



Results Summary

Sample: Mist227A-1

Measures reported: ECA diameter, Circularity, Smoothness, Bounding Ellipse Width, Bounding Ellipse Length, Bounding Ellipse Aspect Ratio

Summary of results:

ECA diameter of particles ranges from 3.8 to 43.1 microns. The distribution is seen to be bimodal. The lower size group of particles is more numerous than the upper size group but the upper group contains more volume.

Overall both circularity and surface smoothness are low (mean circularity is .586) – these particles are not round and smooth in general. Mean ellipse aspect ratio is 1.8 and the aspect ratios range up as high as 7. Since the particles are highly non-spherical, image analysis can characterize them more accurately than methods that determine only a single diameter without aspect ratio data.

Looking at the Smoothness graph, it seems to be bimodal also, suggesting that there probably are two different particle types present. The correlation between ECA and smoothness confirms that there are two classes or groups, with very minimal overlap. The larger class particles are smoother on their surface than the lower class.

Statistics on only the upper class of particles were extracted by reanalyzing the sample with ECAD restricted to greater than 10 and smoothness restricted to greater than 0.6 (the red box in the correlation chart). The second report shows the results. This group of particles shows an approximately Normal distribution, in both number and volume. The number mean is 19.2 microns. Circularity mean is 0.72, and smoothness mean is 0.78.

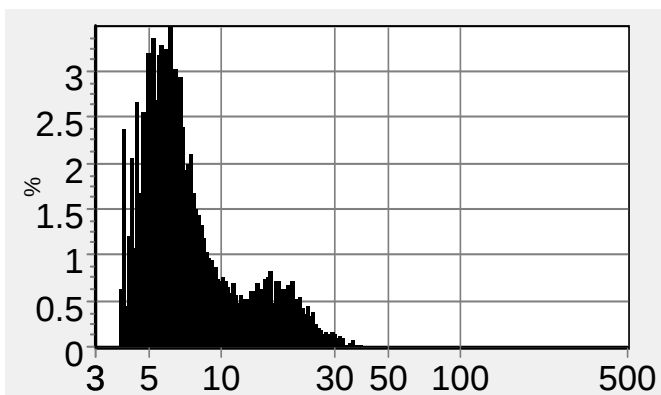
For measure definitions, use the Measure Definitions link on the Lab Services page (measuredefs.pdf).

For statistics definitions, use the Statistics Definitions link on the Lab Services page (statisticsdefs.pdf).

File name	Mist227A-1
File location	C:\ProgramData\ParticleInsight\samples
Image file location	C:\Program Files\ParticleInsight\Images\
Saved images	10
Status	Entered
Created by	Yes
Analyzed by	Yes
Analyzed in SW ver.	
Analyzed on	
Last modified on	Particle Insight 2.43
Signature	
Associated databases	3 Oct 2014 6:53 AM
Source:	Original data
Analysis conditions	standard mist
Run conditions	standard mist
Report options	standard mist

EQUIVALENT CIRCULAR AREA DIAMETER

ECA Diameter - number



SAMPLE ANALYSIS SUMMARY (sizes in microns)

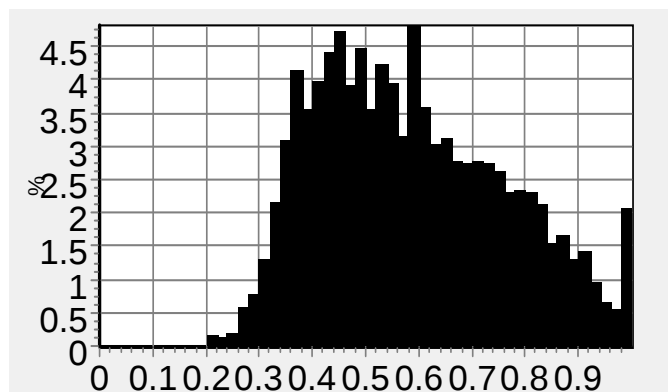
[illegible]

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CIRCULARITY

Circularity

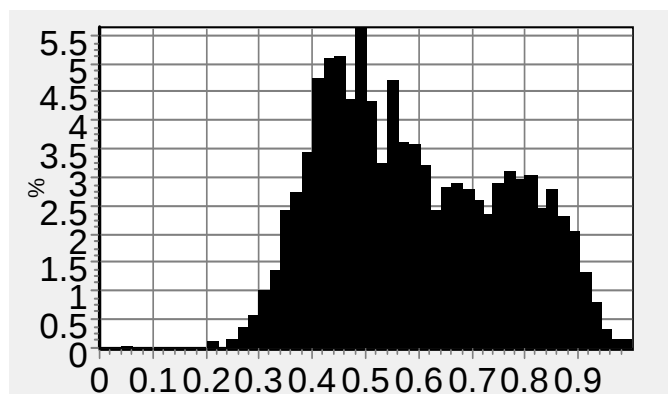


SAMPLE ANALYSIS SUMMARY

Count	3177	Number percentiles:	
Minimum	0.207	10.00 %	0.348
Maximum	1.000	25.00 %	0.422
Mean	0.586	50.00 %	0.544
Std. dev.	0.178	75.00 %	0.698
Mode	0.590	90.00 %	0.822

SMOOTHNESS

Smoothness



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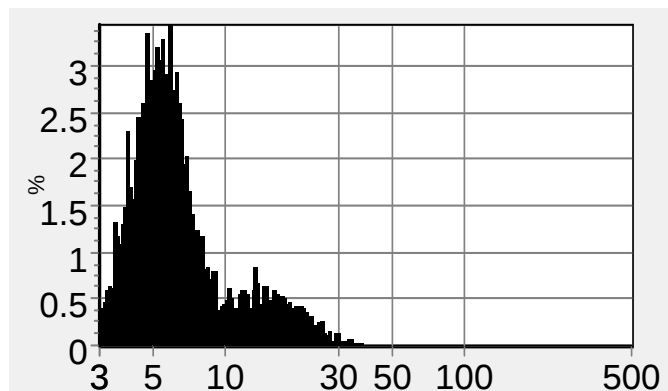
SMOOTHNESS

SAMPLE ANALYSIS SUMMARY

Count	3177	Number percentiles:	
Minimum	0.044	10.00 %	0.367
Maximum	1.000	25.00 %	0.432
Mean	0.591	50.00 %	0.543
Std. dev.	0.169	75.00 %	0.714
Mode	0.490	90.00 %	0.819

BOUNDING ELLIPSE WIDTH

BE Width - number



SAMPLE ANALYSIS SUMMARY (sizes in microns)

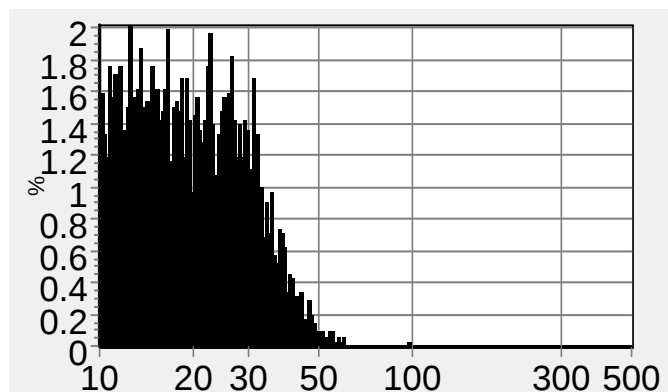
Count	9569	Number percentiles:		Area percentiles:		Volume percentiles:	
Minimum	3.0	10.00 %	3.8	10.00 %	5.4	10.00 %	8.3
Maximum	37.3	25.00 %	4.5	25.00 %	7.9	25.00 %	13.7
Mean	7.6	50.00 %	5.6	50.00 %	14.6	50.00 %	19.1
Std. dev.	5.0	75.00 %	7.7	75.00 %	20.6	75.00 %	24.2
Mode	5.9	90.00 %	14.3	90.00 %	25.6	90.00 %	29.1

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BOUNDING ELLIPSE LENGTH

BE Length - number

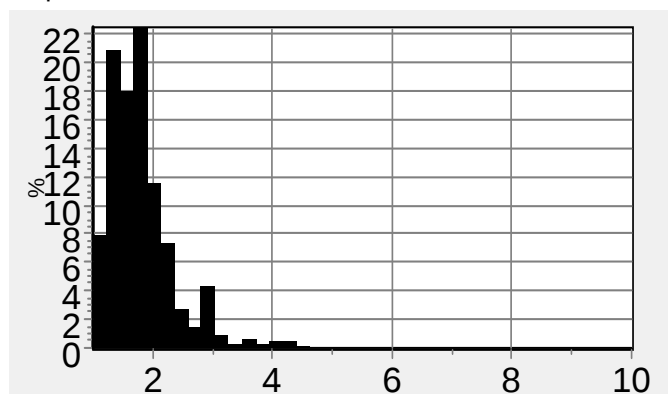


SAMPLE ANALYSIS SUMMARY (sizes in microns)

Count	3527	Number percentiles:		Area percentiles:		Volume percentiles:	
Minimum	10.0	10.00 %	11.2	10.00 %	15.5	10.00 %	19.7
Maximum	97.9	25.00 %	13.5	25.00 %	21.3	25.00 %	25.2
Mean	21.0	50.00 %	18.5	50.00 %	28.0	50.00 %	31.3
Std. dev.	8.9	75.00 %	25.9	75.00 %	34.8	75.00 %	38.2
Mode	12.5	90.00 %	32.5	90.00 %	41.9	90.00 %	45.8

ELLIPSE ASPECT RATIO

Ellipse AR



ELLIPSE ASPECT RATIO

SAMPLE ANALYSIS SUMMARY

Count	10107	Number percentiles:	
Minimum	1.000	10.00 %	1.023
Maximum	6.954	25.00 %	1.184
Mean	1.803	50.00 %	1.481
Std. dev.	0.569	75.00 %	1.786
Mode	1.787	90.00 %	2.280

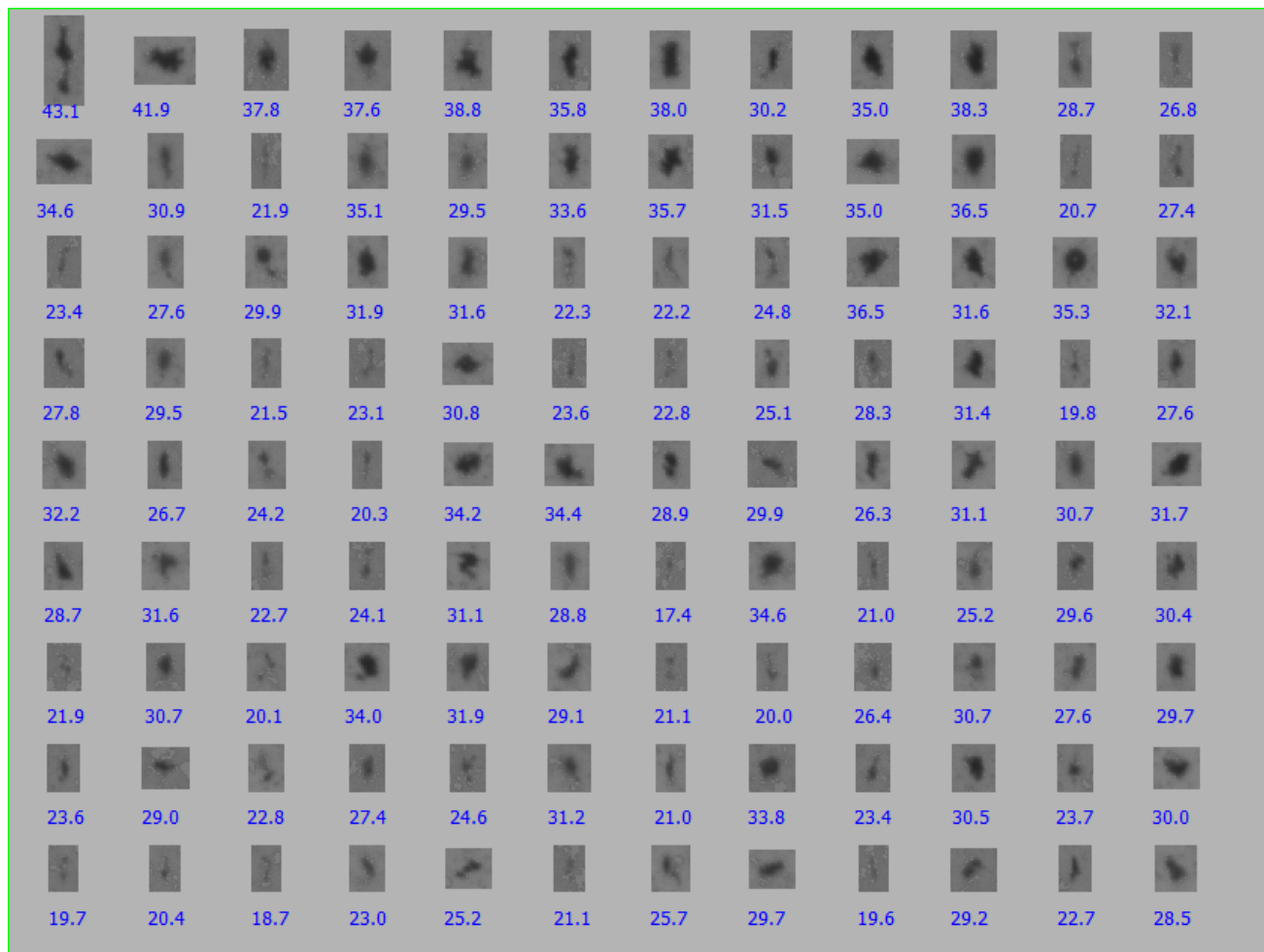
SYSTEM DATA SUMMARY

SYSTEM INDICATORS		CALIBRATION		CONCENTRATION	
In-focus count	10107	Micron/pixel ratio	1.286	Particles / frame	22.46
Frames	450	Magnification	5.75	Flow cell depth (mm)	0.50
Run time (sec)	38	Image size (microns)	1646 x 1235	Probe volume (mm^3)	0.614
Focus reject %	72.1	INSTRUMENT HARDWARE		Part. / ml (measured)	3.656E+04
Shape reject %	0.0			Dilution (%)	100
Border reject %	2			Part. / ml (original)	3.656E+04
Overlap reject %	7.5	Pump speed (%)	40.0	Dark pixel %	2.24
Ave. background intensity	122	Camera gain (%)	50.0		

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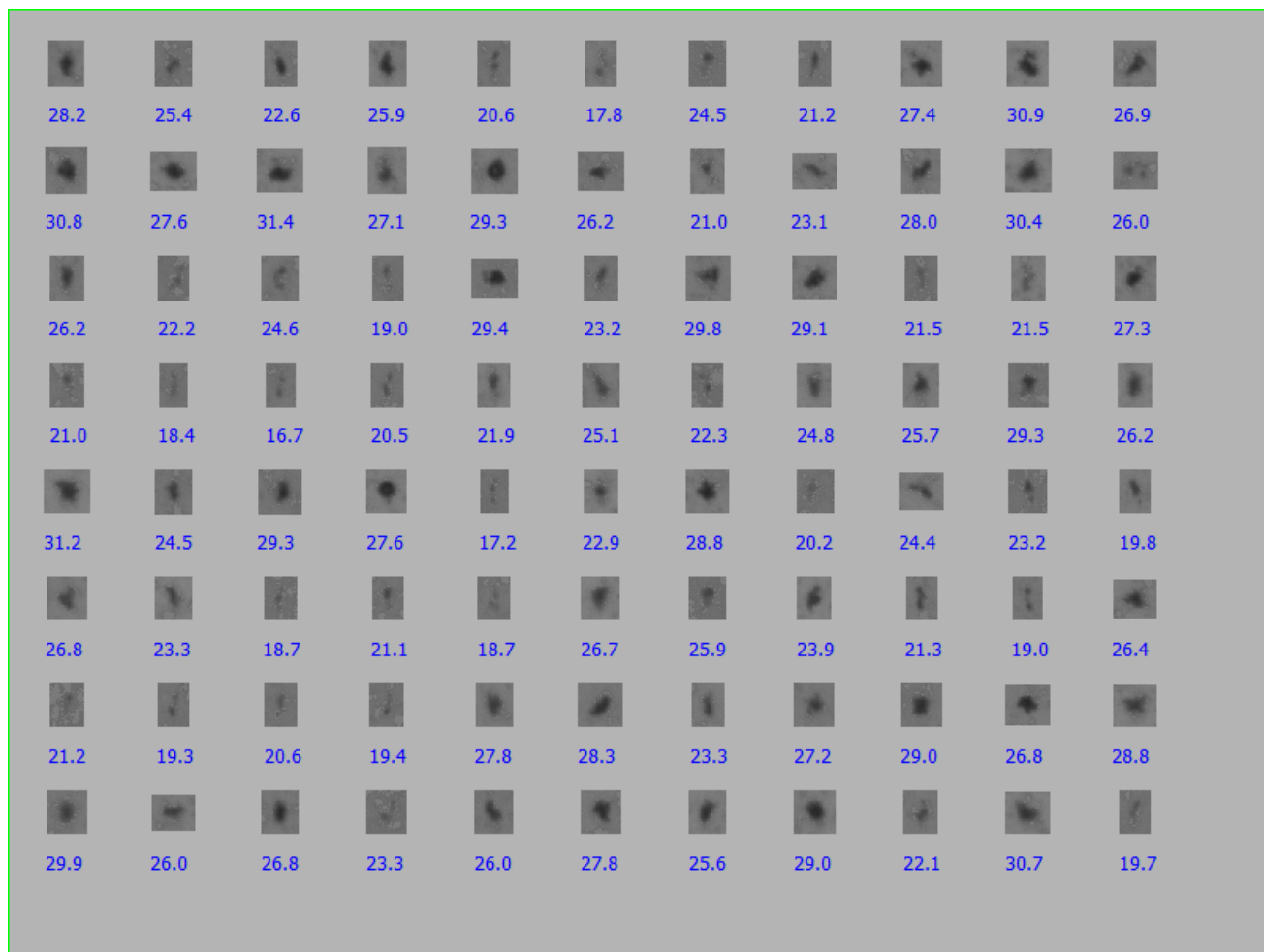
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Measure reported: Equivalent Circular Area Diameter



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Single run statistical summary

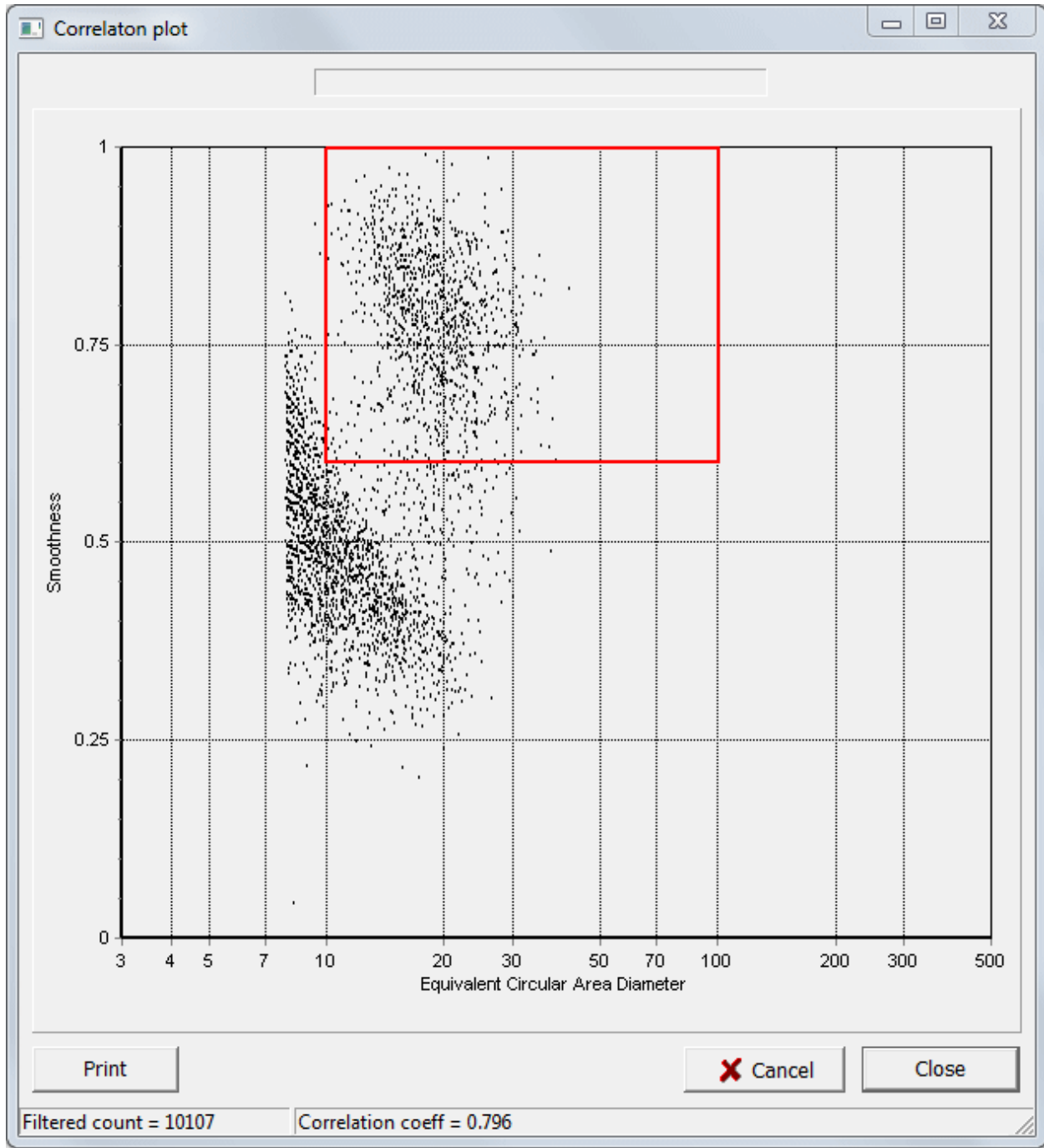
Mist227A-1

[illegible]

Correlation Chart

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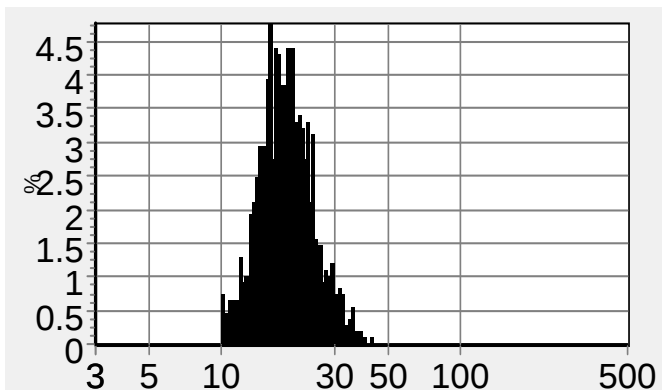
Measures: ECAD, Smoothness



File name	Mist227A-1
File location	C:\ProgramData\ParticleInsight\samples
Image file location	C:\Program Files\ParticleInsight\Images\
Saved images	10
Status	Entered
Created by	Yes
Analyzed by	Yes
Analyzed in SW ver.	
Analyzed on	
Last modified on	Particle Insight 2.43
Signature	
Associated databases	3 Oct 2014 6:53 AM
Source:	Particle database
Analysis conditions	standard mist
Run conditions	standard mist
Report options	standard mist
Post-run processing query filter:	
Equivalent Circular Area Diameter	10.00 - 100.00
Smoothness	0.600 - 1.000
Bounding Circle Diameter	0.00 - 0.00
	0.00 - 0.00
Equivalent Circular Area Diameter	1.00 - 0.00
Equivalent Circular Area Diameter	0.00 - 0.00

EQUIVALENT CIRCULAR AREA DIAMETER

ECA Diameter - number



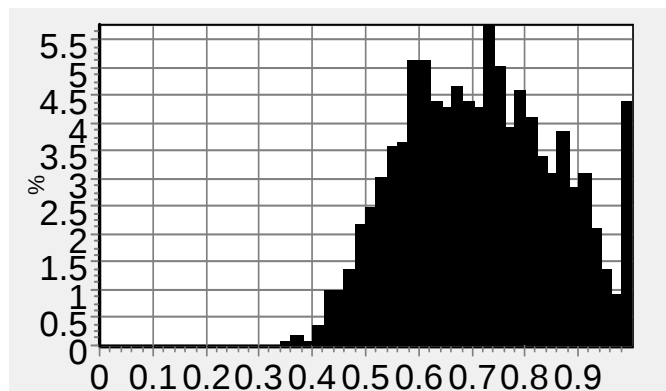
EQUIVALENT CIRCULAR AREA DIAMETER

SAMPLE ANALYSIS SUMMARY (sizes in microns)

Count	1091	Number percentiles:		Area percentiles:		Volume percentiles:		Dp,q:	
Minimum	10.1	10.00 %	13.5	10.00 %	13.6	10.00 %	13.6	D1,0	19.2
Maximum	41.9	25.00 %	15.6	25.00 %	15.9	25.00 %	15.9	D2,0	19.9
Mean	19.2	50.00 %	18.4	50.00 %	18.8	50.00 %	18.9	D2,1	20.6
Std. dev.	5.1	75.00 %	22.0	75.00 %	22.4	75.00 %	22.6	D3,0	20.6
Mode	16.0	90.00 %	26.0	90.00 %	26.3	90.00 %	26.6	D3,2	22.1
								D4,3	23.7

CIRCULARITY

Circularity



SAMPLE ANALYSIS SUMMARY

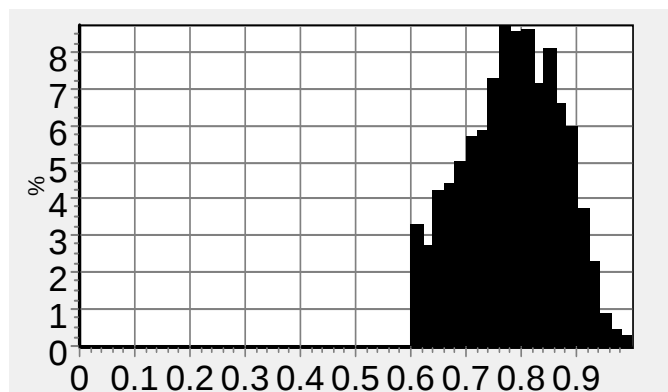
Count	1091	Number percentiles:	
Minimum	0.349	10.00 %	0.528
Maximum	1.000	25.00 %	0.603
Mean	0.715	50.00 %	0.713
Std. dev.	0.143	75.00 %	0.821
Mode	0.730	90.00 %	0.912

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SMOOTHNESS

Smoothness

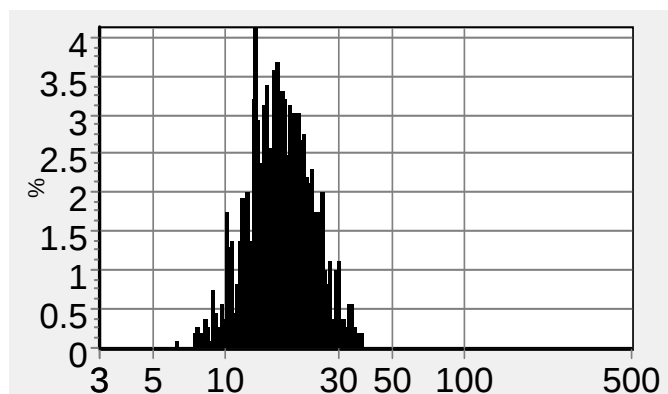


SAMPLE ANALYSIS SUMMARY

Count	1089	Number percentiles:	
Minimum	0.601	10.00 %	0.659
Maximum	1.000	25.00 %	0.718
Mean	0.782	50.00 %	0.786
Std. dev.	0.086	75.00 %	0.848
Mode	0.770	90.00 %	0.892

BOUNDING ELLIPSE WIDTH

BE Width - number



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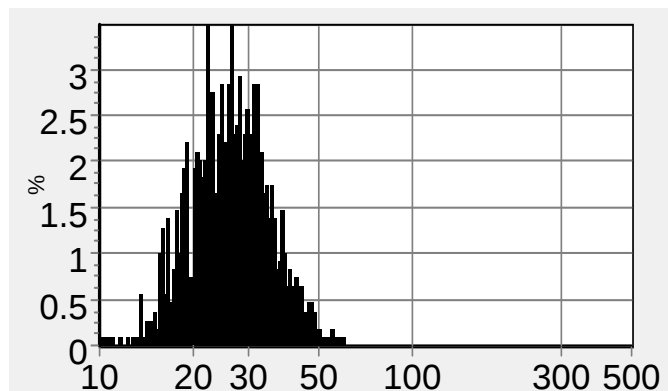
BOUNDING ELLIPSE WIDTH

SAMPLE ANALYSIS SUMMARY (sizes in microns)

Count	1091	Number percentiles:		Area percentiles:		Volume percentiles:	
Minimum	6.1	10.00 %	11.4	10.00 %	11.5	10.00 %	11.5
Maximum	37.3	25.00 %	13.5	25.00 %	13.8	25.00 %	13.9
Mean	17.6	50.00 %	16.7	50.00 %	17.2	50.00 %	17.4
Std. dev.	5.5	75.00 %	20.9	75.00 %	21.3	75.00 %	21.5
Mode	13.4	90.00 %	25.2	90.00 %	25.4	90.00 %	25.6

BOUNDING ELLIPSE LENGTH

BE Length - number



SAMPLE ANALYSIS SUMMARY (sizes in microns)

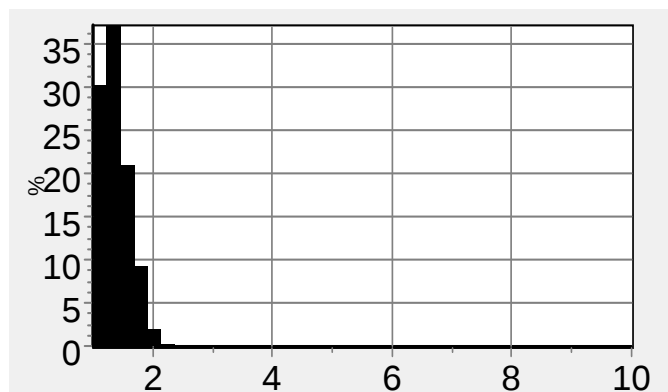
Count	1091	Number percentiles:		Area percentiles:		Volume percentiles:	
Minimum	10.0	10.00 %	17.8	10.00 %	18.1	10.00 %	18.1
Maximum	59.6	25.00 %	21.3	25.00 %	21.7	25.00 %	21.8
Mean	26.9	50.00 %	25.9	50.00 %	26.3	50.00 %	26.3
Std. dev.	7.8	75.00 %	31.4	75.00 %	31.9	75.00 %	32.1
Mode	22.1	90.00 %	37.3	90.00 %	37.9	90.00 %	38.1

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ELLIPSE ASPECT RATIO

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SAMPLE ANALYSIS SUMMARY

Count	1091	Number percentiles:	
Minimum	1.000	10.00 %	1.103
Maximum	2.460	25.00 %	1.194
Mean	1.376	50.00 %	1.345
Std. dev.	0.236	75.00 %	1.533
Mode	1.338	90.00 %	1.717

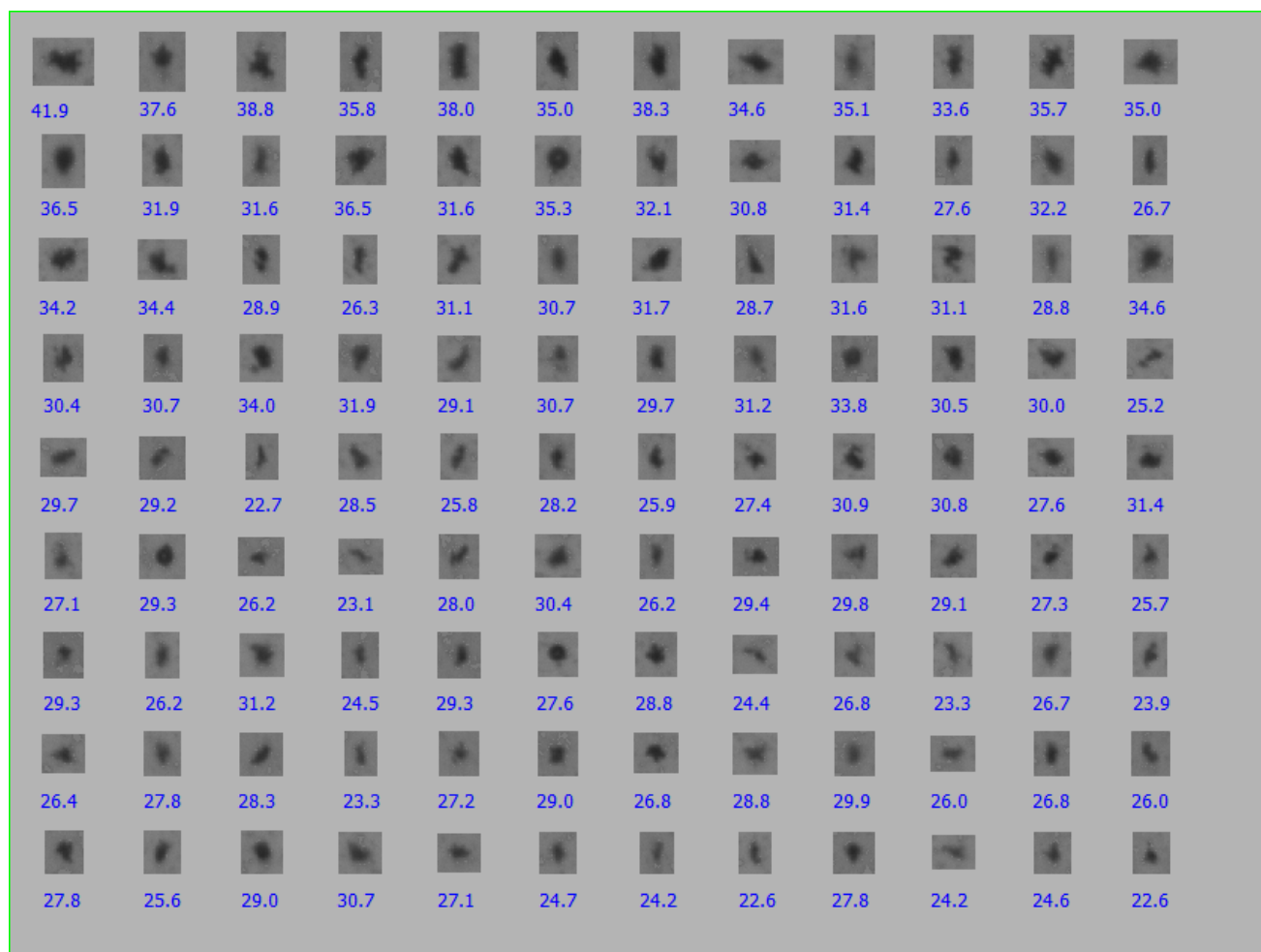
SYSTEM DATA SUMMARY

SYSTEM INDICATORS		CALIBRATION		CONCENTRATION	
In-focus count	1091	Micron/pixel ratio	1.286	Particles / frame	2.42
Frames	450	Magnification	5.75	Flow cell depth (mm)	0.50
Run time (sec)	38	Image size (microns)	1646 x 1235	Probe volume (mm^3)	0.614
Focus reject %	88.1	INSTRUMENT HARDWARE		Part. / ml (measured)	3.946E+03
Shape reject %	0.0			Dilution (%)	100
Border reject %	2			Part. / ml (original)	3.946E+03
Overlap reject %	9.2	Pump speed (%)	40.0	Dark pixel %	2.24
Ave. background intensity	122	Camera gain (%)	50.0		

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Measure reported: Equivalent Circular Area Diameter



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