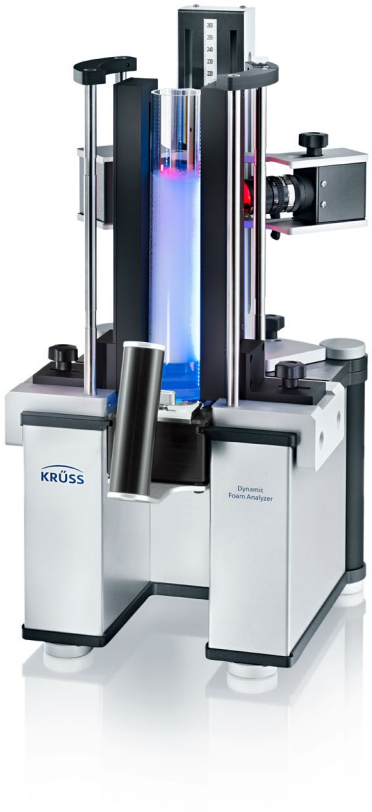
Dynamic Foam Analyzer

DFA100FSM



Time-dependent analysis of bubble size in liquid foams

The Foam Structure Module – FSM of DFA100 reliably analyzes the size distribution of bubbles of liquid foam and the variation of this distribution with respect to time. The measuring method helps you to quantify and specifically optimize the consistency of a foam based on precise and intelligent video image analysis.

Tasks and applications

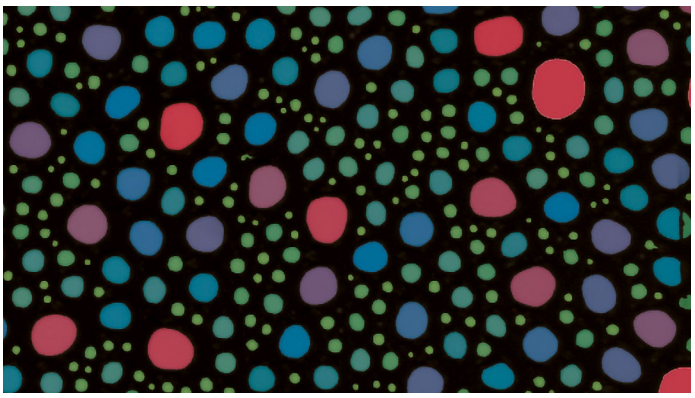
- Foams for washing and cleaning
- Foams in foodstuffs and personal care products
- Surfactant development
- Flotation as a method for separating solids

Measuring methods and options

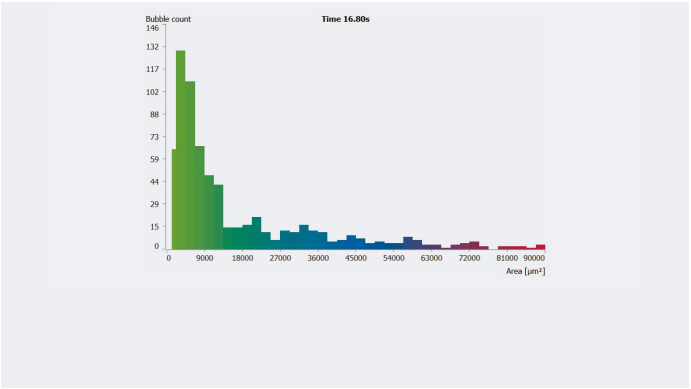
- Live analysis of foam structure
- Foam structure analysis at any position of column
- Measurement of bubble size distribution and the change in this distribution in different resolution ranges
- Calculation of mean bubble size and standard deviation
- Output of a histogram for each individual image in the series of measurements
- Simultaneous measurement of foam height and liquid content possible

Precise investigation of bubble size and quantity

It depends on the particular product whether foam with large or small bubbles is desired. Homogeneity is also important as an indirect measurement of long-term stability or for the sensory perception of foam. With the FSM, you can express these foam properties in solid numbers. To enable different types of foam to be investigated with the same precision, the resolution of the optical system can be easily adapted to small or large pore sizes.



Foam structure analysis



Bubble size distribution histogram

Revealing time-dependent changes in structure

Before foam collapses, its structure starts to change, i.e. large bubbles are formed and smaller ones disappear. Thanks to versatile timing options, this process is accurately recorded and analyzed. The results help to specifically optimize the liquid in order to obtain stable or rapidly decaying foam depending on the requirements. Moreover, foam height measurements and even liquid content detections can be carried out within the same experiment to obtain a comprehensive picture of foam behavior.

Specifications

Illumination	
Type	LED
Wave length, dominant	633 nm
Camera system	
Connection	USB 3.0
Performance	2 fps at 1280 × 1024 px
Diameter of minimum detectable bubble	50 µm
Mean field of view size	position 1: 285 mm^2 position 2: 140 mm^2 position 3: 85 mm^2
Focus	manual

Analyzed characteristics	**foam structure: homogeneity, stability, and aging**
Results	■ mean bubble area ■ bubble count per mm^2 ■ standard deviation and mean bubble area ■ bubble size distribution ■ bubble count half life ■ Sauter mean radius ■ initial foam structure ■ final foam structure