Normal micellar value determination in singular and mixed surfactant system employing fluorescence technique

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Abstrak

Studies on the determination of Critical Micelle Concentration (CMC), of mixed surfactants were carried out at 30°C for hexadecyltrimethylammonium bromide (HTAB) and polyoxyethylene sorbitan monolaurate (Tween 20), hexanol and water. From the phase diagram, a composition of 0.2 to 1.0 fraction of water is the best area for normal micelle region for HTAB and 0.3 to 1.0 fraction of water for Tween 20 with curving upward the 1-hexanol apex maximum solubility of 1-hexanol. From the fluorescence method, the CMC value for pure T20 and HTAB were 1.6293×10-3 M and 2.7439×10-3 M respectively. While for CMC1 and CMC11 value for mixed surfactant system at mole ratio 0.2: 0.8 (T20: HTAB) were CMC1: 2.358×10-3 M and CMC11: 7.0741×10-3 M. These finding were observed upon the theoretical values, which indicate the synergistic behavior between both surfactants.