597	0.200	5.00	0.0896	3.2234	8.2234	0.73	1.82	2.43	II

Table G-2 Data of sample preparation for 1.22% SDS, NaCl scan.

Volume, mL					Weight, g						Wt%			Emulsion
SDS stock	NaCl stock	H_2O	C_8OH	Hexane	SDS	NaCl	H_2O	C_8OH	Hexane	H_2O+C_6	SDS	SDS+C_8OH	NaCl	type
0.50	0.12	4.38	0.18	4.82	0.0995	0.030	5.00	0.1493	3.1764	8.1764	1.22	3.04	0.37	I
0.50	0.20	4.30	0.18	4.82	0.0995	0.205	5.00	0.1493	3.1764	8.1764	1.22	3.04	0.61	I
0.50	0.24	4.26	0.18	4.82	0.0995	0.060	5.00	0.1493	3.1764	8.1764	1.22	3.04	0.73	I
0.50	0.26	4.24	0.18	4.82	0.0995	0.065	5.00	0.1493	3.1764	8.1764	1.22	3.04	0.79	I
0.50	0.28	4.22	0.18	4.82	0.0995	0.070	5.00	0.1493	3.1764	8.1764	1.22	3.04	0.86	I
0.50	0.29	4.21	0.18	4.82	0.0995	0.073	5.00	0.1493	3.1764	8.1764	1.22	3.04	0.89	I
0.50	0.30	4.20	0.18	4.82	0.0995	0.075	5.00	0.1493	3.1764	8.1764	1.22	3.04	0.92	III
0.50	0.31	4.19	0.18	4.82	0.0995	0.078	5.00	0.1493	3.1764	8.1764	1.22	3.04	0.95	III
0.50	0.32	4.18	0.18	4.82	0.0995	0.080	5.00	0.1493	3.1764	8.1764	1.22	3.04	0.98	III
0.50	0.32	4.18	0.18	4.82	0.0995	0.081	5.00	0.1493	3.1760	8.1764	1.22	3.04	0.99	III
0.50	0.34	4.16	0.18	4.82	0.0995	0.084	5.00	0.1493	3.1764	8.1764	1.22	3.04	1.03	II
0.50	0.34	4.16	0.18	4.82	0.0995	0.085	5.00	0.1493	3.1764	8.1764	1.22	3.04	1.04	II
0.50	0.36	4.14	0.18	4.82	0.0995	0.090	5.00	0.1493	3.1764	8.1764	1.22	3.04	1.100	II
0.50	0.40	4.10	0.18	4.82	0.0995	0.100	5.00	0.1493	3.1764	8.1764	1.22	3.04	1.22	II
0.50	0.44	4.06	0.18	4.82	0.0995	0.110	5.00	0.1493	3.1764	8.1764	1.22	3.04	1.35	II
0.50	0.50	4.00	0.18	4.82	0.0995	0.125	5.00	0.1493	3.1764	8.1764	1.22	3.04	1.53	II

Table G-3 Data of sample preparation for 1.84% SDS, NaCl scan.

Volume, mL					Weight, g						Wt%			Emulsion
SDS stock	NaCl stock	H_2O	C_8OH	Hexane	SDS	NaCl	H_2O	C_8OH	Hexane	H_2O+C_6	SDS	SDS+C_8OH	NaCl	type
0.75	0.10	4.15	0.27	4.73	0.1493	0.025	5.00	0.2240	3.1159	8.1159	1.84	4.60	0.31	I
0.75	0.12	4.13	0.27	4.73	0.1493	0.030	5.00	0.2240	3.1159	8.1159	1.84	4.60	0.37	I
0.75	0.14	4.11	0.27	4.73	0.1493	0.035	5.00	0.2240	3.1159	8.1159	1.84	4.60	0.43	I
0.75	0.16	4.09	0.27	4.73	0.1493	0.040	5.00	0.2240	3.1159	8.1159	1.84	4.60	0.49	I
0.75	0.17	4.08	0.27	4.73	0.1493	0.043	5.00	0.2240	3.1159	8.1159	1.84	4.60	0.52	II
0.75	0.18	4.07	0.27	4.73	0.1493	0.044	5.00	0.2240	3.1159	8.1159	1.84	4.60	0.54	II
0.75	0.18	4.07	0.27	4.73	0.1493	0.045	5.00	0.2240	3.1159	8.1159	1.84	4.60	0.55	II
0.75	0.20	4.05	0.27	4.73	0.1493	0.050	5.00	0.2240	3.1159	8.1159	1.84	4.60	0.62	II
0.75	0.30	3.95	0.27	4.73	0.1493	0.075	5.00	0.2240	3.1159	8.1159	1.84	4.60	0.93	II

Table G-4 Data of sample preparation for 3.76% SDS, NaCl scan.

Volume, mL					Weight, g						Wt%			Emulsion
SDS stock	NaCl stock	H_2O	C_8OH	Hexane	SDS	NaCl	H_2O	C_8OH	Hexane	H_2O+C_6	SDS	SDS+C_8OH	NaCl	type
1.50	0.04	3.46	0.54	4.46	0.2986	0.010	5.00	0.4479	2.9368	7.9368	3.76	9.40	0.13	I
1.50	0.04	3.46	0.54	4.46	0.2986	0.011	5.00	0.4479	2.9368	7.9368	3.76	9.40	0.14	I
1.50	0.05	3.45	0.54	4.46	0.2986	0.013	5.00	0.4479	2.9368	7.9368	3.76	9.40	0.16	I
1.50	0.06	3.44	0.54	4.46	0.2986	0.014	5.00	0.4479	2.9368	7.9368	3.76	9.40	0.17	IV
1.50	0.06	3.44	0.54	4.46	0.2986	0.015	5.00	0.4479	2.9368	7.9368	3.76	9.40	0.19	IV
1.50	0.06	3.44	0.54	4.46	0.2986	0.016	5.00	0.4479	2.9368	7.9368	3.76	9.40	0.20	IV
1.50	0.07	3.43	0.54	4.46	0.2986	0.017	5.00	0.4479	2.9368	7.9368	3.76	9.40	0.22	IV
1.50	0.08	3.42	0.54	4.46	0.2986	0.019	5.00	0.4479	2.9368	7.9368	3.76	9.40	0.24	IV
1.50	0.08	3.42	0.54	4.46	0.2986	0.020	5.00	0.4479	2.9368	7.9368	3.76	9.40	0.25	IV
1.50	0.10	3.40	0.54	4.46	0.2986	0.025	6.00	0.4479	2.9368	8.9368	3.76	8.35	0.28	IV

Figure G.1 shows the use of octanol cosurfactant instead of octanoic acid. The solutions were prepared the same way and conditions as for the octanoic acid system at 25°C. The progression of phase equilibria Winsor I-Winsor III- Winsor II occurs (less than 1.80%SDS) with increasing NaCl concentration. Winsor I-Winsor IV-Winsor II occurs at higher surfactant concentration (above 1.80%), but with decreasing electrolyte concentration. The phase behavior of microemulsion containing octanol system can be obtained at lower surfactant and salt concentrations. This is due to the difference of hydrophilic character between octanoic acid (HLB = 5.3) and octanol (HLB = 5.1). Octanoic acid exhibits marked strongly favorable solubility in aqueous. As octanoic acid used cosurfactant, the amounts of electrolyte necessary to balance hydrophilic and hydrophobic effect increase.

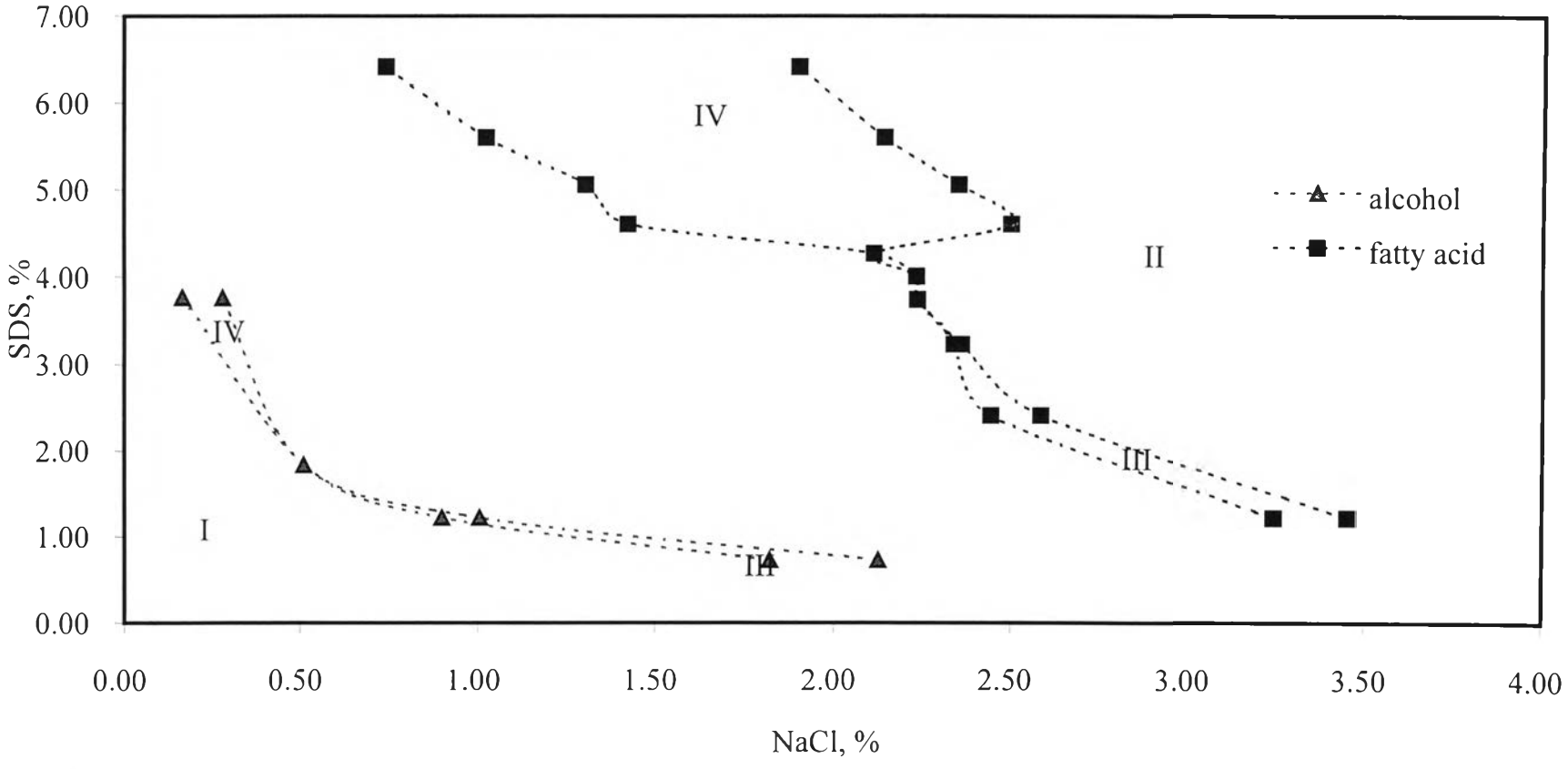

Figure G.1 Phase behavior of the microemulsion systems containing hexane, SDS, NaCl and octanoic acid, octanol cosurfactants. The microemulsion solutions were equilibrated for 2 weeks at 25 ^{o}C.

CURRICULUM VITAE

Name: Pongtai Wilaireungsuwan

Date of Birth: April 14, 1976

Nationality: Thai

University Education:

1994-1997 Bachelor's Degree of Science in Chemical Technology, Chulalongkorn University