



Table of Contents

1	Introduction	1
1.1	Motivation and Objectives	5
2	Fundamentals	9
2.1	The <i>Soret</i> effect	9
2.2	The Amphiphilic Film and Interfacial Curvature	15
2.3	The Binary System Water – Non-Ionic Surfactant	19
2.3.1	Pseudobinary Systems: Ionic Cosurfactant and Salt	23
2.4	Non-Ionic Microemulsions	24
2.4.1	Phase Behavior	24
2.4.2	Sections through the Phase Prism	28
2.4.3	Structural Evolution in Non-Ionic Microemulsions	33
2.4.4	Oil-in-Water Microemulsions	34
2.5	Neutron Scattering	39
2.5.1	The SANS Experiment	40
2.5.2	Raw Data Treatment	41
2.5.3	Scattering Theory	42
2.5.4	Scattering Models	43
3	Experimental and Methods	51
3.1	Dynamic Light Scattering (DLS)	51
3.2	Thermal Diffusion Forced <i>Rayleigh</i> Scattering (TDFRS)	53
4	Binary System H₂O – C₁₂E₆	57
4.1	Motivation and Objectives	57
4.2	Samples and Experimental	61
4.3	Results	63
4.3.1	Phase Behavior	63
4.3.2	SANS Measurements	68
4.4	Discussion and Conclusion	87
5	Binary System H₂O – C₁G_j: <i>Soret</i> Effect at the Critical Micelle Concentration	93
5.1	Motivation and Objectives	93
5.2	Experimental	94



5.3	Results	95
5.4	Discussion and Conclusion	103
6	Ternary System H₂O – C₁₂E₅ – <i>n</i>-alkane: Microemulsion Droplets	109
6.1	Motivation and Objectives	109
6.2	Samples and Experimental	111
6.3	Results	115
6.3.1	Phase Behavior	115
6.3.2	Dynamic Light Scattering (DLS) Measurements	120
6.3.3	Small Angle Neutron Scattering (SANS) Measurements	139
6.3.4	Interfacial Tension	149
6.4	Discussion and Conclusion	160
7	Summary and Conclusion	165
8	Appendix	171
8.1	Materials	172
8.2	Binary System: Water – C ₁₂ E ₆	173
8.3	Binary System H ₂ O – C _i G _j ; <i>Soret</i> Effect at the Critical Micelle Concentration	174
8.4	Ternary System: Microemulsions	178
8.5	Symbols and Abbreviations	181
9	Literature and Notes	187