APPENDIX

Basic data of Chapter II

Table II. I: Temperature (*T*/°*C*) vs mass fraction of surfactant (γ) showing different phases in a microemulsion system involving Triton X-100/[Bmim][PF_6]/H_2O. $\underline{2}$ corresponds to temperature showing lower two-phase (W/IL droplet μE) whereas $\overline{2}$ corresponds to temperature showing upper two-phase (IL/W droplet μE).

γ	$\underline{2}$	$\overline{2}$
0.05	33.2	33.3
0.11	33.0	34.4
0.20	32.0	35.5
0.26	31.0	37.0
0.31	30.0	38.0
0.40	31.0	37.0
0.52	33.0	36.0
0.62	35.5	34.0
0.70	37.0	33.0
0.80	38.0	32.0

Table II. II: Temperature (*T/°C*) vs mass fraction of surfactant (γ) showing different phases in a microemulsion system involving PLANTACARE®810–UP/[Bmim][PF_6]/H_2O. $\underline{2}$ corresponds to temperature showing lower two-phase (W/IL droplet μE) whereas $\overline{2}$ corresponds to temperature showing upper two-phase (IL/W droplet μE).

γ	$\underline{\mathbf{2}}$	$\overline{\mathbf{2}}$
0.10	38.0	39.2
0.21	36.0	41.0
0.25	35.0	42.4
0.31	33.3	44.0
0.35	33.6	45.6
0.41	35.0	44.0
0.45	38.5	41.0
0.50	44.5	37.0
0.60	46.0	36.0
0.65	46.0	35.5

Table II. III: Temperature (*T/°C*) vs mass fraction of surfactant (γ) showing different phases in a microemulsion system involving PLANTACARE®K-55/[Bmim][PF_6]/H_2O. $\underline{2}$ corresponds to temperature showing lower two-phase (W/IL droplet μE) whereas $\overline{2}$ corresponds to temperature showing upper two-phase (IL/W droplet μE).

γ	$\underline{\mathbf{2}}$	$\overline{\mathbf{2}}$
0.10	40.0	40.2
0.21	39.8	40.4

0.31	39.6	40.5
0.41	39.0	41.0
0.50	38.2	41.8
0.56	37.4	42.8
0.60	36.6	43.0
0.67	37.0	41.4
0.70	39.6	37.2
0.76	41.0	35.9
0.80	41.8	35.2

Table II. IV: Temperature (*T/°C*) vs mass fraction of surfactant (γ) showing different phases in a microemulsion system involving *n*-Decyl β-D-maltoside(β-$C_{10}G_2$)/[Bmim][PF_6]/H_2O. $\underline{2}$ corresponds to temperature showing lower two-phase (W/IL droplet μE) whereas $\overline{2}$ corresponds to temperature showing upper two-phase (IL/W droplet μE). L_α represents the temperature at which the lamellar liquid crystalline phases are observed.

γ	$\underline{\mathbf{2}}$	$\overline{\mathbf{2}}$	$\mathbf{L}_\alpha$	$\mathbf{L}_\alpha$
0.09	40.7	40.7		
0.11	40.5	41.0	0.46	40.9
0.20	40.0	41.6	0.51	39.7
0.25	39.8	42.2	0.53	38.5
0.30	39.2	42.8		

0.35	39.5	43.4		
0.40	40.0	43.0		
0.43	44.0	42.0		
0.45	46.5	39.4		
0.51	48.9	37.4		
0.53	49.5	36.9		

Table II. V: Temperature ($T/°C$) vs mass fraction of surfactant (γ) showing different phases in a microemulsion system involving *n*-Dodecyl β-D-maltoside(β-$C_{12}G_2$)/[Bmim][PF_6]/H_2O. $\underline{2}$ corresponds to temperature showing lower two-phase (W/IL droplet μE) whereas $\overline{2}$ corresponds to temperature showing upper two-phase (IL/W droplet μE).

γ	$\underline{\mathbf{2}}$	$\overline{\mathbf{2}}$
0.06	37.9	37.9
0.08	38.0	40.0
0.15	40.0	48.0
0.20	42.0	52.0
0.30	46.0	56.0
0.35	48.0	48.0
0.40	52.0	44.0
0.45	55.0	41.0

Table II. VI: Conductance vs % of Water at different PLANTACARE® 810 – UP: [Bmim][PF_6] molar ratio (S=0.3 and 0.5).

Volume of Water (mL)	**% Water**	**Conductance (mS) (S=0.5)**	**Conductance (mS) (S=0.3)**
0.00	0.0	0.66	1.68
0.20	10.0	0.96	2.66
0.41	20.0	1.54	4.34
0.61	30.0	4.22	6.35
0.81	40.0	8.94	8.45
1.02	50.0	10.82	11.32
1.22	60.0	9.85	10.29
1.42	70.0	8.94	9.28
1.62	80.0	8.21	8.51
1.83	90.0	7.62	7.77
2.03	100.0	7.12	7.42

Table II.VII: Conductance vs % of Water at different PLANTACARE® 818 – UP: [Bmim][PF_6] molar ratio (S=0.3 and 0.5).

Volume of Water (mL)	**% Water**	**Conductance (mS) (S=0.5)**	**Conductance (mS) (S=0.3)**
0.00	0.00	0.42	1.48
0.21	10.00	1.13	3.20

0.41	20.00	2.16	5.52
0.62	30.00	3.70	7.44
0.82	40.00	4.94	9.50
1.03	50.00	6.83	11.63
1.23	60.00	8.45	11.00
1.44	70.00	9.71	10.50
1.64	80.00	9.05	9.60
1.85	90.00	8.53	9.28
2.05	100.00	7.90	8.68

Table II.VIII: Conductance vs % of Water at different PLANTACARE® 810 – UP: [Bmim][PF_6] molar ratio (S=0.3 and 0.5) at 25°C.

Volume of Water (mL)	**% Water**	**Conductance (mS) (S=0.5)**	**Conductance (mS) (S=0.3)**
0.00	0.00	0.78	1.24
0.20	10.00	1.03	1.98
0.41	20.00	1.44	2.54
0.61	30.00	1.98	3.76
0.81	40.00	2.68	4.23
1.02	50.00	3.07	4.44

1.22	60.00	3.46	4.67
1.42	70.00	4.11	5.06
1.62	80.00	4.83	5.88
1.83	90.00	5.90	6.56

Table II. IX: Conductance vs % of Water at different PLANTACARE® 810 – UP: [Bmim][PF_6] molar ratio (S=0.3 and 0.5) at 30°C.

Volume of Water (mL)	**% Water**	**Conductance (mS) (S=0.5)**	**Conductance (mS) (S=0.3)**
0.00	0.00	0.96	1.36
0.20	10.00	1.13	2.11
0.41	20.00	1.55	2.87
0.61	30.00	1.87	3.43
0.81	40.00	2.32	4.54
1.02	50.00	2.68	5.16
1.22	60.00	3.42	6.02
1.42	70.00	4.86	6.63
1.62	80.00	5.73	7.78
1.83	90.00	6.81	7.95
2.03	100.00	6.89	8.09

Table II. X: Conductance vs % of Water at different PLANTACARE® 810 – UP: [Bmim][PF_6] molar ratio (S=0.3 and 0.5) at 40°C.

Volume of Water (mL)	% Water	Conductance (mS) (S=0.5)	Conductance (mS) (S=0.3)
0.00	0.00	2.46	3.60
0.20	10.00	3.09	3.78
0.41	20.00	3.83	3.98
0.61	30.00	4.23	4.13
0.81	40.00	4.72	4.26
1.02	50.00	5.38	6.21
1.22	60.00	7.06	6.78
1.42	70.00	7.53	7.11
1.62	80.00	8.44	7.29
1.83	90.00	9.01	7.46

Table II. XI: Conductance vs % of Water at different PLANTACARE®810–UP: [Bmim][PF_6] molar ratio (S=0.3 and 0.5) at 50°C.

Volume of Water (mL)	% Water	Conductance (mS) (S=0.5)	Conductance (mS) (S=0.3)
0.00	0.00	2.98	2.70
0.20	10.00	3.93	2.94
0.41	20.00	4.06	3.09

0.61	30.00	4.48	3.77
0.81	40.00	5.09	4.11
1.02	50.00	5.72	4.31
1.22	60.00	6.36	4.68
1.42	70.00	8.44	5.03
1.62	80.00	11.13	5.48
1.83	90.00	12.03	5.89
2.03	100.00	12.60	6.15

Table II. XII: Conductance vs % of Water as a function of varying mass fraction of ionic liquid (α) for PLANTACARE® 810 – UP: [Bmim][PF_6] at 30°C.

Volume of Water (mL)	**% Water**	**Conductance (mS) (α=0.37)**	**Conductance (mS) (α =0.42)**	**Conductance (mS) (α =0.53)**	**Conductance (mS) (α =0.58)**
0.00	0.00	10.83	11.00	11.20	11.32
0.23	10.00	10.95	11.20	11.40	11.66
0.46	20.00	11.12	11.51	11.73	11.97
0.69	30.00	11.35	11.63	11.92	12.14
0.92	40.00	11.45	11.72	12.10	12.26

1.15	50.00	11.50	11.80	12.06	12.24
1.38	60.00	11.55	11.73	11.92	12.10
1.61	70.00	11.51	11.65	11.78	12.00
1.84	80.00	11.35	11.50	11.73	11.83
2.07	90.00	11.30	11.45	11.60	11.75
2.30	100.00	11.25	11.43	11.55	11.72

Basic data of Chapter III

Table III. I (a): Temperature (*T/°C*) vs mass fraction of surfactant (γ) of the ternary system showing different phases in a microemulsion system obtained for equal masses of water and ionic liquid [Bmim][PF_6], in presence of PLANTACARE® 810 – UP surfactant at mass fraction of ionic liquid, α=0.37. [α = IL/ (IL + water)] ratios. $\underline{2}$ corresponds to temperature showing lower two-phase (W/IL droplet μE) whereas $\overline{2}$ corresponds to temperature showing upper two-phase (IL/W droplet μE).

γ	$\underline{\mathbf{2}}$	$\overline{\mathbf{2}}$
0.11	34.0	34.4
0.20	33.7	34.8
0.30	33.4	35.4
0.40	33.8	35.0
0.51	34.2	34.6
0.60	35.4	33.0
0.70	37.0	32.0

Table III. I (b): Temperature (*T/°C*) vs mass fraction of surfactant (γ) of the ternary system showing different phases in a microemulsion system obtained for equal masses of water and ionic liquid [Bmim][PF_6], in presence of PLANTACARE® 810 – UP surfactant at mass fraction of ionic liquid, α=0.42. [α = IL/ (IL + water)] ratios. $\underline{2}$ corresponds to temperature showing lower two-phase (W/IL droplet μE) whereas $\overline{2}$ corresponds to temperature showing upper two-phase (IL/W droplet μE).

γ	$\underline{\mathbf{2}}$	$\overline{\mathbf{2}}$
0.11	38.5	38.5
0.20	36.0	41.0
0.30	34.6	43.0
0.40	33.0	44.0
0.51	36.0	42.6
0.60	44.0	34.0
0.70	47.0	32.0

Table III. I (c): Temperature (*T/°C*) vs mass fraction of surfactant (γ) of the ternary system showing different phases in a microemulsion system obtained for equal masses of water and ionic liquid [Bmim][PF_6], in presence of PLANTACARE® 810 – UP surfactant at mass fraction of ionic liquid, α=0.48. [α = IL/ (IL + water)] ratios. $\underline{2}$ corresponds to temperature showing lower two-phase (W/IL droplet μE) whereas $\overline{2}$ corresponds to temperature showing upper two-phase (IL/W droplet μE).

γ	$\underline{\mathbf{2}}$	$\overline{\mathbf{2}}$
0.11	39.0	39.3
0.20	38.0	40.2

0.30	37.2	41.8
0.40	35.6	42.4
0.51	36.0	42.6
0.60	44.0	34.0
0.70	47.0	32.7

Table III. I (d): Temperature (*T/°C*) vs mass fraction of surfactant (γ) of the ternary system showing different phases in a microemulsion system obtained for equal masses of water and ionic liquid [Bmim][PF_6], in presence of PLANTACARE® 810 – UP surfactant at mass fraction of ionic liquid, α=0.53. [α = IL/ (IL + water)] ratios. $\underline{2}$ corresponds to temperature showing lower two-phase (W/IL droplet μE) whereas $\overline{2}$ corresponds to temperature showing upper two-phase (IL/W droplet μE).

γ	$\underline{\mathbf{2}}$	$\overline{\mathbf{2}}$
0.11	36.5	36.2
0.20	37.0	36.0
0.30	37.4	35.6
0.40	37.8	35.0
0.51	37.2	35.8
0.60	36.4	37.4
0.70	34.0	39.0

Table III. I (e): Temperature (*T/°C*) vs mass fraction of surfactant (γ) of the ternary system showing different phases in a microemulsion system obtained for equal masses of water and ionic liquid [Bmim][PF_6], in presence of PLANTACARE® 810 – UP surfactant at mass fraction of ionic liquid, α=0.58. [α = IL/ (IL + water)] ratios. (α = 0.58 corresponds to equal volumes of water and ionic liquid). $\underline{2}$ corresponds to temperature showing lower two-phase (W/IL droplet μE) whereas $\overline{2}$ corresponds to temperature showing upper two-phase (IL/W droplet μE).

γ	$\underline{\mathbf{2}}$	$\overline{\mathbf{2}}$
0.11	35.0	35.6
0.20	34.6	36.0
0.30	34.0	36.8
0.40	33.4	37.4
0.51	34.2	36.5
0.60	37.0	35.4
0.70	40.0	32.0

Table III.II (a): Temperature (*T/°C*) vs mass fraction of surfactant (γ) showing different phases in a microemulsion system involving Triton X-100/[Bmim][PF_6]/Octanol/H_2O. $\underline{2}$ corresponds to temperature showing lower two-phase (W/IL droplet μE) whereas $\overline{2}$ corresponds to temperature showing upper two-phase (IL/W droplet μE).

γ	$\underline{\mathbf{2}}$	$\overline{\mathbf{2}}$
0.06	32.8	33.0
0.10	32.4	33.6
0.20	32.0	34.0

0.25	31.8	34.2
0.30	31.8	34.2
0.40	32.0	34.0
0.51	33.0	33.4
0.60	34.0	33.0
0.70	34.6	32.4
0.80	35.0	31.8

Table III.II (b): Temperature (*T*/°*C*) vs mass fraction of surfactant (γ) showing different phases in a microemulsion system involving Triton X-100/[Bmim][PF_6]/Decanol/H_2O. $\underline{2}$ corresponds to temperature showing lower two-phase (W/IL droplet μE) whereas $\overline{2}$ corresponds to temperature showing upper two-phase (IL/W droplet μE).

γ	$\underline{\mathbf{2}}$	$\overline{\mathbf{2}}$
0.05	33.0	33.2
0.10	32.6	33.6
0.20	32.4	34.0
0.25	32.4	34.2
0.30	32.6	34.2
0.40	33.0	34.0
0.50	33.8	33.6
0.60	34.4	33.2
0.71	35.0	32.4

0.80	35.6	31.8

Table III.II (c): Temperature (*T/°C*) vs mass fraction of surfactant (γ) showing different phases in a microemulsion system involving Triton X-100/[Bmim][PF_6]/Dodecanol/H_2O. $\underline{2}$ corresponds to temperature showing lower two-phase (W/IL droplet μE) whereas $\overline{2}$ corresponds to temperature showing upper two-phase (IL/W droplet μE).

γ	$\underline{\mathbf{2}}$	$\overline{\mathbf{2}}$
0.05	32.0	32.2
0.10	31.6	33.0
0.21	31.4	34.2
0.26	31.2	34.8
0.31	31.6	35.0
0.40	33.2	34.8
0.51	35.0	34.0
0.60	36.0	33.2
0.70	36.4	32.6
0.81	36.4	32.2

Table III. III (a): Temperature (*T/°C*) vs mass fraction of surfactant (γ) showing different phases in a microemulsion system involving PLANTACARE®810–UP /[Bmim][PF_6]/Octanol/H_2O. $\underline{2}$ corresponds to temperature showing lower two-phase (W/IL droplet μE) whereas $\overline{2}$ corresponds to temperature showing upper two-phase (IL/W droplet μE).

γ	$\underline{\mathbf{2}}$	$\overline{\mathbf{2}}$

0.11	39.6	39.8
0.20	38.8	41.0
0.31	38.0	42.5
0.40	38.4	42.0
0.43	40.0	40.8
0.44	41.4	39.6
0.49	43.0	37.8
0.51	44.0	37.0

Table III. III (b): Temperature (*T/°C*) vs mass fraction of surfactant (γ) showing different phases in a microemulsion system involving PLANTACARE®810–UP /[Bmim][PF_6]/Decanol/H_2O. $\underline{2}$ corresponds to temperature showing lower two-phase (W/IL droplet μE) whereas $\overline{2}$ corresponds to temperature showing upper two-phase (IL/W droplet μE).

γ	$\underline{\mathbf{2}}$	$\overline{\mathbf{2}}$
0.09	36.3	36.3
0.11	36.2	36.4
0.20	36.0	36.8
0.31	35.8	37.2
0.36	36.0	37.0
0.38	36.2	36.8
0.42	37.0	36.0

0.45	37.4	35.7

Table III. III (c): Temperature (*T/°C*) vs mass fraction of surfactant (γ) showing different phases in a microemulsion system involving PLANTACARE®810–UP /[Bmim][PF_6]/Dodecanol/H_2O. $\underline{2}$ corresponds to temperature showing lower two-phase (W/IL droplet μE) whereas $\overline{2}$ corresponds to temperature showing upper two-phase (IL/W droplet μE).

γ	$\underline{\mathbf{2}}$	$\overline{\mathbf{2}}$
0.11	38.2	38.3
0.20	38.0	38.8
0.29	37.6	39.8
0.33	38.0	40.0
0.38	40.0	38.0
0.42	40.5	37.2
0.45	40.8	37.0
0.49	41.0	36.6

Table III. IV (a): Temperature (*T/°C*) vs mass fraction of surfactant (γ) showing different phases in a microemulsion system involving PLANTACARE®K-55 /[Bmim][PF_6]/Octanol/H_2O. $\underline{2}$ corresponds to temperature showing lower two-phase (W/IL droplet μE) whereas $\overline{2}$ corresponds to temperature showing upper two-phase (IL/W droplet μE).

γ	$\underline{\mathbf{2}}$	$\overline{\mathbf{2}}$
0.11	35.0	35.2

0.15	34.6	35.4
0.20	34.2	35.8
0.25	34.0	36.2
0.31	34.1	36.4
0.35	34.2	36.4
0.40	34.4	36.2
0.45	34.8	36.0
0.50	35.2	35.6
0.60	35.8	34.6
0.65	36.4	34.2
0.70	37.2	33.6

Table III. IV (b): Temperature (*T*/°*C*) vs mass fraction of surfactant (γ) showing different phases in a microemulsion system involving PLANTACARE®K-55 /[Bmim][PF_6]/Decanol/H_2O. $\underline{2}$ corresponds to temperature showing lower two-phase (W/IL droplet μE) whereas $\overline{2}$ corresponds to temperature showing upper two-phase (IL/W droplet μE).

γ	$\underline{\mathbf{2}}$	$\overline{\mathbf{2}}$
0.11	35.0	35.2
0.15	34.6	35.4
0.20	34.2	35.8
0.25	34.0	36.2

0.31	34.2	36.4
0.35	34.4	36.2
0.40	34.8	35.9
0.45	35.0	35.6
0.50	36.2	34.8
0.60	36.6	34.2

Table III. IV (c): Temperature (*T/°C*) vs mass fraction of surfactant (γ) showing different phases in a microemulsion system involving PLANTACARE®K-55 /[Bmim][PF_6]/Dodecanol/H_2O. $\underline{2}$ corresponds to temperature showing lower two-phase (W/IL droplet μE) whereas $\overline{2}$ corresponds to temperature showing upper two-phase (IL/W droplet μE).

γ	$\underline{\mathbf{2}}$	$\overline{\mathbf{2}}$
0.11	34.5	35.0
0.20	33.0	36.0
0.31	31.0	36.7
0.34	30.6	37.2
0.38	30.4	35.8
0.42	36.2	34.2
0.45	38.0	33.0
0.49	40.2	32.0

Basic data of Chapter IV

Table IV. I: Temperature (*T*/°*C*) vs mass fraction of surfactant (γ) showing different phases for equal masses of polar ionic liquid as polar phase and alkane (dodecane) as the non-polar phase (1:1) in presence of non-ionic sugar-based surfactants with varying hydrocarbon chain length in a microemulsion system involving PLANTACARE®810–UP/EAN/Dodecane, *n*-Decyl *β*-D-maltoside (*β*–$C_{10}G_2$)/EAN/Dodecane and *n*-Dodecyl *β*-D-maltoside (*β*–$C_{12}G_2$)/EAN/Dodecane. $\underline{2}$ corresponds to temperature showing lower two-phase (W/IL droplet μE) whereas $\overline{2}$ corresponds to temperature showing upper two-phase (IL/W droplet μE).

	PLANTACARE® 810 – UP		*β*-$C_{10}G_2$		*β*-$C_{12}G_2$	
γ	$\underline{2}$	$\overline{2}$	$\underline{2}$	$\overline{2}$	$\underline{2}$	$\overline{2}$
0.10	33.0	33.6	36.4	36.6	42.6	43.0
0.20	32.4	33.8	36.0	37.0	41.8	43.8
0.30	31.8	34.2	35.8	37.4	41.6	44.2
0.35	31.4	34.5	35.9	37.6	42.0	44.4
0.40	31.2	34.8	36.0	37.4	42.4	44.0
0.45	31.5	35.0	36.6	37.2	43.4	42.8
0.50	31.8	34.6	37.2	36.8	43.8	42.4
0.56	32.3	34.1	37.4	36.0	44.2	42.2
0.60	32.7	33.5	37.6	35.4	44.8	41.8
0.66	33.2	32.7	38.0	35.0	45.2	41.4
0.70	33.8	32.2	38.4	34.6	45.8	41.0
0.75	34.1	31.9	38.8	34.2	46.2	40.6

Table IV. II: Polarization microscopy images revealing the presence of lamellar phases for the ternary microemulsion system, i.e., β-$C_{12}G_2$/EAN/Octane and β-$C_{10}G_2$/EAN/Octane, i.e., γ = > 0.35 in the low-temperature regime (below 40°C) as shown in chapter 4. Figure 2.

Table IV. III: Polarization microscopy images as a shred of evidence showing the absence of Liquid Crystalline phases (*LC*) for PLANTACARE®810–UP /EAN/Octane microemulsion system. i.e., γ = > 0.35 in the low-temperature as well as high temperature regime as shown in chapter 4. Figure 3.

Table IV. IV: Temperature (*T/°C*) vs mass fraction of surfactant (γ) showing different phases for equal masses of polar ionic liquid as polar phase (1:1) and alkane (dodecane) as the non-polar phase (1:1) in presence of non-ionic sugar-based surfactants with varying chain length of *n*-alkanes in a microemulsion system involving PLANTACARE®810–UP (UP-810)/EAN/Octane, PLANTACARE® 810 – UP (UP-810)/EAN/Decane and PLANTACARE® 810 – UP (UP-810)/EAN/Dodecane. $\underline{2}$ corresponds to temperature showing lower two-phase (W/IL droplet μE) whereas $\overline{2}$ corresponds to temperature showing upper two-phase (IL/W droplet μE).

	Octane		Decane		Dodecane	
γ	$\underline{2}$	$\overline{2}$	$\underline{2}$	$\overline{2}$	$\underline{2}$	$\overline{2}$
0.10	40.4	40.6	31.2	31.5	33.0	33.6
0.20	39.2	41.2	30.5	31.8	32.4	33.8
0.30	38.6	41.8	30.2	32.0	31.8	34.2
0.35	38.4	41.9	30.1	32.0	31.4	34.5
0.40	38.8	41.3	30.3	31.9	31.2	34.8
0.45	39.1	40.5	30.5	31.8	31.5	35.0
0.50	40.6	39.6	30.7	31.6	31.8	34.6
0.56	41.0	39.0	31.0	31.3	32.3	34.1

0.60	41.3	38.8	31.5	30.8	32.7	33.5
0.66	41.6	38.4	32.0	30.4	33.2	32.7
0.70	42.0	38.0	32.2	30.1	33.8	32.2

Table IV.V (a): Temperature (*T/°C*) vs mass fraction of surfactant (γ) showing different phases in a microemulsion system involving *n*-Decyl β-D-maltoside (β–$C_{10}G_2$)/EAN/Octane. $\underline{2}$ corresponds to temperature showing lower two-phase (W/IL droplet μE) whereas $\overline{2}$ corresponds to temperature showing upper two-phase (IL/W droplet μE).

γ	$\underline{\mathbf{2}}$	$\overline{\mathbf{2}}$	$\mathbf{L}_\alpha$	$\mathbf{L}_\alpha$
0.10	40.0	40.2		
0.16	39.8	40.6		
0.20	39.0	41.2		
0.25	38.8	41.6		
0.30	39.2	40.5	0.36	39.8
0.35	41.0	39.2	0.38	39.4
0.40	42.0	38.0	0.41	38.7

Table IV.V (b): Temperature (*T/°C*) vs mass fraction of surfactant (γ) showing different phases in a microemulsion system involving *n*-Decyl β-D-maltoside (β–$C_{10}G_2$)/EAN/Decane. $\underline{2}$ corresponds to temperature showing lower two-phase (W/IL droplet μE) whereas $\overline{2}$ corresponds to temperature showing upper two-phase (IL/W droplet μE).

γ	$\underline{\mathbf{2}}$	$\overline{\mathbf{2}}$
0.10	36.4	36.6

0.20	36.0	37.2
0.30	35.8	37.4
0.35	36.0	37.3
0.40	36.8	37.2
0.45	37.6	36.4
0.50	38.2	36.0
0.56	38.4	35.8

Table IV.V (c): Temperature (*T/°C*) vs mass fraction of surfactant (γ) showing different phases in a microemulsion system involving *n*-Decyl β-D-maltoside (β–$C_{10}G_2$)/EAN/Dodecane. $\underline{2}$ corresponds to temperature showing lower two-phase (W/IL droplet μE) whereas $\overline{2}$ corresponds to temperature showing upper two-phase (IL/W droplet μE).

γ	$\underline{\mathbf{2}}$	$\overline{\mathbf{2}}$
0.10	36.4	36.6
0.20	36.0	37.0
0.30	35.8	37.4
0.35	35.9	37.6
0.40	36.0	37.4
0.45	36.6	37.2
0.50	37.2	36.8
0.56	37.4	36.0
0.60	37.6	35.4

0.66	38.0	35.0

Table IV.VI (a): Temperature (*T*/°*C*) vs mass fraction of surfactant (γ) showing different phases in a microemulsion system involving *n*-Dodecyl β-D-maltoside (β–$C_{12}G_2$)/EAN/Octane. $\underline{2}$ corresponds to temperature showing lower two-phase (W/IL droplet μE) whereas $\overline{2}$ corresponds to temperature showing upper two-phase (IL/W droplet μE).

γ	$\underline{\mathbf{2}}$	$\overline{\mathbf{2}}$	$\mathbf{L}_\alpha$	$\mathbf{L}_\alpha$
0.10	36.4	36.6		
0.16	36.0	37.0		
0.20	35.8	37.2		
0.25	36.2	37.0		
0.30	36.8	36.2	0.34	36.2
0.32	37.0	36.0	0.36	36.1
0.35	37.2	35.6	0.38	36.0
0.38	37.1	35.0		

Table IV.VI (b): Temperature (*T*/°*C*) vs mass fraction of surfactant (γ) showing different phases in a microemulsion system involving *n*-Dodecyl β-D-maltoside (β–$C_{12}G_2$)/EAN/Decane. $\underline{2}$ corresponds to temperature showing lower two-phase (W/IL droplet μE) whereas $\overline{2}$ corresponds to temperature showing upper two-phase (IL/W droplet μE).

γ	$\underline{\mathbf{2}}$	$\overline{\mathbf{2}}$
0.10	43.0	43.2

0.16	42.7	43.6
0.20	42.5	43.8
0.25	42.3	43.7
0.30	42.5	43.5
0.35	43.1	42.7
0.40	43.4	42.3
0.45	43.6	41.9

Table IV.VI (c): Temperature (*T*/°*C*) vs mass fraction of surfactant (γ) showing different phases in a microemulsion system involving *n*-Dodecyl β-D-maltoside (β–$C_{12}G_2$)/EAN/Dodecane. $\underline{2}$ corresponds to temperature showing lower two-phase (W/IL droplet μE) whereas $\overline{2}$ corresponds to temperature showing upper two-phase (IL/W droplet μE).

γ	$\underline{\mathbf{2}}$	$\overline{\mathbf{2}}$
0.10	42.6	43.0
0.20	41.8	43.8
0.30	41.6	44.2
0.35	42.0	44.4
0.40	42.4	44.0
0.45	43.4	42.8
0.50	43.8	42.4
0.56	44.2	42.2
0.60	44.6	41.8

Basic Data of Chapter V

Table V.I. I: Absorption spectra of Sudan Red Dye in hydrophobic ionic liquid/water microemulsion systems as a function of absorbance and surfactant concentration.

Wavelength(nm)	***Absorbance***
401.0	0.04
420.0	0.20
440.0	0.30
480.0	0.52
500.0	0.56
504.0	0.56
530.0	0.48
540.0	0.42
570.0	0.30
600.0	0.20
660.0	0.06
680.0	0.04

Table V.I. II: Absorbance vs mass fraction of surfactant (γ) data for studying the solubilization of hydrophobic Lysochrome Sudan Red G dye in a microemulsion system involving Triton X-100/ [Bmim][PF_6]/ Water.

γ	***Absorbance***
0.35	0.25

0.45	0.56
0.55	0.75
0.6	0.97
0.65	1.39
0.7	1.67
0.75	1.83

Table V.I III: Absorbance vs mass fraction of surfactant (γ) data for studying the solubilization of hydrophobic Lysochrome Sudan Red G dye in a microemulsion system involving PLANTACARE®810–UP/ [Bmim][PF_6]/ Water.

γ	***Absorbance***
0.35	0.17
0.45	0.47
0.55	0.83
0.60	1.05
0.65	1.35
0.70	1.68
0.75	2.30
0.80	2.74
0.90	3.59
0.95	3.89

Table V. II. I: Absorption spectra of aqueous phases after cobalt ions recovery with potassium thiocyanate for PLANTACARE®810–UP/EtOAc/[$Co(SCN)_2^-$]/H_2O microemulsion systems.

Wavelength (nm)	*Absorbance*
405.0	0.09
460.0	0.03
510.0	0.05
550.0	0.31
600.0	0.53
622.0	0.56
640.0	0.54
650.0	0.42
660.0	0.30
675.0	0.20
682.0	0.13
700.0	0.03

Table V. II. II: Absorption spectra of aqueous phases after cobalt ions recovery with potassium thiocyanate for PLANTACARE®810–UP/EtOAc/[Ni $(SCN)_2^-$]/H_2O microemulsion systems.

Wavelength (nm)	*Absorbance*
420.0	0.04
450.0	0.05
503.0	0.15

542.0	0.32
568.0	0.48
577.0	0.55
611.0	0.53
636.0	0.31
654.0	0.20
662.0	0.10
680.0	0.06
700.0	0.04

Table V. II. III: Temperature (*T/°C*) vs mass fraction of surfactant (γ) showing different phases in a microemulsion system involving PLANTACARE®810–UP/EtOAc/ H_2O. $\underline{2}$ corresponds to temperature showing lower two-phase (W/IL droplet μE) whereas $\overline{2}$ corresponds to temperature showing upper two-phase (IL/W droplet μE).

γ	$\underline{\mathbf{2}}$	$\overline{\mathbf{2}}$
0.10	38.5	39.0
0.20	37.4	41.4
0.26	36.5	42.6
0.31	35.8	43.6
0.35	35.8	43.4
0.40	36.2	43.0

0.46	38.2	41.8
0.50	41.4	39.0
0.60	44.5	37.2
0.66	45.8	36.0
0.70	46.4	35.5

Table V. II. IV: Absorbance vs concentrations of potassium thiocyanate (KSCN) (mol/L) after the extraction of 0.05 mol/L cobalt nitrate [Co $(NO_3)_2 \cdot 6H_2O$] in a microemulsion system involving PLANTACARE® 810 – UP/ EtOAc/ Co $(SCN)_2^-$/ H_2O. (λ_{max} = 622 nm)

Concentration of KSCN (mol/L) in aqueous phase after extraction of Cobalt	***Absorbance***
0.10	0.83
0.50	0.80
1.00	0.75
1.50	0.70
2.00	0.66
4.00	0.43
6.22	0.22
8.09	0.12
10.00	0.08

Table V. II. V: Absorbance vs concentrations of potassium thiocyanate (KSCN) (mol/L) after the extraction of 0.05 mol/L nickel nitrate [Ni $(NO_3)_2 \cdot 6H_2O$] in a microemulsion system involving PLANTACARE® 810 – UP/ EtOAc/ Ni $(SCN)_2^-$/ H_2O. (λ_{max} = 593 nm)

Concentration of KSCN (mol/L) in aqueous phase after extraction of Nickel	***Absorbance***
0.10	0.33
0.50	0.27
1.00	0.21
1.29	0.18
1.58	0.15
2.60	0.06
5.00	0.01
10.00	0.00

Table V. II. VI: Absorbance vs concentration of cobalt ions (Co^{2+}) (mol/L) in aqueous phase treated with 0.01 mol/L potassium thiocyanate (KSCN) after recovery of different cobalt nitrate [$Co(NO_3)_2 \cdot 6H_2O$] concentration using 4 mol/L potassium thiocyanate (KSCN) in a microemulsion system involving PLANTACARE® 810 – UP / EtOAc/ $Co(SCN)_2^-/H_2O$. (λ_{max} = 622 nm)

Concentration of Co^{2+} (mol/L) in aqueous phase after extraction	***Absorbance***
0.05	0.30
0.08	1.08
0.10	1.42

0.13	1.68
0.15	1.91

Table V. II. VII: Absorbance vs concentration of nickel ions (Ni^{2+}) (mol/L) in aqueous phase treated with 0.01 mol/L potassium thiocyanate (KSCN) after recovery of different nickel nitrate [$Ni(NO_3)_2{\cdot}6H_2O$] concentration using 4.0 mol/L potassium thiocyanate (KSCN) in a microemulsion system involving PLANTACARE®810–UP/EtOAc/$Ni(SCN)_2^-$/H_2O. (λ_{max} = 593 nm)

Concentration of Ni^{2+}(mol/L) in aqueous phase after extraction	***Absorbance***
0.05	0.16
0.08	0.34
0.10	0.60
0.13	0.88
0.15	1.07