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# The phase behavior and solubilization of isopropyl myristate in microemulsions containing cetyltrimethyl ammonium bromide and sodium dodecyl sulfate

Y. Zhang, X.Y. Zhang, J.L. Chai\*, X.C. Cui, J. Pan, J.W. Song, B. Sun, J.J. Lu

*College of Chemistry, Chemical Engineering and Materials Science, Collaborative Innovation Center of Functionalized Probes for Chemical Imaging in Universities of Shandong, Shandong Normal University, Jinan 250014, PR China*

## ABSTRACT

The phase behavior and solubilization of isopropyl myristate in microemulsions containing CTAB-SDS/IPM/butan-1-ol/aqueous NaCl ( $w = 0.05$ ) with different  $X_{\text{SDS}}$  values (**the molar fraction of SDS in CTAB and SDS mixture**) were studied using the  $\varepsilon$ - $\beta$  diagram method. The microemulsion systems containing mixed CTAB-SDS surfactants have lower alcohol solubility ( $S_A$ ) and lower mass fraction of the alcohol in the interfacial layer ( $A^S$ ), but higher solubilization ability ( $SP^*$ ) compared to the microemulsions containing single surfactant SDS and CTAB. At different oil-to-water ratios ( $\alpha$ ), CTAB and SDS in microemulsions display significant synergistic effect, and the order of magnitude for  $SP^*$  values is CTAB-SDS > CTAB ~ SDS. As the value of  $\alpha$  increases, the order of magnitude for  $S_A$  and  $A^S$  values for different microemulsions can be ranked as: CTAB-SDS < CTAB < SDS. However, the  $SP^*$  value of the SDS-based microemulsions would decrease, the  $SP^*$  value of the CTAB-based microemulsions would increase, and the  $SP^*$  value of the CTAB-SDS-based microemulsions would increase at first, and remain constant

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\* Corresponding author.

E-mail address: jlchai@sdu.edu.cn(J.L. Chai)

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