

EFFECT OF RHAMNOLIPIDS BIOSURFACTANT ON TRADITIONAL SURFACTANTS: A MACRO- AND MICRORHEOLOGICAL STUDY

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The global surfactant market is expected to reach \$44.9 billion by 2022, of which 67% of the demand is from the personal care and detergents market [1]. Due to consumers' increasing awareness on product sustainability, the microbially produced biosurfactants are increasingly gaining the interest of the personal care industry as potential alternatives for traditional petroleum derived and chemically synthesized surfactants [2]. The future of personal care and detergent products is the elimination of non-biodegradable, environmentally toxic surfactants. However, prior to that, an understanding of how performance criteria such as rheology is affected by substitution of traditional surfactants with biosurfactants is required. In this study, the affect of rhamnolipid biosurfactant on the rheological response of traditional surfactants such as sodium laureth sulfate and cocamidopropyl betaine is explored utilizing mechanical rheometry, microrheometry, microfluidic rheometry and Raman spectroscopy. The study provides unique insights into microstructure-rheology linkages in complex biosurfactant-surfactant mixtures.

Reference

[1] News & Views - Market Reports: Global Markets for Surfactant Chemicals and Materials. Chemical Industry Digest. 2018. ISSN: 0971-5266.

[2] Fakruddin Md (2012) Biosurfactant: Production and Application. J Pet Environ Biotechnol 3:124.
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