

Cake Bubble Analysis Image Analysis Report 398

Sample Description

One image (JPG) of cake bubbles was submitted for analysis. No calibration tools were available with the image.

Purpose of Analysis

Demonstrate the ability of the Clemex Vision image analyzer to detect all bubbles separately and to measure their size (Diameter, Perimeter, Area).

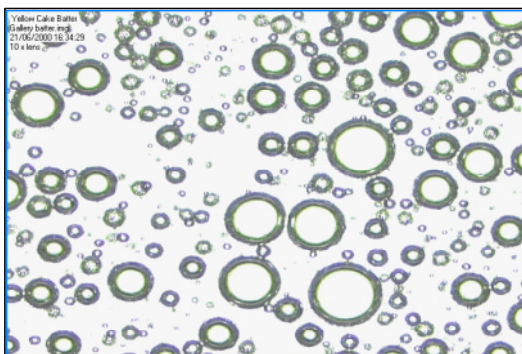


Figure 1: Original image. Calibration factor used = 1 $\mu\text{m}/\text{pixel}$.

Procedure

The binarization was performed in 3 steps to obtain as much information as possible from the original image. Connected objects were separated using binary tools. Bubbles sectioned by the frame of view were eliminated. Non-spherical objects were then isolated and processed further to bring them back to their original shape. All objects were grouped in the red bitplane and measured.

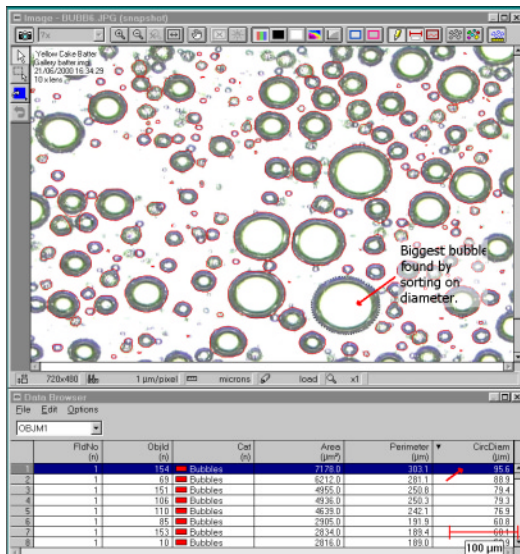


Figure 2: Final measured bubbles linked to their respective data.

Results Summary

Results were cumulated for automated statistics and graph generation. Final results can be printed directly from Clemex Vision. Raw data are linked to their respective object and can be exported in Excel format. Please note that 1 micron = 1 pixel in this particular case since no scale line was available to calibrate the JPEG image.

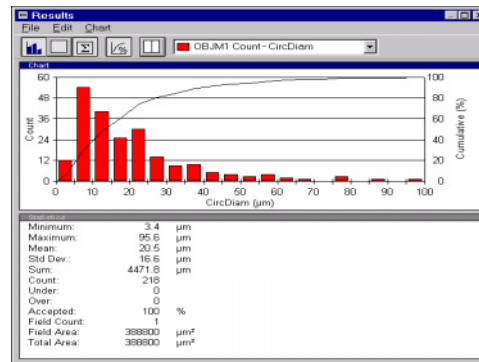


Figure 3: Cumulative graph and statistics showing the diameter distribution.

It was possible to separate and measure most of the bubbles. Most of the smallest bubbles could also be detected and measured. However, the use of a higher resolution camera is recommended to increase the resolution of the small bubbles. Objects represented by only a few pixels do not produce reliable results.

Equipment

Image Analysis

System: Clemex Vision PE
Usable Image Size: 720 x 480 pixels
Objective: 10x (magnification unknown)