Characterization of Non-Ionic Surfactants by Chromatographic and Spectroscopic Methods

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Abstract

Non-ionic surfactants make up a significant portion of total surfactant production worldwide. While these materials find broad applications in many industries, they are particularly important to Quaker across several product lines in terms of their surface chemistry, emulsification, and detergent properties. With the ability of the formulator to discern structure-activity relationships key to understanding surfactant behavior, it is clear that precise characterization of these materials is beneficial. Classic wet methods and modern analytical techniques provide several ways with which to accomplish this; most often a combined approach is required to get a complete chemical picture.

This presentation will review basic non-ionic surfactant chemistry, and cover all relevant analytical techniques, including spectroscopic (FT-IR, FT-NMR, MS), chromatographic (GC, HPLC, GPC), and synthetic wet methods (HI ether cleavage/extraction, base hydrolysis/extraction). Multi-step analytical approaches to characterization will be discussed, along with several practical applications and real-world examples of non-ionic surfactant analysis.