

CLEMEX
intelligent microscopy

664b

Particle Size Analysis



Prepared by
Clemex Technologies Inc.

CLEMEX

intelligent microscopy

Results

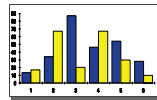


Image Analysis Report # 664 b

Samples submitted: 4 bags (samples) containing small Carbon Fibers,			
=>	Sample 1	<=	Currently analyzed sample.
	Sample 2		
	Sample 3		
	Sample 4		

Purpose of analysis: Determine length distribution in a reliable procedure

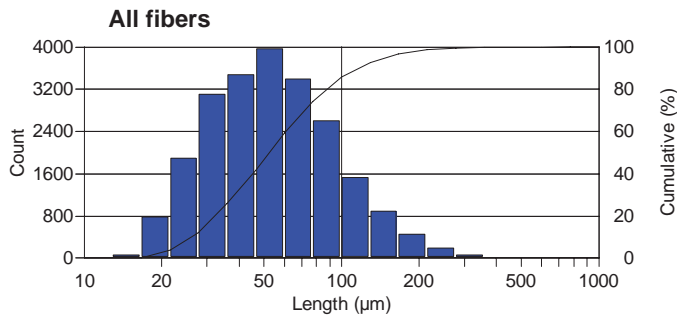
Procedure: The powder was spreaded on four microscope slides so that statistical variations would be minimized. Slightly connected particles were separated and remaining groups were eliminated. Particles smaller than 15 microns were also eliminated.

Analysis parameters:	Magnification used:	50X	Calibration Factor:	1.3269 mic/pixel
	Camera used:	Clemex L 2.0C	Stage:	215x75 mm Motorized
	Microscope:	DM 6000 M	Number of fields/slide:	144 (8 x 18)
	Number of slides / sample:	4	Total area (4 slides):	1.7E+09 mic ²
	Clemex Software used	PS3	Total fibers count:	22452

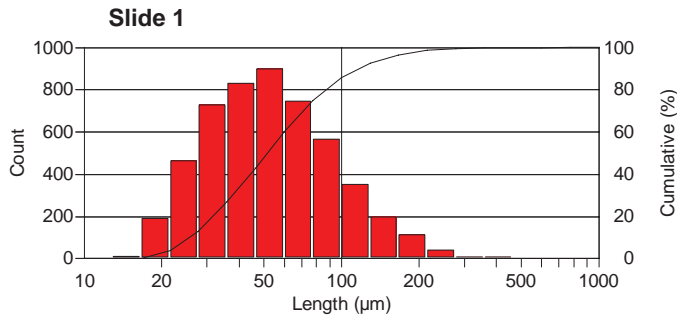


Longest fiber found in current sample.
Only the particles appearing in blue were measured.

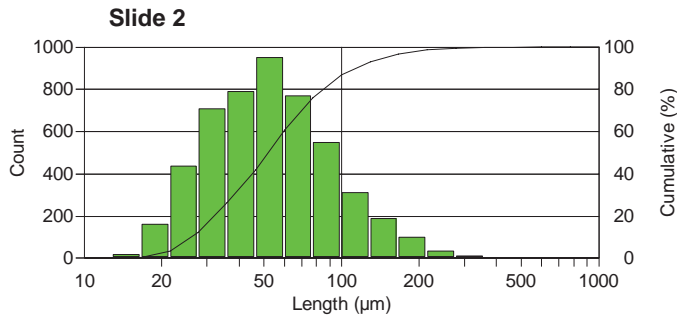
Sample 1



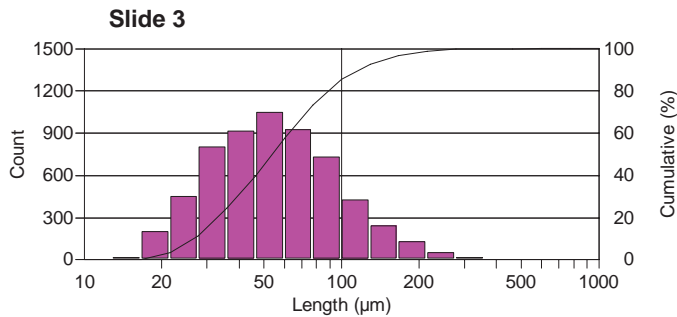
Minimum: 15.92 μm
 Maximum: 701.76 μm
 Mean: **63.79** μm
 Std Dev.: 42.94 μm
 Count: 22452
 D10: 26.17 μm
 D50: 52.24 μm
 D90: 114.19 μm



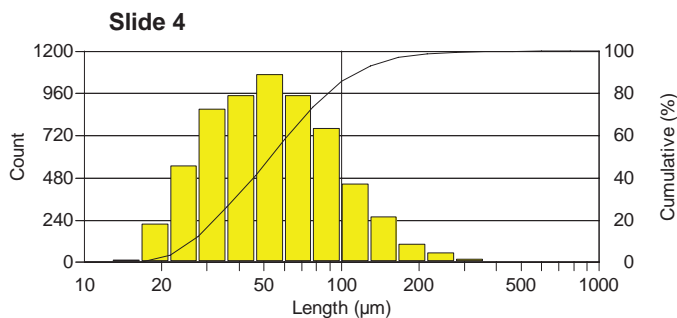
Minimum: 15.92 μm
 Maximum: 701.76 μm
 Mean: **63.31** μm
 Std Dev.: 44.18 μm
 Count: 5170
 D10: 25.83 μm
 D50: 51.17 μm
 D90: 114.78 μm



Minimum: 15.92 μm
 Maximum: 505.05 μm
 Mean: **62.85** μm
 Std Dev.: 42.60 μm
 Count: 5043
 D10: 26.00 μm
 D50: 51.19 μm
 D90: 112.35 μm



Minimum: 15.92 μm
 Maximum: 482.49 μm
 Mean: **64.78** μm
 Std Dev.: 41.96 μm
 Count: 5967
 D10: 26.83 μm
 D50: 53.56 μm
 D90: 115.68 μm



Minimum: 16.09 μm
 Maximum: 527.61 μm
 Mean: **63.99** μm
 Std Dev.: 43.09 μm
 Count: 6272
 D10: 26.03 μm
 D50: 52.76 μm
 D90: 113.68 μm

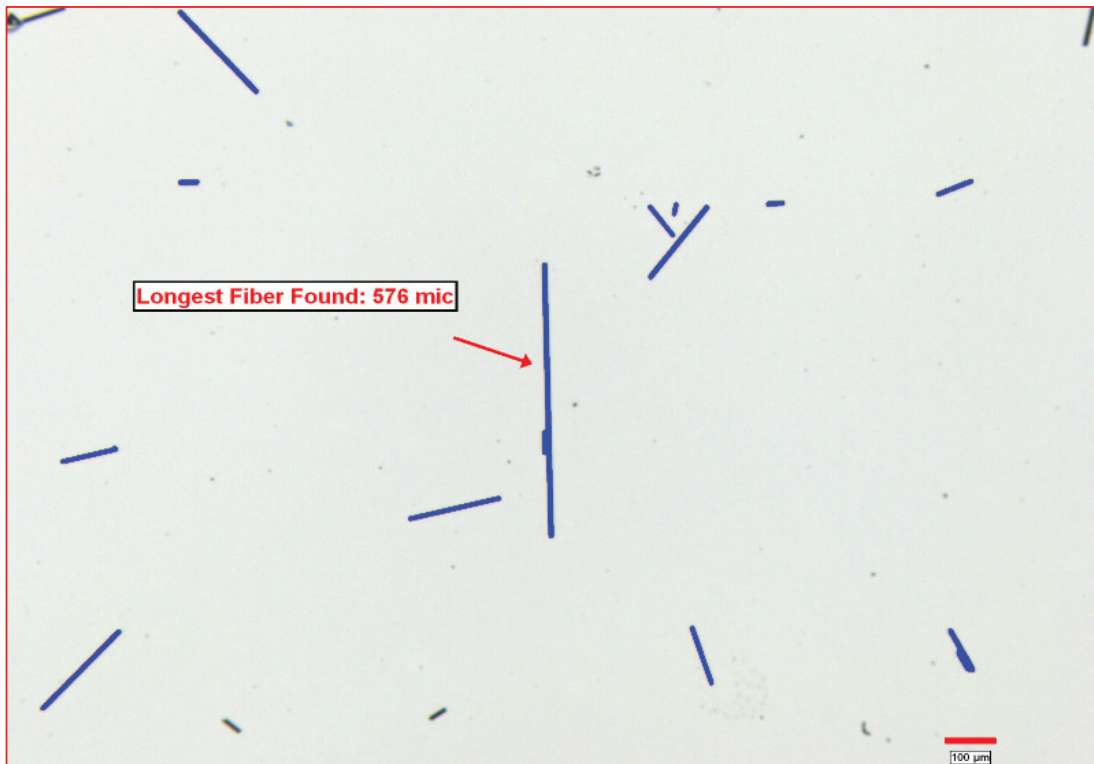
Image Analysis Report # 664 b

Samples submitted:	4 bags (samples) containing small Carbon Fibers,		
=>	Sample 1 Sample 2 Sample 3 Sample 4	<=	Currently analyzed sample.

Purpose of analysis: Determine length distribution in a reliable procedure

Procedure: The powder was spreaded on four microscope slides so that statistical variations would be minimized. Slightly connected particles were separated and remaining groups were eliminated. Particles smaller than 15 microns were also eliminated.

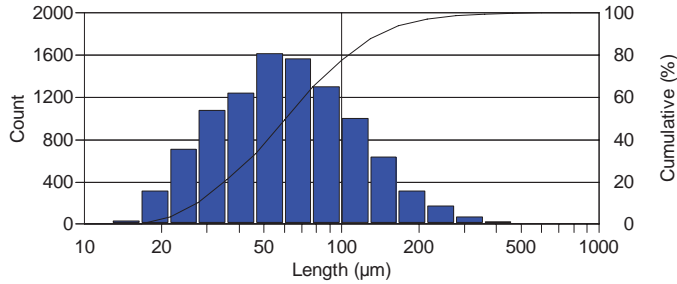
Analysis parameters:	Magnification used:	50X	Calibration Factor:	1.3269 mic/pixel
	Camera used:	Clemex L 2.0C	Stage:	215x75 mm Motorized
	Microscope:	DM 6000 M	Number of fields/slide:	144 (8 x 18)
	Number of slides / sample:	4	Total area (4 slides):	1.7E+09 mic ²
	Clemex Software used	PS3	Total fibers count:	10098



Longest fiber found in current sample.
Only the particles appearing in blue were measured.

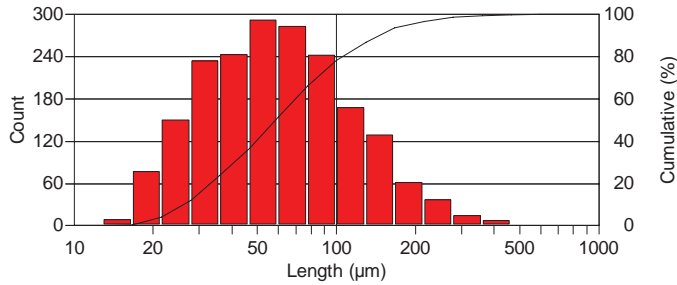
Sample 2

All fibers



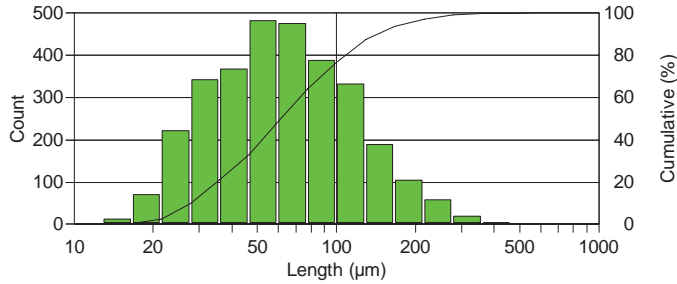
Minimum: 15.92 μm
 Maximum: 576.04 μm
 Mean: **75.27** μm
 Std Dev.: 54.59 μm
 Count: 10098
 D10: 27.19 μm
 D50: 60.30 μm
 D90: 140.04 μm

Slide 1



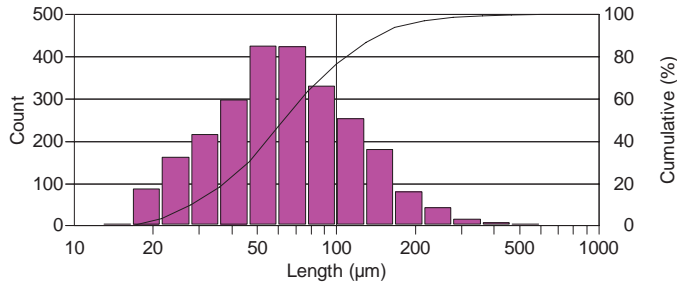
Minimum: 15.92 μm
 Maximum: 576.04 μm
 Mean: **74.71** μm
 Std Dev.: 57.61 μm
 Count: 1952
 D10: 26.18 μm
 D50: 58.38 μm
 D90: 141.11 μm

Slide 2



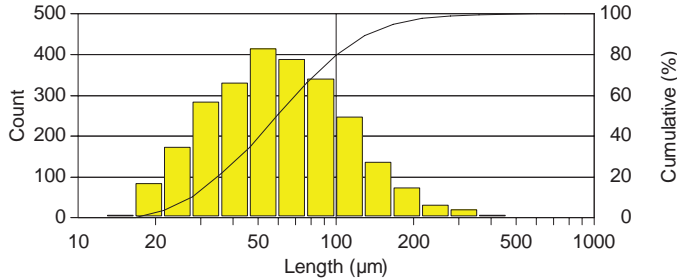
Minimum: 15.92 μm
 Maximum: 548.01 μm
 Mean: **75.71** μm
 Std Dev.: 53.58 μm
 Count: 3072
 D10: 27.82 μm
 D50: 61.23 μm
 D90: 140.42 μm

Slide 3



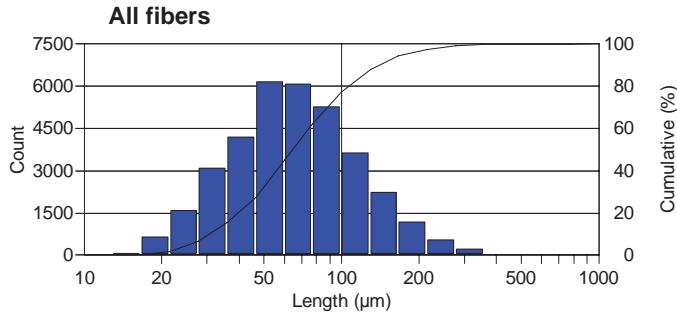
Minimum: 15.92 μm
 Maximum: 524.13 μm
 Mean: **77.43** μm
 Std Dev.: 55.63 μm
 Count: 2539
 D10: 27.64 μm
 D50: 62.61 μm
 D90: 143.32 μm

Slide 4

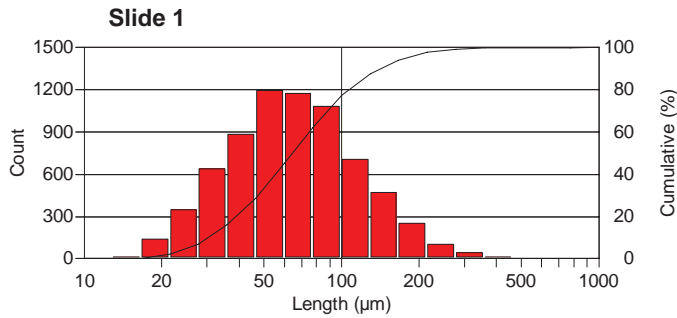


Minimum: 15.92 μm
 Maximum: 511.19 μm
 Mean: **73.00** μm
 Std Dev.: 52.26 μm
 Count: 2535
 D10: 27.28 μm
 D50: 58.78 μm
 D90: 132.91 μm

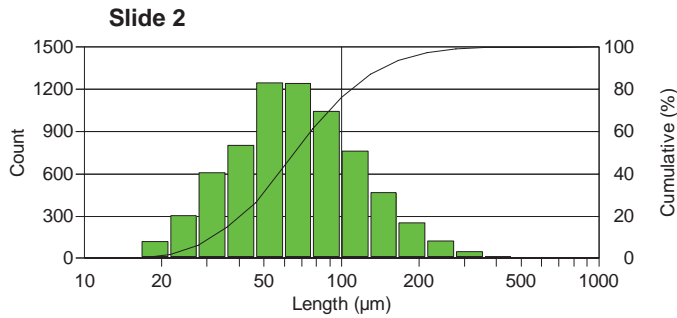
Sample 3



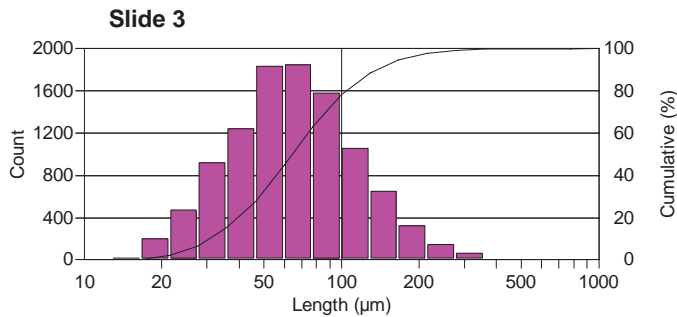
Minimum: 15.92 μm
 Maximum: 850.71 μm
 Mean: **77.59** μm
 Std Dev.: 51.11 μm
 Count: 34993
 D10: 30.97 μm
 D50: 64.20 μm
 D90: 138.44 μm



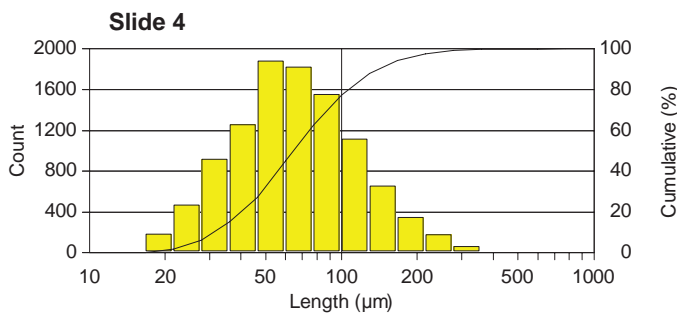
Minimum: 15.92 μm
 Maximum: 786.35 μm
 Mean: **77.27** μm
 Std Dev.: 51.06 μm
 Count: 7078
 D10: 30.39 μm
 D50: 63.77 μm
 D90: 139.83 μm



Minimum: 16.09 μm
 Maximum: 826.66 μm
 Mean: **79.28** μm
 Std Dev.: 53.92 μm
 Count: 7056
 D10: 31.50 μm
 D50: 65.19 μm
 D90: 141.87 μm



Minimum: 15.92 μm
 Maximum: 850.71 μm
 Mean: **76.54** μm
 Std Dev.: 49.01 μm
 Count: 10379
 D10: 30.96 μm
 D50: 64.18 μm
 D90: 135.25 μm



Minimum: 15.92 μm
 Maximum: 661.13 μm
 Mean: **77.69** μm
 Std Dev.: 51.20 μm
 Count: 10480
 D10: 31.22 μm
 D50: 63.97 μm
 D90: 137.22 μm

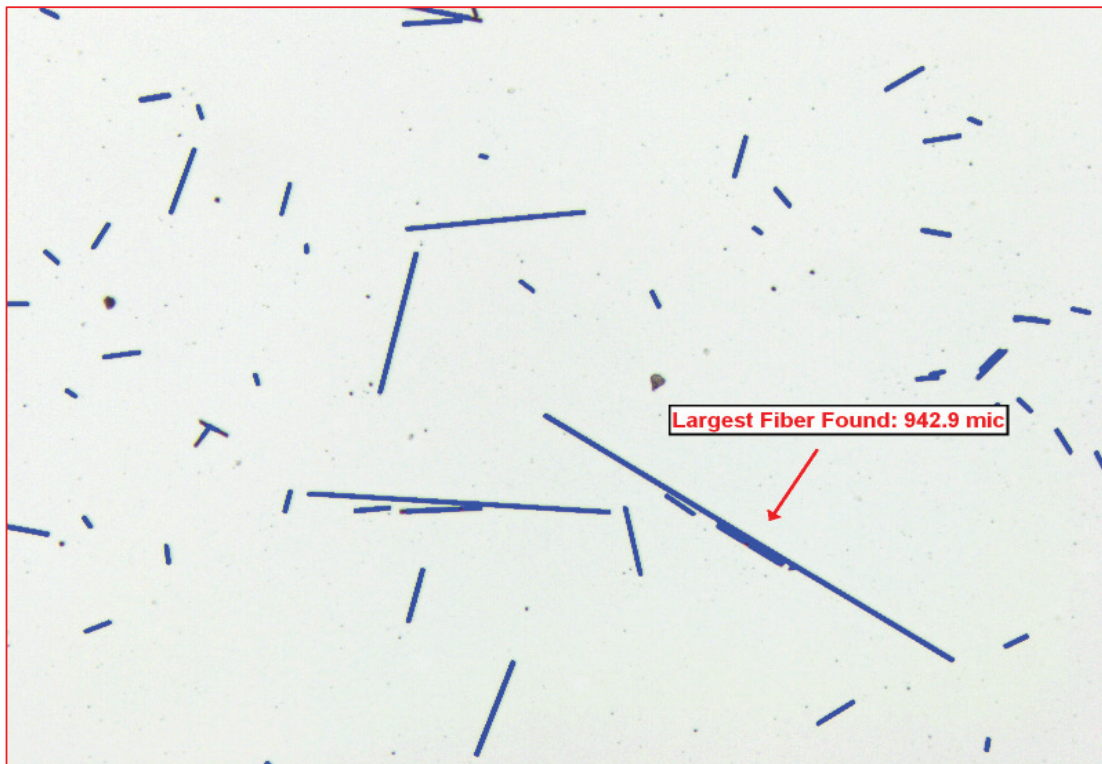
Image Analysis Report # 664 b

Samples submitted: 4 bags (samples) containing small Carbon Fibers,
Sample 1
Sample 2
Sample 3
=> Sample 4 <= Currently analyzed sample.

Purpose of analysis: Determine length distribution in a reliable procedure

Procedure: The powder was spreaded on four microscope slides so that statistical variations would be minimized. Slightly connected particles were separated and remaining groups were eliminated. Particles smaller than 15 microns were also eliminated.

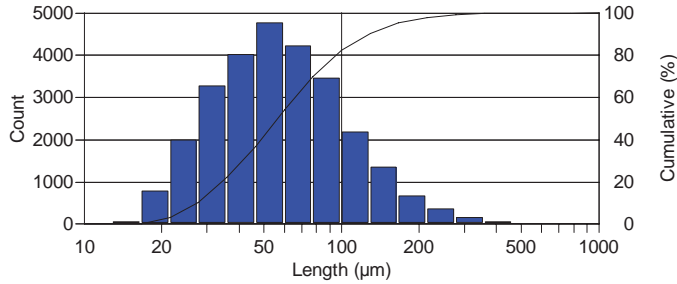
Analysis parameters:	Magnification used: 50X	Calibration Factor: 1.3269 mic/pixel
	Camera used: Clemex L 2.0C	Stage: 215x75 mm Motorized
	Microscope: DM 6000 M	Number of fields/slide: 144 (8 x 18)
	Number of slides / sample: 4	Total area (4 slides): 1.7E+09 mic ²
	Clemex Software used PS3	Total fibers count: 27436



Longest fiber found in current sample.
Only the particles appearing in blue were measured.

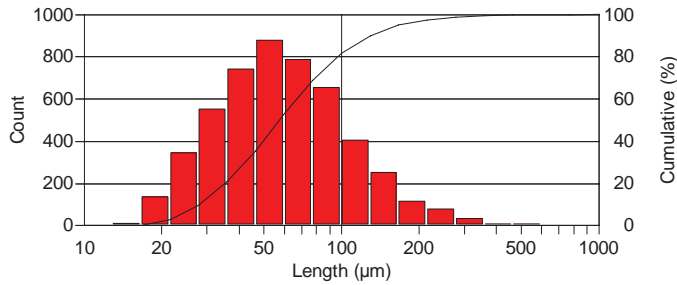
Sample 4

All fibers



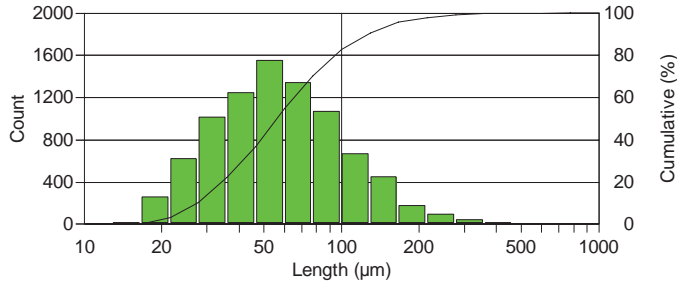
Minimum: 15.92 μm
 Maximum: 942.93 μm
 Mean: **70.22** μm
 Std Dev.: 52.07 μm
 Count: 27436
 D10: 29.34 μm
 D50: 68.58 μm
 D90: 125.49 μm

Slide 1



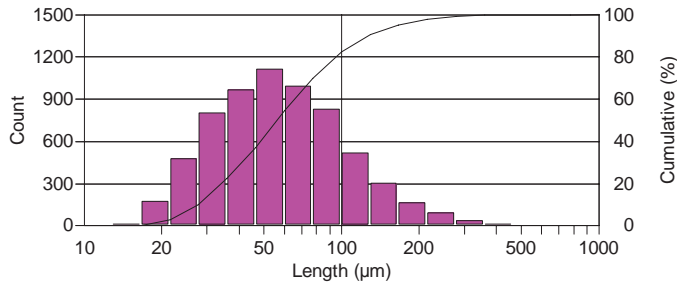
Minimum: 15.92 μm
 Maximum: 942.93 μm
 Mean: **71.78** μm
 Std Dev.: 53.78 μm
 Count: 5023
 D10: 27.84 μm
 D50: 57.48 μm
 D90: 129.32 μm

Slide 2



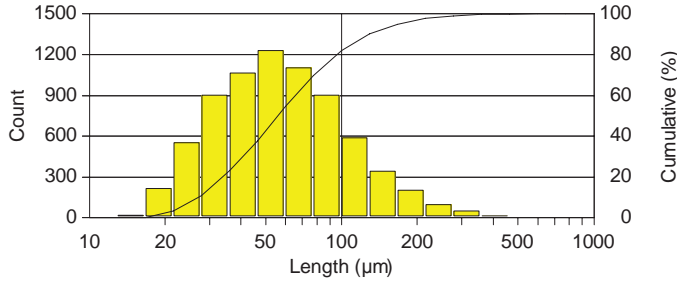
Minimum: 15.92 μm
 Maximum: 630.28 μm
 Mean: **69.34** μm
 Std Dev.: 50.60 μm
 Count: 8613
 D10: 27.29 μm
 D50: 55.69 μm
 D90: 125.78 μm

Slide 3



Minimum: 15.92 μm
 Maximum: 775.57 μm
 Mean: **70.26** μm
 Std Dev.: 53.02 μm
 Count: 6512
 D10: 27.55 μm
 D50: 56.09 μm
 D90: 126.78 μm

Slide 4



Minimum: 15.92 μm
 Maximum: 582.34 μm
 Mean: **70.13** μm
 Std Dev.: 51.71 μm
 Count: 7288
 D10: 27.08 μm
 D50: 55.46 μm
 D90: 127.72 μm



All Samples

Image Analysis Report # 664 b

Results Summary:

	S1	S2	S3	S4	
Minimum:	15.92	15.92	15.92	15.92	µm
Maximum:	701.76	576.04	850.71	942.93	µm
Mean:	63.79	75.27	77.59	70.22	µm
Std Dev.:	42.94	54.59	51.11	52.07	µm
Count:	22452	10098	34993	27436	µm
D10:	26.17	27.19	30.97	29.34	µm
D50:	52.24	60.30	64.20	68.58	µm
D90:	114.19	140.04	138.44	125.49	µm

CLEMEX

intelligent microscopy