

Detergent Foam Stability Analysis

Objective

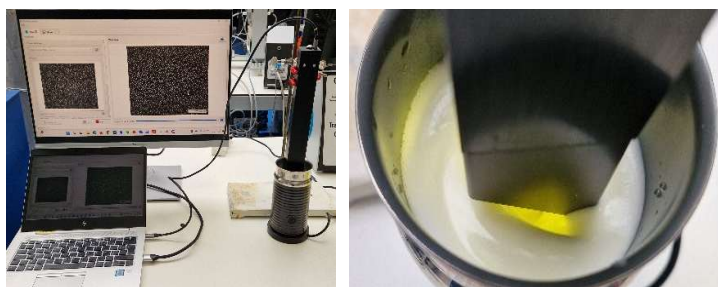
Characterize the evolution and stability of a detergent foam after its formation, directly under real-use conditions.

Measurement

FOAMSCOPE™ is immersed directly into the foam during stirring, allowing its structure and evolution to be monitored continuously without sampling or interrupting the process.

The foam is generated by stirring.

Sample	Dishwashing liquid (20%)
Camera settings	Exposure: 4.30ms - Gain: 0dB
Capture settings	Frequency: 0,1fps - Time: 1800sec



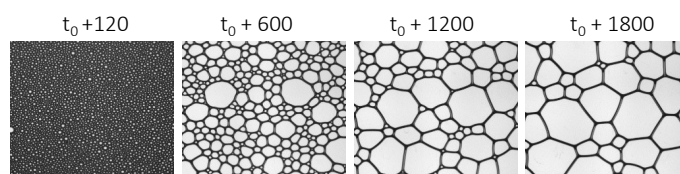
Key analysis parameters

FOAMSCOPE metric	Information provided
Bubble count	Evolution of the bubble population and disappearance of small bubbles
D32 Sauter Diameter	Characteristic bubble size, with increased sensitivity to larger bubbles and foam coarsening.
Polydispersity Index (PDI)	Homogeneity and evolution of the bubble size distribution
Liquid fraction	Evolution of the liquid content within the foam

Combining liquid fraction, bubble count, D32 and PDI provides a quantitative description of detergent foam stability and structural evolution over time.

Note: this sheet is designed as an application illustration, not as a scientific validation study.

Foam structure images capture



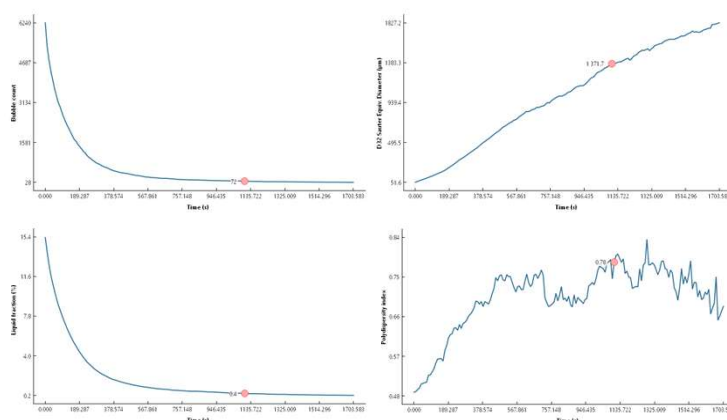
$t_0 + 120$ s — Initial structure → Dense population of small bubbles with a broad size distribution.

$t_0 + 600$ s — Coarsening → Small bubbles disappear while larger bubbles grow.

$t_0 + 1200$ s — Advanced coarsening → Bubble population decreases significantly while characteristic bubble size increases.

$t_0 + 1800$ s — Mature foam structure → Few large bubbles remain, revealing substantial evolution of the initial foam structure.

Foam structure analysis



Bubble Count ↓

Rapid decrease followed by a plateau, indicating progressive disappearance of small bubbles and stabilization of the remaining population.

D32 ↑

Continuous increase in characteristic bubble size, consistent with progressive foam coarsening.

Liquid Fraction ↓

Rapid initial decrease followed by stabilization, consistent with progressive liquid drainage.

PDI — evolution / fluctuations

Fluctuations reflect changes in bubble size heterogeneity as the foam structure evolves.

Bubble Count ↓ + D32 ↑ + Liquid Fraction ↓ + PDI fluctuations → Progressive transformation from a fine, liquid-containing foam toward a coarser structure dominated by fewer, larger bubbles.