Introduction

Milk is the base of the dairy industry, source of various food products like butter and cheese. Insoluble in water, fat forms an emulsion and appears in the form of a multitude of spheric droplets.

CILAS Particle Size Analyzer is perfectly appropriated to measure these fat drops scattered in milk.

Milk from farms is transformed and homogenized before sale.

The particle size analysis is an important factor during process to assure a standardized product at the end.

The analysis of the dairy emulsion

One of the biggest dairy group uses in its R&D laboratory, a particle-size analyser CILAS 1064 L. It guarantees the process reliability, thanks to quick and accurate analysis.

Cream is separated from milk in a centrifuge, then cream is mixed with milk again to reach different fat percentage rates (figure 1).

Homogenization at high pressure

Homogenization is a key step in the commercial milk preparation by reducing the fat corpuscle size (< 1 µm) and achieving very thin and stable emulsions (figure 2 and 3).

The fat corpuscles size present in milk is important to define characteristics like flavour liberation, texture and emulsion stability.

Figure 1: Particle Size Analysis in the Homogenization Process
The particle size analysis in process allows to visualize the milk and cream separation to achieve a standard products in final stage. CILAS Particle Size Analyzers present advantages in emulsion characterization:

- **Practical** and **easy** to use with an intuitive graphical software,
- **Fast measurement** fully automated within less than 30 seconds,
- **Accurate and reproducible** measurements in accordance with the **ISO 13320 standard**,
- **Excellent reliability** thanks to its static optical bench,
- **Cost effective** with only few consumable thanks to its peristaltic pumps,
- **Compact** with the **smallest footprint** of the market (80 cm length),
- **Flexible** with the « 2 in 1 » concept allowing you to perform liquid and dry measurement with the same instrument without any modification or realignment.