

PARTICLE SIZE ANALYSIS

Sample Description

Two paracetamol powder samples are submitted for image analysis. One sample is dry powder and the other one is in liquid.

Purpose of Analysis

Demonstrate the ability of Clemex Vision image analysis system can isolate and perform size and shape measurements over each particle.

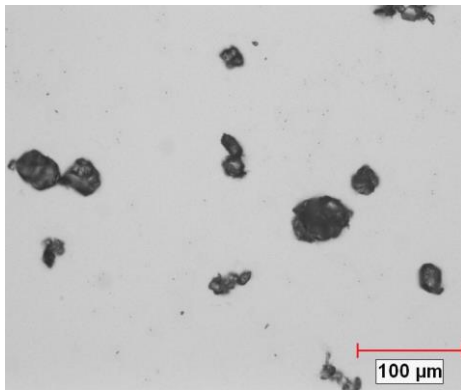


Figure 1: The original image of dispersed dry powder at 200X (0.5983 $\mu\text{m}/\text{pixel}$).

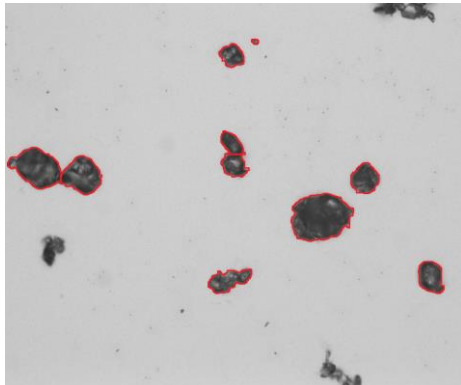


Figure 2: Outline view of particles as measured in red bitplane.

Procedure¹

Clemex Powder Disperser was used to disperse dry powders uniformly over a slide for analysis. Fibers were binarized in red using the Contrast Thresholding tool. Connected particles were transferred to green bitplane and a separation filter was applied on them.

1. Images taken during the procedure are available in appendix A
2. Complete results are available in appendix B

Features that remained connected are eliminated from the green bitplane. Small artifacts and particles sectioned by the field of view are eliminated from the red bitplane prior to measurement.

Equipment

Image Analysis System:	Clemex Vision PE
Microscope:	Leica DM LA with transmitted light
Camera:	Clemex L 2.1M
Magnification:	200X
Stage:	Marzhauser EK32IM 75x50mm

Results²

Area, Length, Circular Diameter, Roundness, Aspect Ratio, Width and Volume measurements are performed on each feature. Automated statistics and graphs were generated. 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.

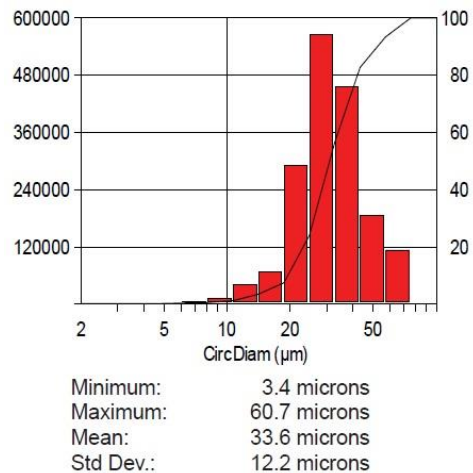


Figure 3: Particles' Diameter distribution against Volume and corresponding statistics.

Appendix A: Image Analysis Steps

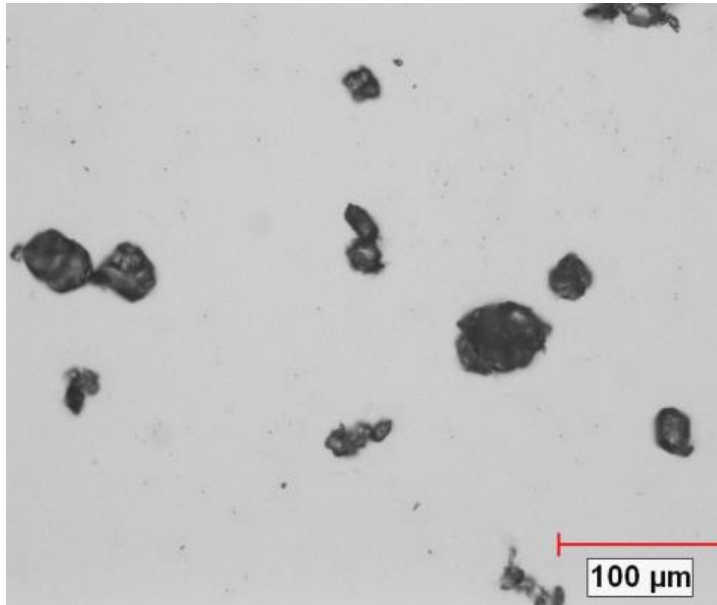


Image 1: Original image showing particles as dispersed on a slide (200X, 0.6227 microns/pixel).

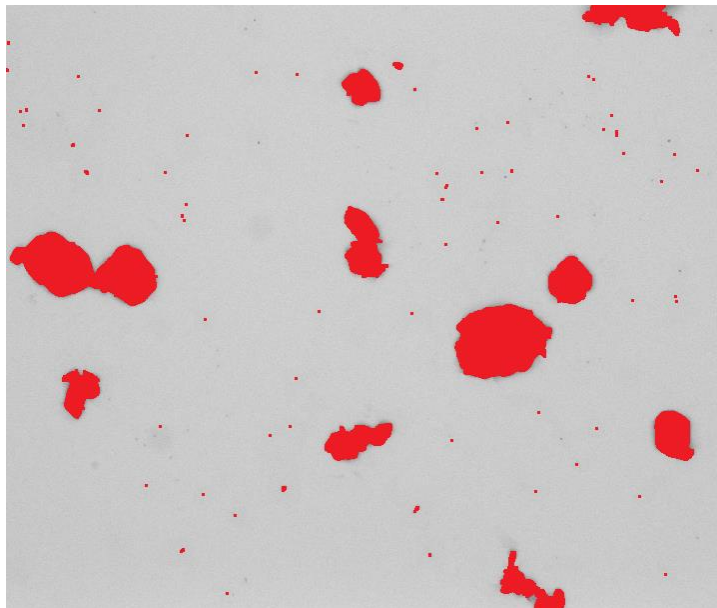


Image 2: Particles as binarized in red using the Contrast Thresholding tool.

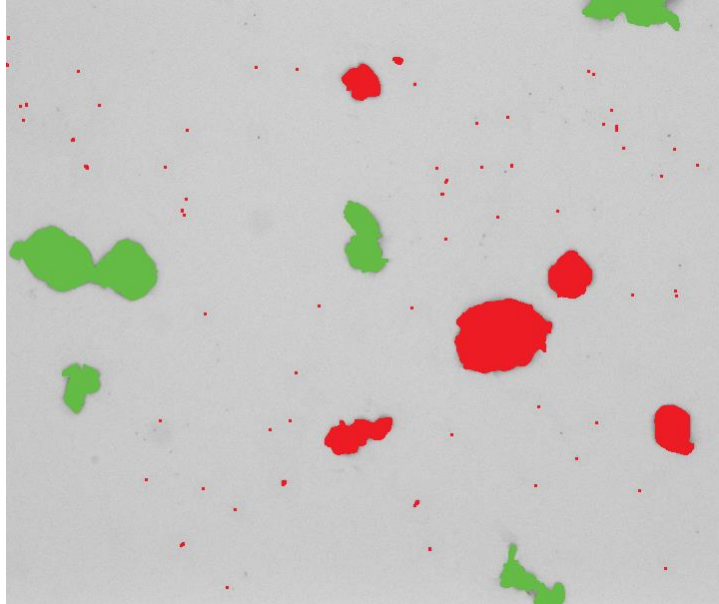


Image 3: Possibly connected particles as isolated into the green bitplane using an object transfer filter based on roughness.

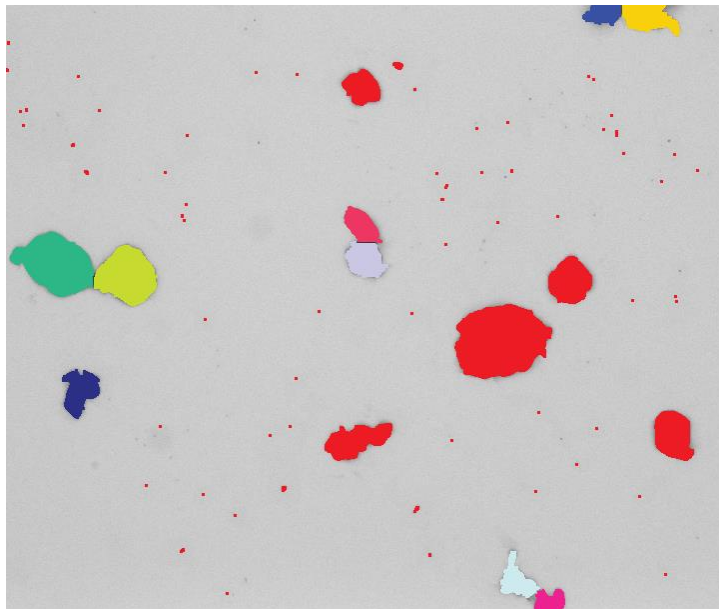


Image 4: Connected particles were disconnected using the Separate instruction. The green bitplane is shown in labeling view attributing a different color to each discrete feature.

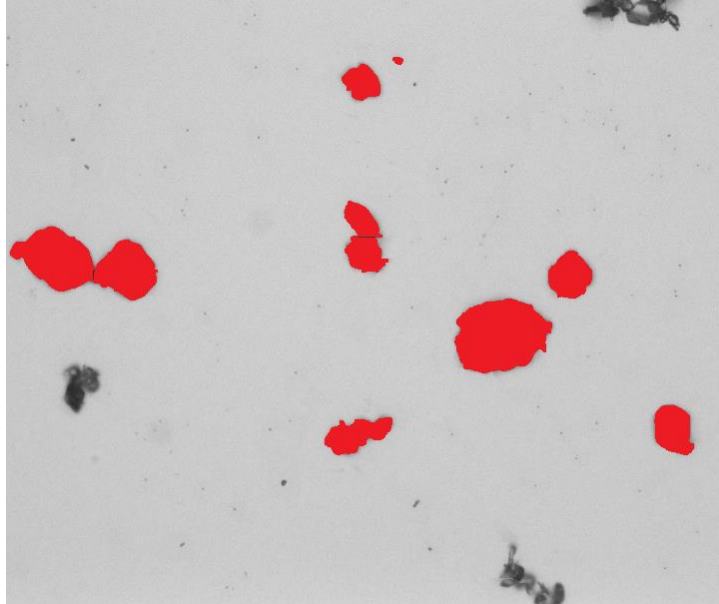


Image 5: Remaining connected features are eliminated from the green bitplane before putting them back together with the red ones. Small artifacts and features sectioned by the field of view are eliminated prior to measurement.

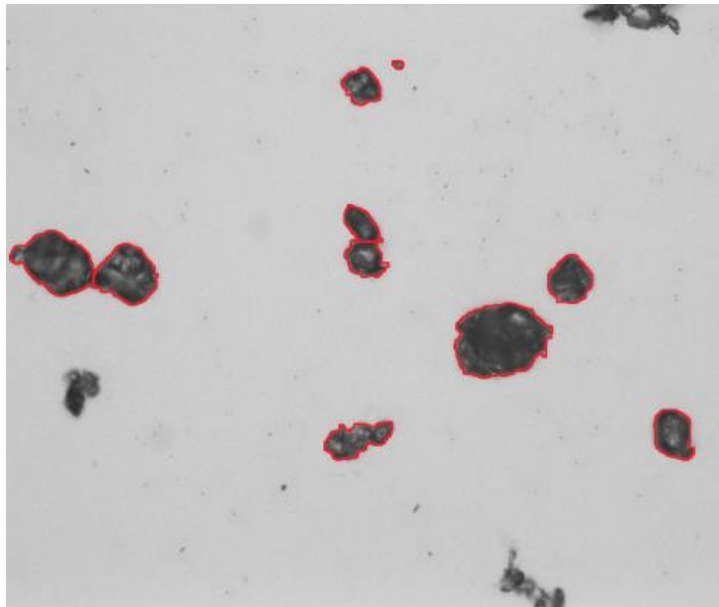
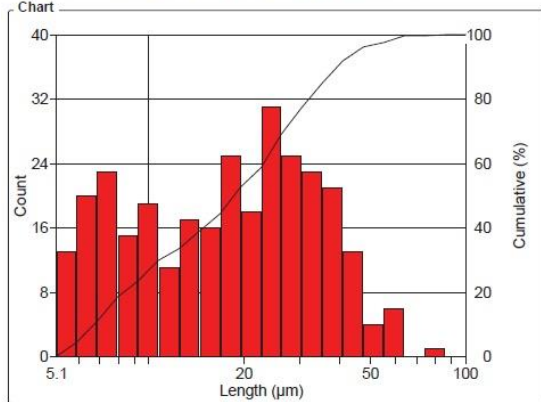


Image 6: Same as previous but in outline view mode allowing to see the original image and the separations.

Sample #1 – Dry Powder
OBJM1 Count - Length

Magn.: 200xT Calib.: 0.6227 µm/pixel Bitplane: Bitplane 2

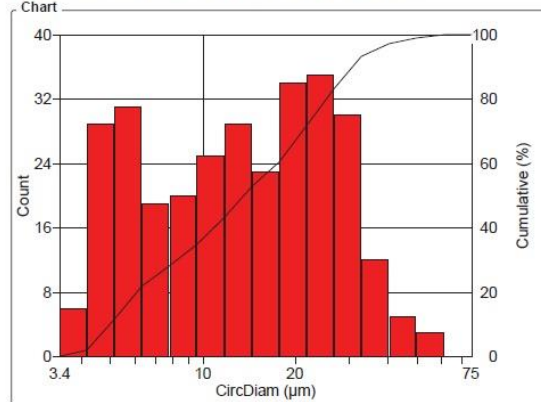


Length Intervals (µm)	Count	%	Cumul%
5.1 - 5.9	13	4.32	4.32
5.9 - 6.9	20	6.64	10.96
6.9 - 8	23	7.64	18.60
8 - 9.2	15	4.98	23.59
9.2 - 10.7	19	6.31	29.90
10.7 - 12.5	11	3.65	33.55
12.5 - 14.5	17	5.65	39.20
14.5 - 16.8	16	5.32	44.52
16.8 - 19.5	25	8.31	52.82
19.5 - 22.6	18	5.98	58.80
22.6 - 26.2	31	10.30	69.10
26.2 - 30.4	25	8.31	77.41
30.4 - 35.3	23	7.64	85.05
35.3 - 41	21	6.98	92.03
41 - 47.5	13	4.32	96.35
47.5 - 55.1	4	1.33	97.67
55.1 - 64	6	1.99	99.67
64 - 74	0	0	99.67
74 - 86	1	0.33	100
86 - 100	0	0	100

Statistics	
Minimum:	5.1 µm
Maximum:	85.7 µm
Mean:	21.0 µm
Std Dev.:	13.3 µm
Sum:	6331.3 µm
Count:	301
Under:	0
Over:	0
Accepted:	100 %
Field Count:	20
Field Area:	187962.6 µm ²
Total Area:	3759252.7 µm ²

OBJM1 Count - CircDiam

Magn.: 200xT Calib.: 0.6227 µm/pixel Bitplane: Bitplane 2

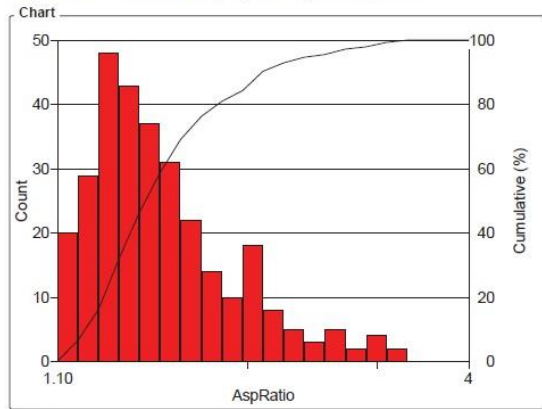


CircDiam Intervals (µm)	Count	%	Cumul%
3.4 - 4.2	6	1.99	1.99
4.2 - 5.1	29	9.63	11.63
5.1 - 6.3	31	10.30	21.93
6.3 - 7.8	19	6.31	28.24
7.8 - 9.5	20	6.64	34.88
9.5 - 11.7	25	8.31	43.19
11.7 - 14.4	29	9.63	52.82
14.4 - 17.7	23	7.64	60.47
17.7 - 21.8	34	11.30	71.76
21.8 - 26.7	35	11.63	83.39
26.7 - 32.9	30	9.97	93.36
32.9 - 40.4	12	3.99	97.34
40.4 - 50	5	1.66	99.00
50 - 61	3	1.00	100
61 - 75	0	0	100

Statistics	
Minimum:	3.4 µm
Maximum:	60.7 µm
Mean:	16.3 µm
Std Dev.:	10.6 µm
Sum:	4900.8 µm
Count:	301
Under:	0
Over:	0
Accepted:	100 %
Field Count:	20
Field Area:	187962.6 µm ²
Total Area:	3759252.7 µm ²

OBJM1 Count - AspRatio

Magn.: 200xT Calib.: 0.6227 µm/pixel Bitplane: Bitplane 2

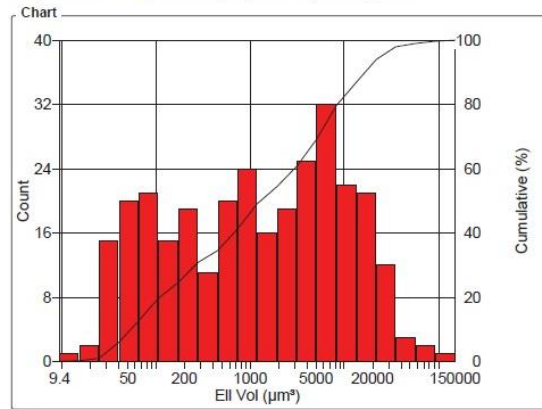


Values				
AspRatio Intervals	Count	%	Cumul%	
1.10 - 1.17	20	6.64	6.64	
1.17 - 1.25	29	9.63	16.28	
1.25 - 1.34	48	15.95	32.23	
1.34 - 1.42	43	14.29	46.51	
1.42 - 1.52	37	12.29	58.80	
1.52 - 1.62	31	10.30	69.10	
1.62 - 1.73	22	7.31	76.41	
1.73 - 1.84	14	4.65	81.06	
1.84 - 1.97	10	3.32	84.39	
1.97 - 2.10	18	5.98	90.37	
2.10 - 2.24	8	2.66	93.02	
2.24 - 2.39	5	1.66	94.68	
2.39 - 2.55	3	1.00	95.68	
2.55 - 2.72	5	1.66	97.34	
2.72 - 2.90	2	0.66	98.01	
2.90 - 3.09	4	1.33	99.34	
3.09 - 3.30	2	0.66	100	
3.30 - 3.52	0	0	100	
3.52 - 3.75	0	0	100	
3.75 - 4	0	0	100	

Statistics	
Minimum:	1.10
Maximum:	3.22
Mean:	1.57
Std Dev.:	0.400
Count:	301
Under:	0
Over:	0
Accepted:	100 %
Field Count:	20
Field Area:	187962.6 µm²
Total Area:	3759252.7 µm²

OBJM1 Count - Ell Vol

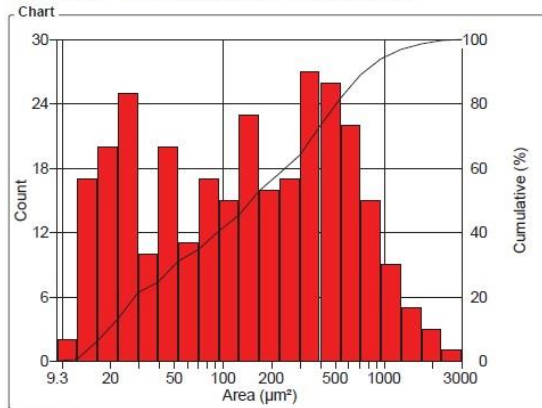
Magn.: 200xT Calib.: 0.6227 µm/pixel Bitplane: Bitplane 2



Values				
Ell Vol Intervals (µm²)	Count	%	Cumul%	
9.4 - 15.3	1	0.33	0.33	
15.3 - 25	2	0.66	1.00	
25 - 40	15	4.98	5.98	
40 - 65	20	6.64	12.62	
65 - 106	21	6.98	19.60	
106 - 171	15	4.98	24.58	
171 - 278	19	6.31	30.90	
278 - 451	11	3.65	34.55	
451 - 732	20	6.64	41.20	
732 - 1187	24	7.97	49.17	
1187 - 1926	16	5.32	54.49	
1926 - 3125	19	6.31	60.80	
3125 - 5071	25	8.31	69.10	
5071 - 8226	32	10.63	79.73	
8226 - 13346	22	7.31	87.04	
13346 - 21652	21	6.98	94.02	
21652 - 35127	12	3.99	98.01	
35127 - 56990	3	1.00	99.00	
56990 - 92458	2	0.66	99.67	
92458 - 150000	1	0.33	100	

Statistics	
Minimum:	9.4 µm²
Maximum:	112383.2 µm²
Mean:	5766.7 µm²
Std Dev.:	11208.4 µm²
Sum:	1735788.9 µm²
Count:	301
Under:	0
Over:	0
Accepted:	100 %
Field Count:	20
Field Area:	187962.6 µm²
Total Area:	3759252.7 µm²

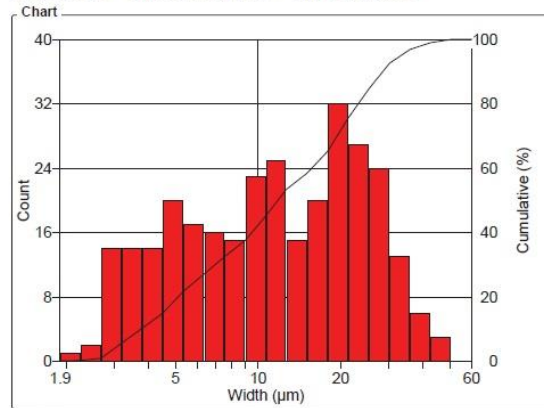
OBJM1 Count - Area

 Magn.: 200xT Calib.: 0.6227 $\mu\text{m}/\text{pixel}$ Bitplane: Bitplane 2


Area Intervals (μm^2)	Count	%	Cumul%
9.3 - 12.4	2	0.66	0.66
12.4 - 16.6	17	5.65	6.31
16.6 - 22.1	20	6.64	12.96
22.1 - 29.5	25	8.31	21.26
29.5 - 39	10	3.32	24.58
39 - 53	20	6.64	31.23
53 - 70	11	3.65	34.88
70 - 94	17	5.65	40.53
94 - 125	15	4.98	45.51
125 - 167	23	7.64	53.16
167 - 223	16	5.32	58.47
223 - 298	17	5.65	64.12
298 - 397	27	8.97	73.09
397 - 530	26	8.64	81.73
530 - 708	22	7.31	89.04
708 - 945	15	4.98	94.02
945 - 1261	9	2.99	97.01
1261 - 1684	5	1.66	98.67
1684 - 2247	3	1.00	99.67
2247 - 3000	1	0.33	100

Statistics		
Minimum:	9.3	μm^2
Maximum:	2894.7	μm^2
Mean:	296.1	μm^2
Std Dev.:	378.0	μm^2
Sum:	89129.9	μm^2
Count:	301	
Under:	0	
Over:	0	
Accepted:	100	%
Field Count:	20	
Field Area:	187962.6	μm^2
Total Area:	3759252.7	μm^2

OBJM1 Count - Width

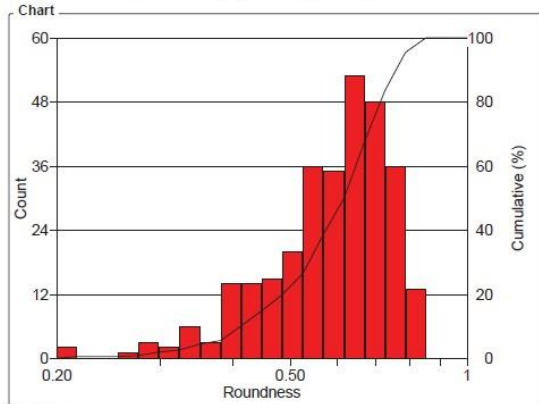
 Magn.: 200xT Calib.: 0.6227 $\mu\text{m}/\text{pixel}$ Bitplane: Bitplane 2


Width Intervals (μm)	Count	%	Cumul%
1.9 - 2.3	1	0.33	0.33
2.3 - 2.7	2	0.66	1.00
2.7 - 3.2	14	4.65	5.65
3.2 - 3.8	14	4.65	10.30
3.8 - 4.5	14	4.65	14.95
4.5 - 5.4	20	6.64	21.59
5.4 - 6.4	17	5.65	27.24
6.4 - 7.6	16	5.32	32.56
7.6 - 9	15	4.98	37.54
9 - 10.7	23	7.64	45.18
10.7 - 12.7	25	8.31	53.49
12.7 - 15.1	15	4.98	58.47
15.1 - 17.9	20	6.64	65.12
17.9 - 21.3	32	10.63	75.75
21.3 - 25.3	27	8.97	84.72
25.3 - 30.1	24	7.97	92.69
30.1 - 35.7	13	4.32	97.01
35.7 - 42.5	6	1.99	99.00
42.5 - 50.5	3	1.00	100
50.5 - 60	0	0	100

Statistics		
Minimum:	1.9	μm
Maximum:	50.0	μm
Mean:	14.4	μm
Std Dev.:	9.76	μm
Sum:	4342.1	μm
Count:	301	
Under:	0	
Over:	0	
Accepted:	100	%
Field Count:	20	
Field Area:	187962.6	μm^2
Total Area:	3759252.7	μm^2

OBJM1 Count - Roundness

Magn.: 200xT Calib.: 0.6227 µm/pixel Bitplane: Bitplane 2

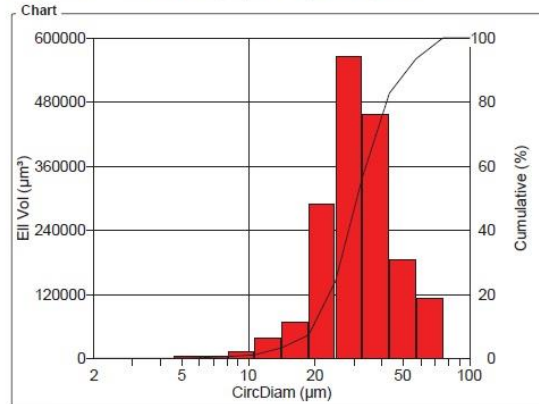


Roundness Intervals	Count	%	Cumul%
0.20 - 0.22	2	0.66	0.66
0.22 - 0.23	0	0	0.66
0.23 - 0.25	0	0	0.66
0.25 - 0.28	1	0.33	1.00
0.28 - 0.30	3	1.00	1.99
0.30 - 0.32	2	0.66	2.66
0.32 - 0.35	6	1.99	4.65
0.35 - 0.38	3	1.00	5.65
0.38 - 0.41	14	4.65	10.30
0.41 - 0.45	14	4.65	14.95
0.45 - 0.49	15	4.98	19.93
0.49 - 0.52	20	6.64	26.58
0.52 - 0.57	36	11.96	38.54
0.57 - 0.62	35	11.63	50.17
0.62 - 0.67	53	17.61	67.77
0.67 - 0.73	48	15.95	83.72
0.73 - 0.79	36	11.96	95.68
0.79 - 0.85	13	4.32	100
0.85 - 0.92	0	0	100
0.92 - 1	0	0	100

Statistics	
Minimum:	0.21
Maximum:	0.84
Mean:	0.597
Std Dev.:	0.129
Count:	301
Under:	0
Over:	0
Accepted:	100 %
Field Count:	20
Field Area:	187962.6 µm²
Total Area:	3759252.7 µm²

OBJM1 Ell Vol - CircDiam

Magn.: 200xT Calib.: 0.6227 µm/pixel Bitplane: Bitplane 2



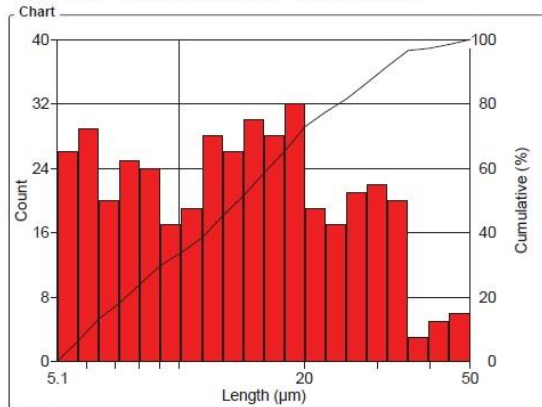
CircDiam Intervals (µm)	Ell Vol (µm³)	%	Cumul%
2 - 2.6	0	0	0
2.6 - 3.5	9.4	540.71e-06	540.71e-06
3.5 - 4.6	586.1	0.03	0.03
4.6 - 6.1	3354.2	0.19	0.23
6.1 - 8.1	5081.6	0.29	0.52
8.1 - 10.7	11525.4	0.66	1.18
10.7 - 14.1	38963.1	2.24	3.43
14.1 - 18.7	67357.5	3.88	7.31
18.7 - 24.7	289405.9	16.67	23.98
24.7 - 33	565152.1	32.56	56.54
33 - 43	456722.4	26.31	82.85
43 - 57	185248.0	10.67	93.53
57 - 76	112383.2	6.47	100
76 - 100	0	0	100

Statistics	
Minimum:	3.4 µm
Maximum:	60.7 µm
Mean:	33.6 µm
Std Dev.:	12.2 µm
Sum:	58.3e+06 µm
Count:	301
Under:	0
Over:	0
Accepted:	100 %
Field Count:	20
Field Area:	187962.6 µm²
Total Area:	3759252.7 µm²

Sample #2 – Particles in Liquid

OBJM1 Count - Length

Magn.: 200xT Calib.: 0.6227 µm/pixel Bitplane: Bitplane 2

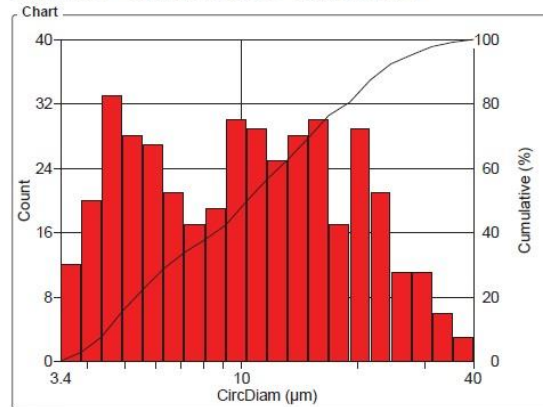


Length Intervals (µm)	Count	%	Cumul%
5.1 - 5.7	26	6.24	6.24
5.7 - 6.4	29	6.95	13.19
6.4 - 7.2	20	4.80	17.99
7.2 - 8.1	25	6.00	23.98
8.1 - 9	24	5.76	29.74
9 - 10.1	17	4.08	33.81
10.1 - 11.3	19	4.56	38.37
11.3 - 12.7	28	6.71	45.08
12.7 - 14.2	26	6.24	51.32
14.2 - 16	30	7.19	58.51
16 - 17.9	28	6.71	65.23
17.9 - 20.1	32	7.67	72.90
20.1 - 22.5	19	4.56	77.46
22.5 - 25.2	17	4.08	81.53
25.2 - 28.3	21	5.04	86.57
28.3 - 31.7	22	5.28	91.85
31.7 - 35.5	20	4.80	96.64
35.5 - 39.8	3	0.72	97.36
39.8 - 44.6	5	1.20	98.56
44.6 - 50	6	1.44	100

Statistics	
Minimum:	5.1 µm
Maximum:	48.6 µm
Mean:	16.1 µm
Std Dev.:	9.51 µm
Sum:	6722.1 µm
Count:	417
Under:	0
Over:	0
Accepted:	100 %
Field Count:	21
Field Area:	187962.6 µm ²
Total Area:	3947215.4 µm ²

OBJM1 Count - CircDiam

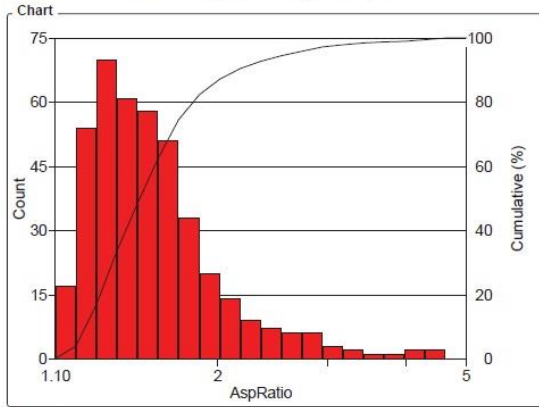
Magn.: 200xT Calib.: 0.6227 µm/pixel Bitplane: Bitplane 2



CircDiam Intervals (µm)	Count	%	Cumul%
3.4 - 3.8	12	2.88	2.88
3.8 - 4.3	20	4.80	7.67
4.3 - 4.9	33	7.91	15.59
4.9 - 5.6	28	6.71	22.30
5.6 - 6.3	27	6.47	28.78
6.3 - 7.1	21	5.04	33.81
7.1 - 8.1	17	4.08	37.89
8.1 - 9.1	19	4.56	42.45
9.1 - 10.3	30	7.19	49.64
10.3 - 11.7	29	6.95	56.59
11.7 - 13.2	25	6.00	62.59
13.2 - 14.9	28	6.71	69.30
14.9 - 16.9	30	7.19	76.50
16.9 - 19.1	17	4.08	80.58
19.1 - 21.6	29	6.95	87.53
21.6 - 24.4	21	5.04	92.57
24.4 - 27.6	11	2.64	95.20
27.6 - 31.3	11	2.64	97.84
31.3 - 35.4	6	1.44	99.28
35.4 - 40	3	0.72	100

Statistics	
Minimum:	3.4 µm
Maximum:	36.3 µm
Mean:	12.2 µm
Std Dev.:	7.41 µm
Sum:	5095.8 µm
Count:	417
Under:	0
Over:	0
Accepted:	100 %
Field Count:	21
Field Area:	187962.6 µm ²
Total Area:	3947215.4 µm ²

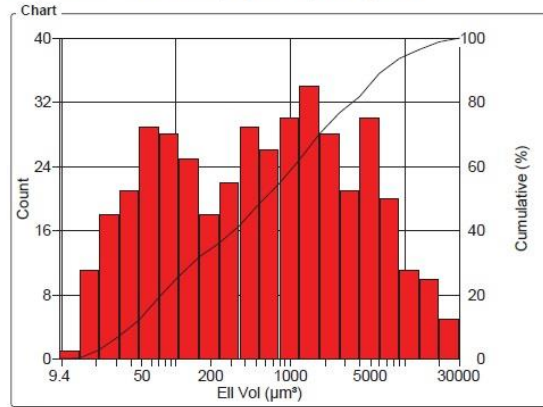
OBJM1 Count - AspRatio

 Magn.: 200xT Calib.: 0.6227 $\mu\text{m}/\text{pixel}$ Bitplane: Bitplane 2


Values				
AspRatio Intervals	Count	%	Cumul%	
1.10 - 1.19	17	4.08	4.08	
1.19 - 1.28	54	12.95	17.03	
1.28 - 1.38	70	16.79	33.81	
1.38 - 1.49	61	14.63	48.44	
1.49 - 1.61	58	13.91	62.35	
1.61 - 1.73	51	12.23	74.58	
1.73 - 1.87	33	7.91	82.49	
1.87 - 2.02	20	4.80	87.29	
2.02 - 2.17	14	3.36	90.65	
2.17 - 2.35	9	2.16	92.81	
2.35 - 2.53	7	1.68	94.48	
2.53 - 2.73	6	1.44	95.92	
2.73 - 2.94	6	1.44	97.36	
2.94 - 3.17	3	0.72	98.08	
3.17 - 3.42	2	0.48	98.56	
3.42 - 3.69	1	0.24	98.80	
3.69 - 3.98	1	0.24	99.04	
3.98 - 4.30	2	0.48	99.52	
4.30 - 4.64	2	0.48	100	
4.64 - 5	0	0	100	

Statistics	
Minimum:	1.07
Maximum:	4.38
Mean:	1.63
Std Dev.:	0.482
Count:	417
Under:	0
Over:	0
Accepted:	100 %
Field Count:	21
Field Area:	187962.6 μm^2
Total Area:	3947215.4 μm^2

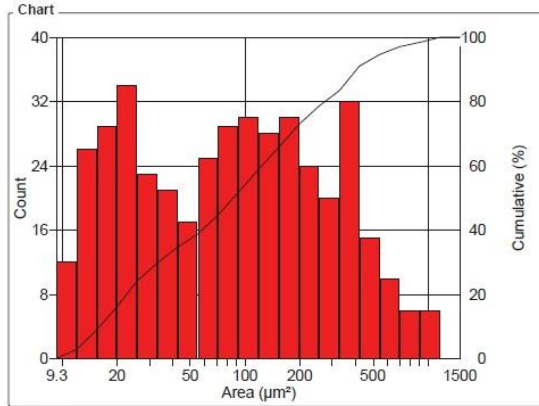
OBJM1 Count - Ell Vol

 Magn.: 200xT Calib.: 0.6227 $\mu\text{m}/\text{pixel}$ Bitplane: Bitplane 2


Values				
Ell Vol Intervals (μm^2)	Count	%	Cumul%	
9.4 - 14.1	1	0.24	0.24	
14.1 - 21	11	2.64	2.88	
21 - 32	18	4.32	7.19	
32 - 47	21	5.04	12.23	
47 - 71	29	6.95	19.18	
71 - 106	28	6.71	25.90	
106 - 158	25	6.00	31.89	
158 - 237	18	4.32	36.21	
237 - 355	22	5.28	41.49	
355 - 531	29	6.95	48.44	
531 - 795	26	6.24	54.68	
795 - 1190	30	7.19	61.87	
1190 - 1781	34	8.15	70.02	
1781 - 2666	28	6.71	76.74	
2666 - 3991	21	5.04	81.77	
3991 - 5975	30	7.19	88.97	
5975 - 8944	20	4.80	93.76	
8944 - 13388	11	2.64	96.40	
13388 - 20041	10	2.40	98.80	
20041 - 30000	5	1.20	100	

Statistics	
Minimum:	9.4 μm^2
Maximum:	28555.5 μm^2
Mean:	2296.6 μm^2
Std Dev.:	4174.6 μm^2
Sum:	957672.4 μm^2
Count:	417
Under:	0
Over:	0
Accepted:	100 %
Field Count:	21
Field Area:	187962.6 μm^2
Total Area:	3947215.4 μm^2

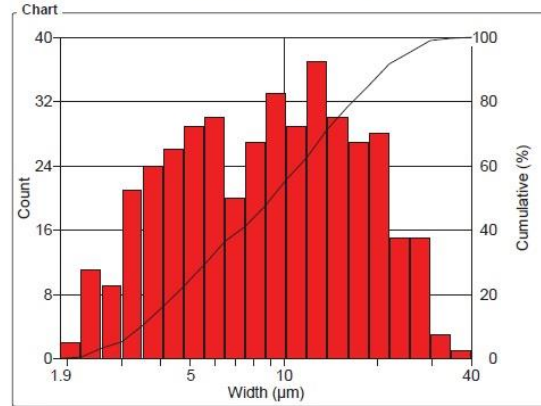
OBJM1 Count - Area

 Magn.: 200xT Calib.: 0.6227 $\mu\text{m}/\text{pixel}$ Bitplane: Bitplane 2


Area Intervals (μm^2)	Count	%	Cumul%
9.3 - 12	12	2.88	2.88
12 - 15.5	26	6.24	9.11
15.5 - 19.9	29	6.95	16.07
19.9 - 25.7	34	8.15	24.22
25.7 - 33.1	23	5.52	29.74
33.1 - 43	21	5.04	34.77
43 - 55	17	4.08	38.85
55 - 71	25	6.00	44.84
71 - 92	29	6.95	51.80
92 - 118	30	7.19	58.99
118 - 152	28	6.71	65.71
152 - 196	30	7.19	72.90
196 - 253	24	5.76	78.66
253 - 326	20	4.80	83.45
326 - 421	32	7.67	91.13
421 - 543	15	3.60	94.72
543 - 700	10	2.40	97.12
700 - 902	6	1.44	98.56
902 - 1163	6	1.44	100
1163 - 1500	0	0	100

Statistics	
Minimum:	9.3 μm^2
Maximum:	1035.2 μm^2
Mean:	160.3 μm^2
Std Dev.:	191.7 μm^2
Sum:	66844.6 μm^2
Count:	417
Under:	0
Over:	0
Accepted:	100 %
Field Count:	21
Field Area:	187962.6 μm^2
Total Area:	3947215.4 μm^2

OBJM1 Count - Width

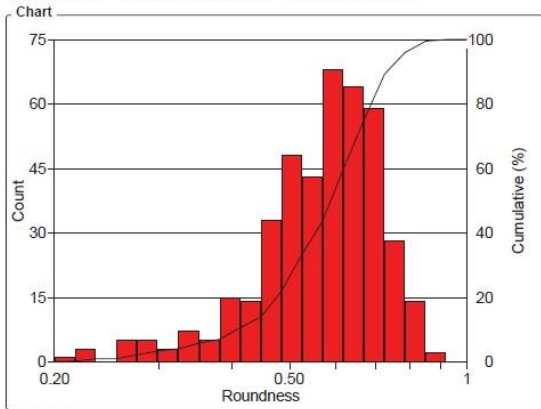
 Magn.: 200xT Calib.: 0.6227 $\mu\text{m}/\text{pixel}$ Bitplane: Bitplane 2


Width Intervals (μm)	Count	%	Cumul%
1.9 - 2.2	2	0.48	0.48
2.2 - 2.6	11	2.64	3.12
2.6 - 3	9	2.16	5.28
3 - 3.5	21	5.04	10.31
3.5 - 4.1	24	5.76	16.07
4.1 - 4.7	26	6.24	22.30
4.7 - 5.5	29	6.95	29.26
5.5 - 6.4	30	7.19	36.45
6.4 - 7.5	20	4.80	41.25
7.5 - 8.7	27	6.47	47.72
8.7 - 10.2	33	7.91	55.64
10.2 - 11.8	29	6.95	62.59
11.8 - 13.8	37	8.87	71.46
13.8 - 16	30	7.19	78.66
16 - 18.7	27	6.47	85.13
18.7 - 21.7	28	6.71	91.85
21.7 - 25.3	15	3.60	95.44
25.3 - 29.5	15	3.60	99.04
29.5 - 34.3	3	0.72	99.76
34.3 - 40	1	0.24	100

Statistics	
Minimum:	1.9 μm
Maximum:	35.7 μm
Mean:	10.7 μm
Std Dev.:	6.94 μm
Sum:	4468.9 μm
Count:	417
Under:	0
Over:	0
Accepted:	100 %
Field Count:	21
Field Area:	187962.6 μm^2
Total Area:	3947215.4 μm^2

OBJM1 Count - Roundness

Magn.: 200xT Calib.: 0.6227 µm/pixel Bitplane: Bitplane 2

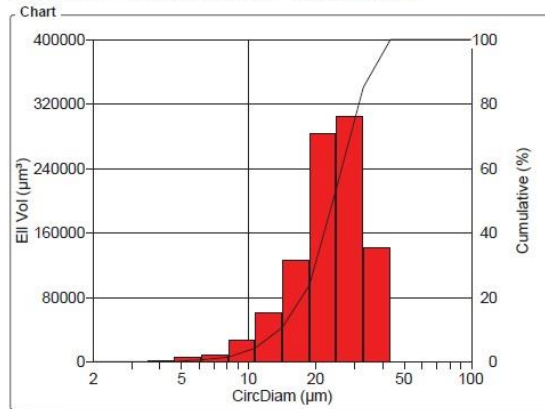


Roundness Intervals	Count	%	Cumul%
0.20 - 0.22	1	0.24	0.24
0.22 - 0.23	3	0.72	0.96
0.23 - 0.25	0	0	0.96
0.25 - 0.28	5	1.20	2.16
0.28 - 0.30	5	1.20	3.36
0.30 - 0.32	3	0.72	4.08
0.32 - 0.35	7	1.68	5.76
0.35 - 0.38	5	1.20	6.96
0.38 - 0.41	15	3.60	10.56
0.41 - 0.45	14	3.36	13.92
0.45 - 0.49	33	7.91	21.82
0.49 - 0.52	48	11.51	33.33
0.52 - 0.57	43	10.31	43.65
0.57 - 0.62	68	16.31	59.95
0.62 - 0.67	64	15.35	75.30
0.67 - 0.73	59	14.15	89.45
0.73 - 0.79	28	6.71	96.16
0.79 - 0.85	14	3.36	99.52
0.85 - 0.92	2	0.48	100
0.92 - 1	0	0	100

Statistics	
Minimum:	0.18
Maximum:	0.87
Mean:	0.576
Std Dev.:	0.127
Count:	417
Under:	0
Over:	0
Accepted:	100 %
Field Count:	21
Field Area:	187962.6 µm²
Total Area:	3947215.4 µm²

OBJM1 Ell Vol - CircDiam

Magn.: 200xT Calib.: 0.6227 µm/pixel Bitplane: Bitplane 2



CircDiam Intervals (µm)	Ell Vol (µm³)	%	Cumul%
2 - 2.6	0	0	0
2.6 - 3.5	9.4	980.03e-06	980.03e-06
3.5 - 4.6	1323.6	0.14	0.14
4.6 - 6.1	5123.1	0.53	0.67
6.1 - 8.1	7760.6	0.81	1.48
8.1 - 10.7	26438.2	2.76	4.25
10.7 - 14.1	60880.7	6.36	10.60
14.1 - 18.7	126474.6	13.21	23.81
18.7 - 24.7	283450.2	29.60	53.41
24.7 - 33	304639.8	31.81	85.22
33 - 43	1411572.3	14.78	100
43 - 57	0	0	100
57 - 76	0	0	100
76 - 100	0	0	100

Statistics	
Minimum:	3.4 µm
Maximum:	36.3 µm
Mean:	24.0 µm
Std Dev.:	7.52 µm
Sum:	22.9e+06 µm
Count:	417
Under:	0
Over:	0
Accepted:	100 %
Field Count:	21
Field Area:	187962.6 µm²
Total Area:	3947215.4 µm²