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DROP/BUBBLE PROFILE ANALYSIS TENSIOMETER: APPLICATION IN THE STUDY OF EMULSION AND FOAMS

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Interfacial properties corresponding to liquid interfaces and their modifications play an important role in many modern technologies. Most prominent examples are all the processes involved in the formation of foams and emulsions, as they are based on the rapid creation of new surfaces that are permanently subject to all types of deformation. This clearly implies the need for quantitative knowledge about the relevant dynamic interfacial properties and their changes under conditions pertinent to technological processes. In characterizing liquid interfaces, single drops or bubbles are often used to characterize liquid-liquid and liquid-gas interfaces. Its advantage is the small volume and the different training protocols. Drop and bubble profile analysis tensiometry (PAT) is currently the most frequently used tool for measuring dynamic surface and interfacial tensions of liquid interfaces. The principle of this methodology is based on the analysis of the shape of the drop or bubble, which is determined by two forces that act in opposite directions: the surface/interfacial tension that tends to make a drop or bubble spherical, and gravity that tends to elongate it. there. While dynamic surface and interfacial tension methods provide information over a wide time range, covering the range of milliseconds to many hours of interfacial film aging, dilatational rheology methods provide insights into the swelling and compression processes over different frequency ranges.The Dorp Bubble Micro Manipulator (DBMM), an extension of PAT, allows a quantitative analysis of the interaction between two drops or two bubbles, and provides information about the coalescence processes. In summary, a comprehensive understanding of interfacial phenomena is essential for significant advances in technologies that depend on these phenomena, highlighting the importance of using tools such as PAT tensiometry and DBMM.

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