CHAPTER 2

PROPOSED SYSTEMS
&
PLANNING OF WORK
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PROPOSED SYSTEMS AND PLANNING OF WORK

The hydrophilic and hydrophobic interaction of surfactants, and dispersants undergoing in their solution system will be studied as the function of their concentrations in their solutions. The hydrophobicity of the non-polar part of the surfactant is to be intended to bring about a new molecular orientations affecting their phase formations and phase disappearance in the system. The attracting thermodynamic functions of the systems such as interfacial tensions, heat capacity and solubility may considerably affect the wetting nature and tendency of surfactants in their aqueous solutions.

The components wetting in the tenary system will be undertaken as the major part of our study. The characteristic tie lines and plait points of binary system will be considered as the reference parameters with respect to which the interactions will be interpreted.

The hydrophilic part of the surfactants is to be seen so as to enhance or inhibit the hydrogen bonded water network in their solutions.

In the present work we shall also study the thermodynamic parameters and the effect of changes in geometric structure of surfactant of aromatic hydrocarbon – H$_2$O inter-facial tension (I.F.T.) of following Binary and ternary systems.

**Binary Systems**

1. Benzene + H$_2$O system
2. Toluene + H$_2$O system
3. Xylene + H$_2$O system
4. NaCl + H$_2$O system
5. NaH$_2$PO$_4$ + H$_2$O system
6. Na$_2$HPO$_4$ + H$_2$O system
7. CaCl₂ + H₂O system

**TERNARY SYSTEMS**

1. Benzene + H₂O + CPC (Cetyl Pyridinium Chloride)
2. Benzene + H₂O + CPB (Cetyl Pyridinium Bromide)
3. Benzene + H₂O + CPI (Cetyl Pyridinium Iodide)
4. Toluene + H₂O + CPC
5. Toluene + H₂O + CPB
6. Toluene + H₂O + CPI
7. Xylene + H₂O + CPC
8. Xylene + H₂O + CPB
9. Xylene + H₂O + CPI
10. (a) NaCl + H₂O + CTAB 0.02M (Cetyl Tetra Ammonium Bromide)
    (b) NaCl + H₂O + CTAB 0.04 M
    (c) NaCl + H₂O + CTAB 0.06 M
11. (a) NaH₂PO₄ + H₂O + CTAB 0.02M
    (b) NaH₂PO₄ + H₂O + CTAB 0.04 M
    (c) NaH₂PO₄ + H₂O + CTAB 0.06 M
12. (a) Na₂HPO₄ + H₂O + CTAB 0.02M
    (b) Na₂HPO₄ + H₂O + CTAB 0.04 M
    (c) Na₂HPO₄ + H₂O + CTAB 0.06 M
13. (a) CaCl₂ + H₂O + CTAB 0.02M
    (b) CaCl₂ + H₂O + CTAB 0.04 M
    (c) CaCl₂ + H₂O + CTAB 0.06 M