The surface tension when developing and optimising surfactants and surfactant-containing products

Product:	SITA science line t100, SITA pro line t15+
Industry:	Surfactant chemistry
Measuring principle:	Measuring the dynamic surface tension

Surfactants are used in many industrial sectors to improve product performance. Consequently, the behavior of those surface active agents has to be examined and analysed for good performance. The main feature of surfactants is their surface activity, which means that surfactants diffuse to and adsorb onto newly developed surfaces, influencing their surface tension. Due to the fact that the surface tension depends on the surfactant's concentration, the surfactant's concentration can analysed by measuring the surface tension.

The temperature of a liquid has an influence on the surface tension as well. Therefore, it is essential for many applications to know how fast those attachment processes of the surfactants are and how fast it is possible to reduce the surface tension within a short time. In addition, the measurement of the surface tension allows an analysis of the critical micelle concentration (CMC) of a surfactant or surfactant mixture.

Figure 1: Laboratory tensiometer SITA science line t100

● Dynamic surface tension

Mobile tensiometers can measure the dynamic surface tension of liquids very easy and reliable from a dynamic until a quasi-static range. The temperature influencing the surface tension is recorded as well. Automated scans characterise and compare the surfactant dynamics and the surface-active behaviour of the surfactants. During a continuous measurement, dependencies on temperature or the concentration of surfactants or other substances can also be analysed.

Supported by software, the concentration dependency can be determined automatically. The data obtained can then be used to easily develop concentration profiles in order to monitor process solutions with limit values.
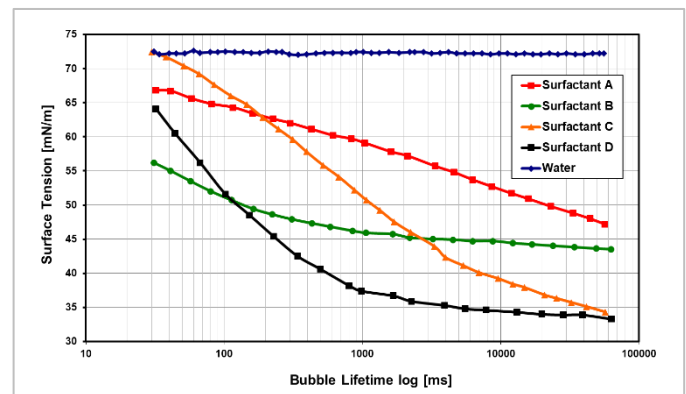

Figure 2: Measurement of different surfactant samples