PARTICLE SIZE ANALYSIS

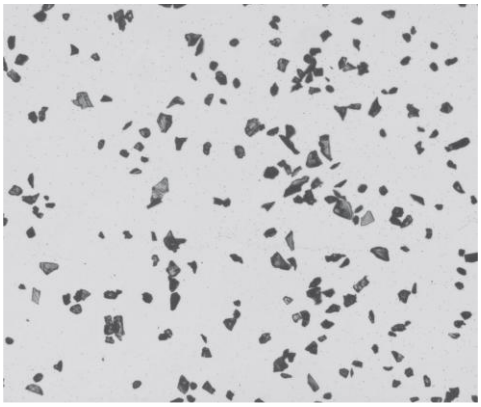


Figure 1: *The original image as captured at 50X.*

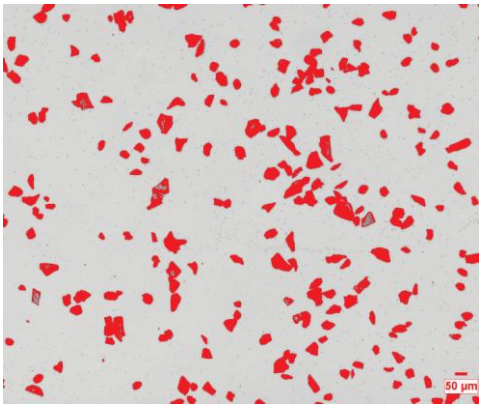


Figure 2: *Particles as binarized into the red bitplane.*

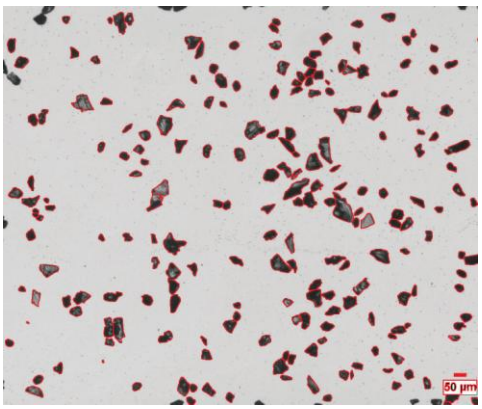


Figure 3: *Outline view of the final detected particles as measured.*

Sample Description

Two particle specimens are submitted for image analysis to characterize the particles and measure the sizes.

Purpose of Analysis

Demonstrate the ability of the Clemex Vision image analysis system with particle size analysis module to detect and measure the particles in the field of view.

Procedure

50X and 200X magnifications were used for analyzing the particles in sample #1 and #2, respectively. Particles were binarized into red bitplane. Certain binary operations were applied to clean the holes. Small features were eliminated during the process. Isolated particles were transferred into another bitplane so the remaining red particles could be processed further with separation steps. Measurements were done on the complete particles in two samples.

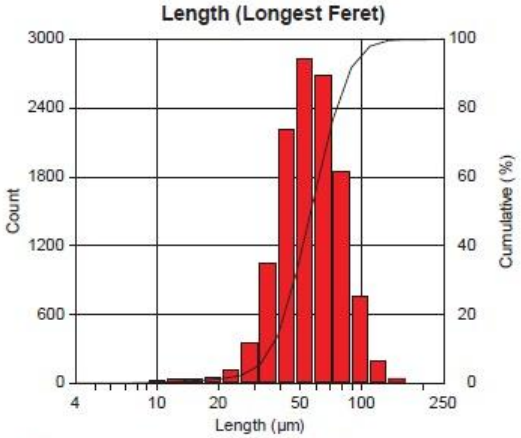
Equipment

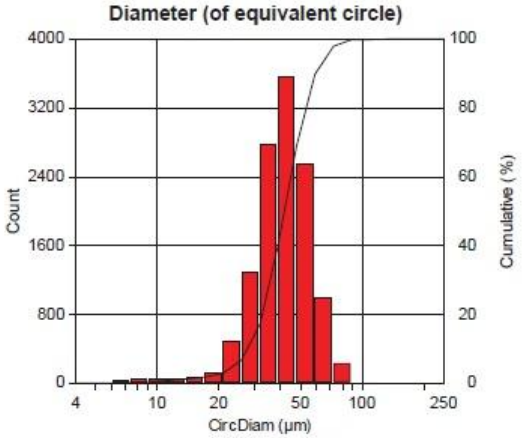
Image Analysis System:	Clemex Vision CORE
Microscope:	Leica 6000
Camera:	Clemex L 1.4M
Magnification:	50X and 200X
Stage:	Motorized Marzhauser

Results

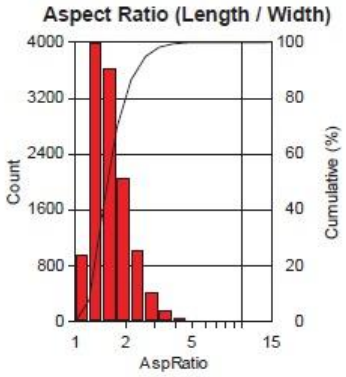
Length, Circular Diameter, Aspect Ratio, Sphericity and Roughness were measured on the particles in each field. Automated statistics and graphs were generated and presented in the Appendix. Final results can be printed directly from Clemex Vision. Raw data are linked to their respective objects for validation purpose. Raw data can also be exported in Excel format.

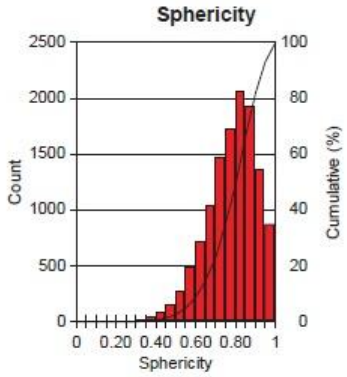
Appendix: Sample #1

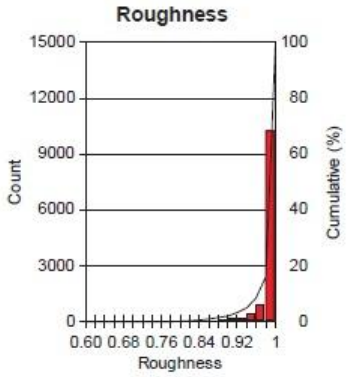




Min:	7.32	6.34
Max.:	228.75	122.84
Mean:	59.17	42.77
Std. Dev.:	20.62	12.67
D10:	36.28	28.04
D50:	56.45	41.83
D90:	85.88	59.15



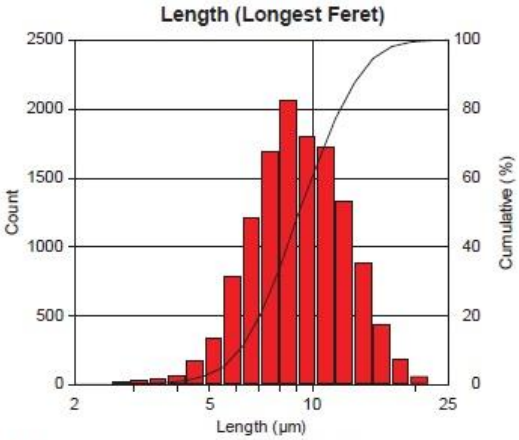


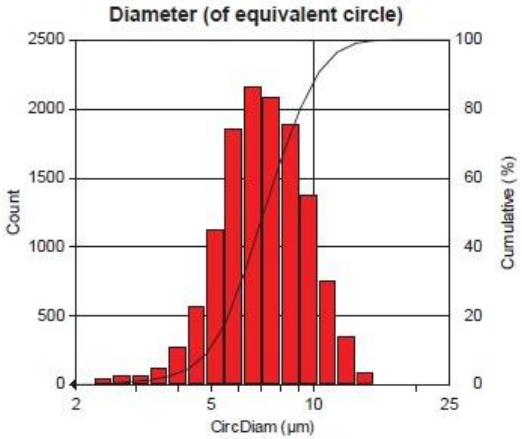


Min:	1.05	0.11	0.67
Max.:	13.52	1.00	1.00
Mean:	1.69	0.78	0.99
Std. Dev.:	0.50	0.13	0.03
D10:	1.23	0.61	0.97
D50:	1.56	0.80	1.00
D90:	2.31	0.93	1.00

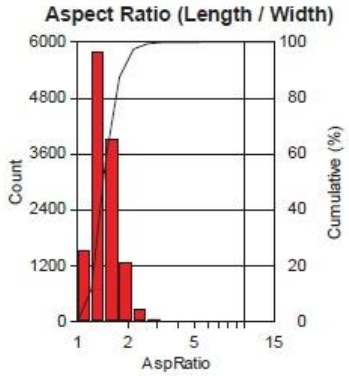
Note: Particles that where thinner than three times the minimum optical resolution were eliminated.
For this analysis, it means that features thinner than the following value were elliminated: 6 µm

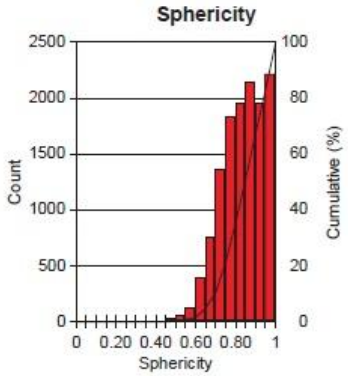
Appendix: Sample #2

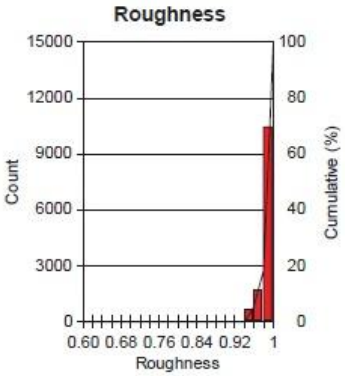




Min:	2.37	2.09
Max.:	22.75	16.36
Mean:	9.60	7.37
Std. Dev.:	3.04	2.10
D10:	6.12	4.93
D50:	9.10	7.12
D90:	13.78	10.20







Min:	1.06	0.16	0.95
Max.:	5.60	1.00	1.00
Mean:	1.49	0.84	0.99
Std. Dev.:	0.29	0.11	0.01
D10:	1.20	0.70	0.97
D50:	1.42	0.85	1.00
D90:	1.85	0.98	1.00

Note: Particles that where thinner than three times the minimum optical resolution were eliminated.
For this analysis, it means that features thinner than the following value were elliminated: 2 µm