

Particle Sizing Analysis

Image Analysis Report # 525

Sample Description

One prepared sample of red ink showing particles was submitted for analysis.

Purpose of Analysis

Demonstrate that the Clemex Vision image analysis system can distinguish the particles and perform size measurements.

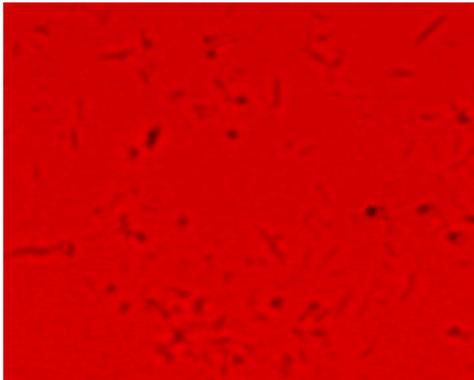


Figure 1: Part of the original image (0.25 microns/pixel).

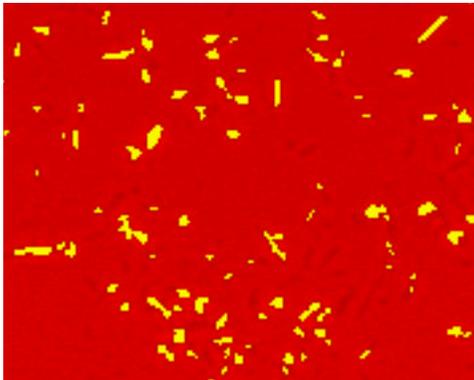


Figure 2: Particles as measured in yellow bitplane.

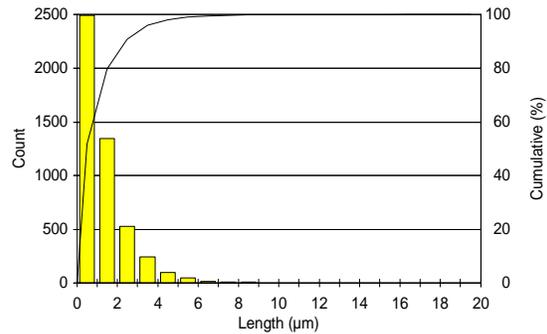
Procedure

Fibers were binarized in blue using Gray Threshold. A Top Hat on black is applied to highlight very thin particles. A second binarization (yellow) is done on this modified image. Both bitplanes are combined to obtain a complete detection. A small cleaning is done to eliminate features that are not significant (1pixel) prior to measurements.

Results

Length and area percent measurements are performed on each

feature. Automated statistics and graph are generated and cumulated over all the specified fields (field template). Final results can be printed directly from Clemex Vision. Raw data are linked to their respective objects for validation purpose. Raw data can also be exported in Excel format.



Minimum:	0.50	microns
Maximum:	16.20	microns
Mean:	1.38	microns
Std Dev.:	1.20	microns
Field Count:	64	
Total Area:	1 562 574.25	microns ²

Figure 3: Particles' Length distribution and corresponding statistics.

Equipment

Image Analysis System:	Clemex Vision PE
Microscope:	Leica DM LM
Objective/Magnification:	50x / 500x
Illumination:	Transmitted Light
Calibration:	0.2524544 microns/pixel
Camera:	Sony DXC 950P
Motorized Stage:	Marzhauser EK32IM 75x50mm
Stage Controller:	Clemex ST-2000

Discussion

The main difficulty of this analysis was to detect as many fibers as possible. The problem was easily overcome using a Top Hat gray filter and two binarization steps. Also, using the linear focus along with a few cycles of multi layer grab help to see the particles at 500x.

A Guard Frame was used to avoid measuring features sectioned by the field of view.

We recommend validating the final detected particles using the Mapping view tool.

Results are reproducible.