

# **INTERFACIAL INTERACTION OF THE SUCCINIC SURFACTANTS WITH DIFFERENT HEAD GROUPS IN HIGHLY CONCENTRATED W/O EMULSIONS. EFFECT ON RHEOLOGICAL PROPERTIES**

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The interfacial properties of three succinic surfactants (PIBSA) with different hydrophilic end groups and sorbitan monooleate (SMO) in water-in-oil emulsions of the liquid explosive type were studied. The aqueous phase contained 40% of ammonium nitrate (AN). The trend in equilibrium interfacial tension was found to be PIBSA-MEA > PIBSA-UREA > PIBSA-MEA/SMO mixture > PIBSA-IMIDE > SMO, where MEA, UREA, IMIDE are amid/amide, urethane and imide end groups, respectively. The same trend was observed for the interfacial elastic modulus. The FT-IR study revealed interactions between surfactant head groups and an AN solution. The interactions depend on the polarity of head groups determined by their chemical structure. The packing efficiency of the surfactants under study is also influenced by the chemical structure of head groups. Attempts to model the conformation of the surfactants at the interface were made. The investigation of mixed interfacial cover (PIBSA-MEA/SMO) showed that SMO remained at the interface reducing the interfacial tension at the W/O interface. It was also demonstrated that variation of the nature of head groups influences the rheological properties of emulsions. Bulk elasticity and yielding do not correlate with interfacial tension and elasticity. The explanation can be suggested from different type of surfactant characteristics and interactions.