

Polystyrene Microsphere Characterization Image Analysis Report 165

Sample Description

Bottle of polymer (polystyrene and polystyrene divinylbenzene) in water.

Purpose of Analysis

Demonstrate the ability of the Clemex image analyzer to delineate and measure the size of particles, and to eliminate touching particles. Evaluate the ability of the image analyzer to measure a range of particle sizes in one field (i.e. 5-20 μm sample)

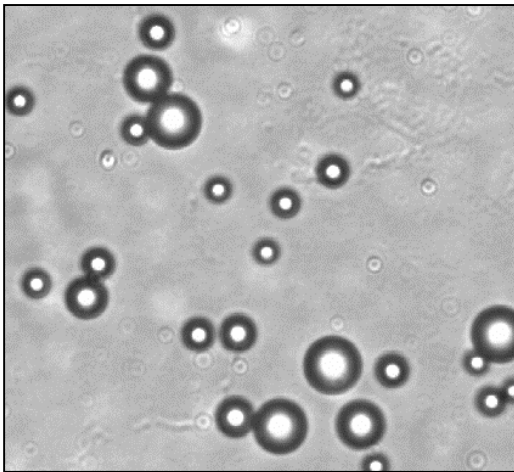


Figure 1: Original image (400X).

Procedure

Undesired objects were removed from the original detection using binary operations (*Circular Closing and Opening, Object Transfer by Limits, Dilate, Transfer by contact*).

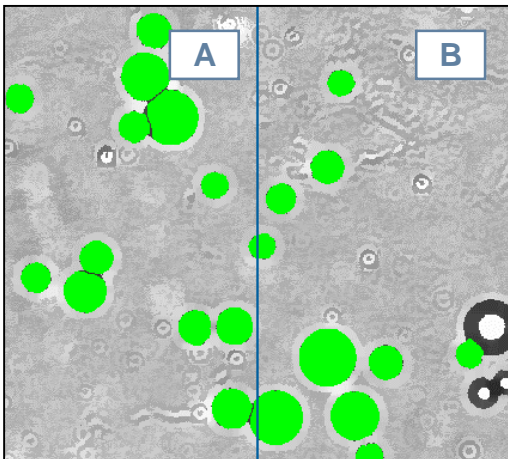


Figure 2: a) Objects are disconnected after processing b) Microspheres that were not sufficiently round were removed by and Object Transfer by Limits operation.

Procedure (continued)

Overlapping objects were isolated and separated using the central part of the spheres as the kernel.

Results Summary

	Feret Av. (μm)	Inner Dia. (μm)	Outer Dia. (μm)	Circular Dia. (μm)	Mean Dia. (μm)
Minimum	3.8	3.2	4.3	3.7	3.8
Maximum	22.5	22.0	22.8	22.3	22.4
Average	11.7	11.0	12.2	11.6	11.6
Standard Deviation	3.2	3.1	3.2	3.2	3.2

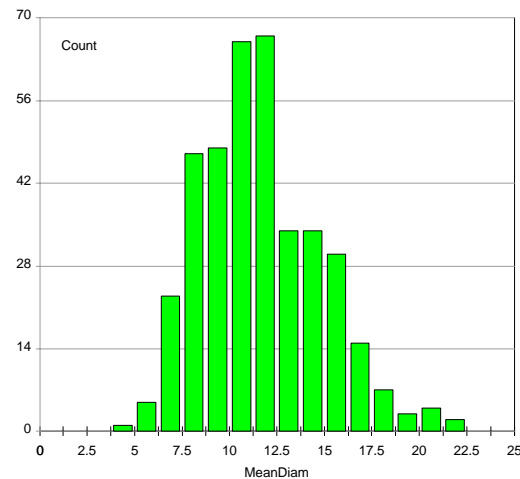


Figure 3: Mean diameter distribution of the remaining microspheres.

Equipment

Image Analysis

System: Clemex Vision PE
Camera: Xillix MI 1400, Sony XC 77CE, B/W
Microscope: Nikon Epiphot-2 (5.0, 10, 20, 40X) with transmitted light
Stage: Motorized Marzhauser EK8B-S1 (100 x 75 mm) with auto focus drive