

PARTICLE SHAPE
REPORT

Prepared for:

Metal Powders

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Introduction

The objective of this report with Particle Insight particle shape analyzer is to provide an overview of the capabilities that not only size but also shape can bring to best characterize raw materials and differentiate differences in samples based on shape, not just size.

Equipment Overview

The Particle Insight is a dynamic image analysis system specifically developed for applications where the shape of raw materials is an important aspect. The analyzer provides up to 32 different shape parameters that are studied and reported instantaneously for specimens in organic or aqueous solvent suspensions.

The analyzer complies with the FDA 21 CFR Part 11 requirements as well as with the new Data Integrity requirements set forth by the FDA. The image analyzer is appropriate for a range of geological, industrial, and biological samples varying between 3 and 2500 μm (with lens changes). The recirculating sample module and precision optics in the system are developed to obtain and report applicable measurements immediately, which is a critical quality control capability in numerous production processes. The system also includes an automated fill and rinse feature to enable smooth operation and is compatible with aqueous as well as organic solvents.

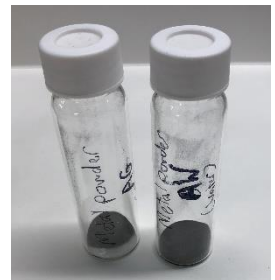


Key Features:

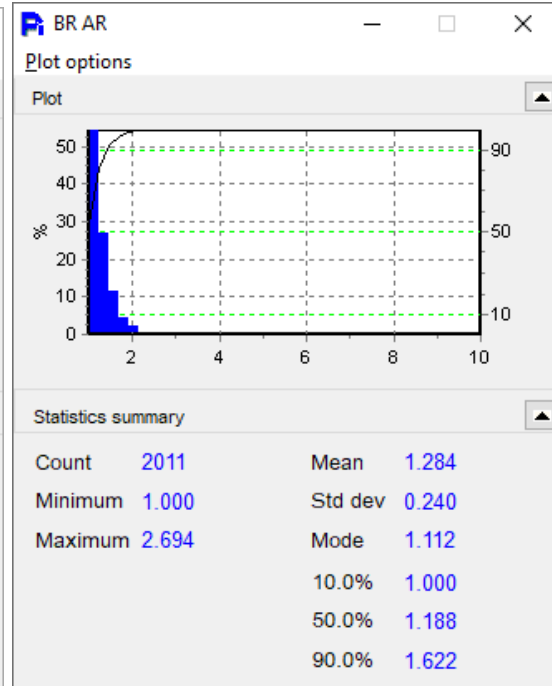
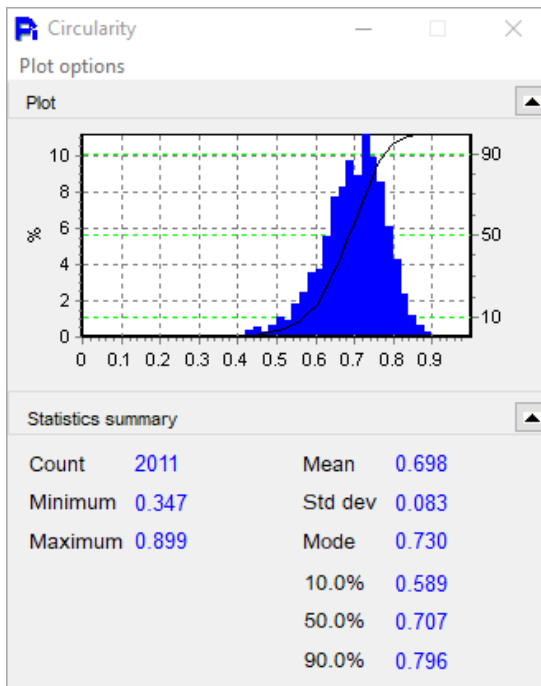
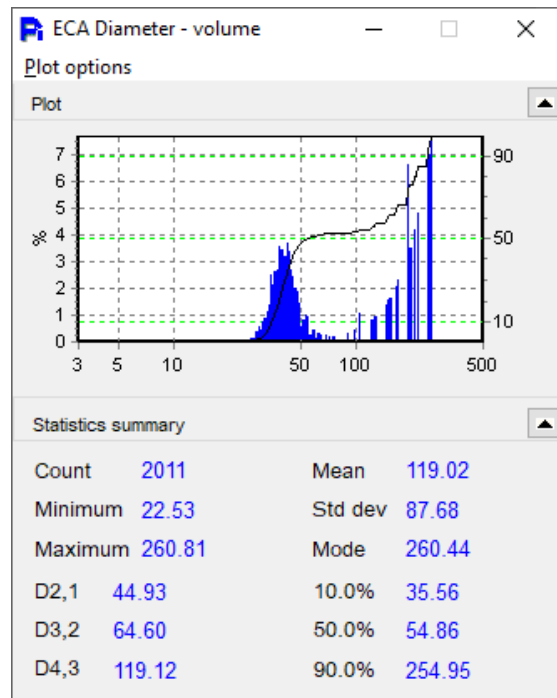
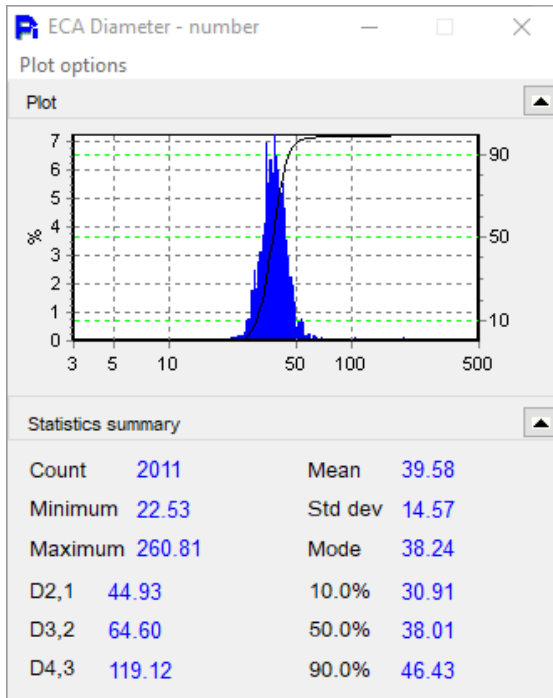
- Sample handling automation and flexibility
- Real time results & data backup
- Flexible sample cell design
- Data reporting flexibility
- Rare event detection
- Statistical assurance
- Security and regulatory compliance

Method Overview

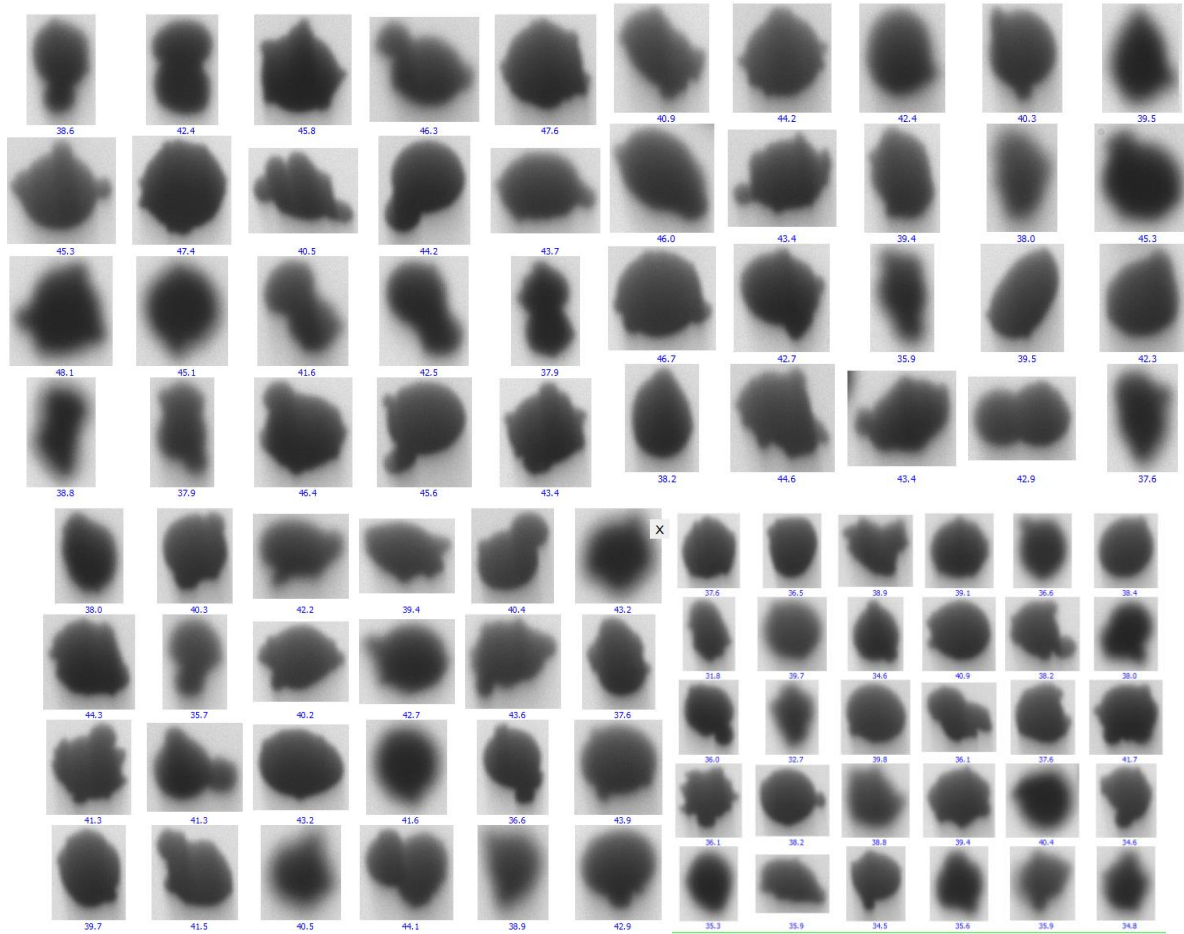
- Six samples were supplied. Metal Powder samples were prepared and suspended in water. Once approximately 10 grams were mixed in 20ml of water, the sample was mixed and dispersed. Approximately 4ml of that solution was suspended in 300ml of water and analyzed.
- Sample names
 - **Acero Inoxidable (Stainless Steel) x 2**
 - **Cobre (Copper)**
 - **Bronze x 3**
- Particle shape reports were created for each sample and comparisons were also done to differentiate the two samples not only on size but also on several shape parameters.



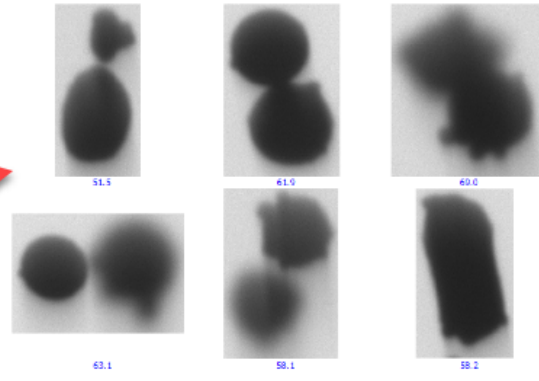
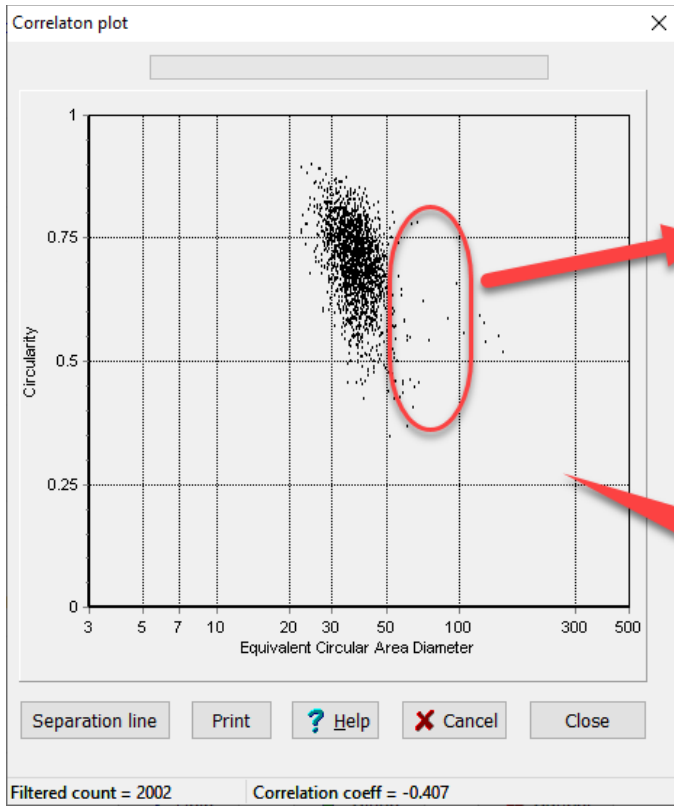
Acero Inox C - Size Summary & Typical Thumbnails



DEMONSTRATION REPORT

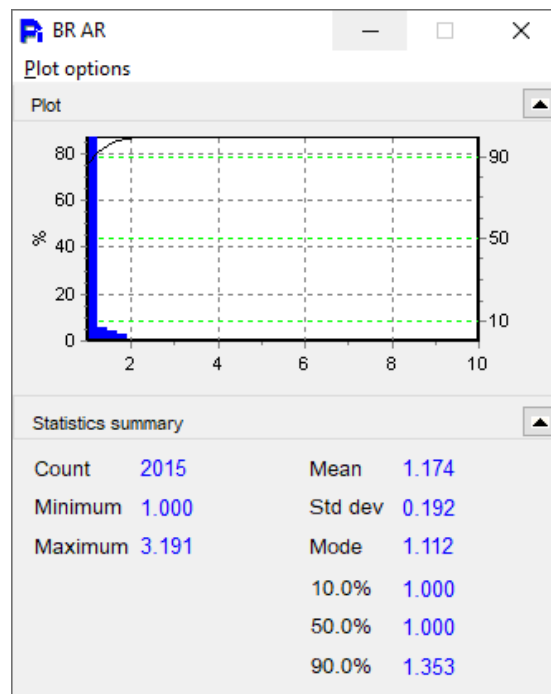
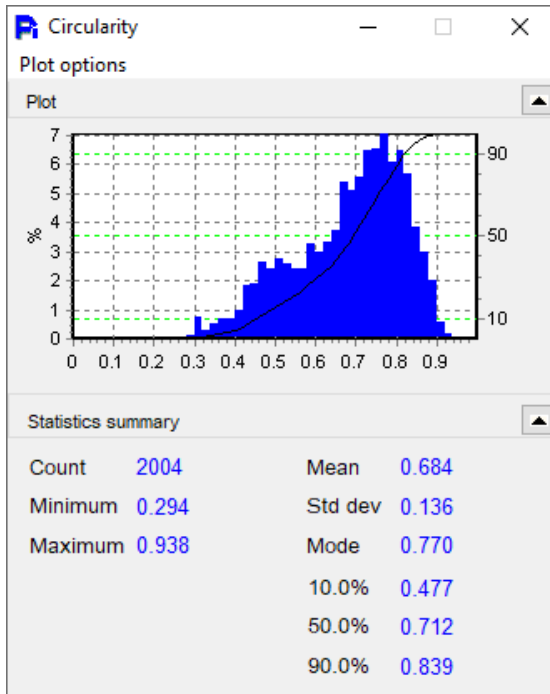
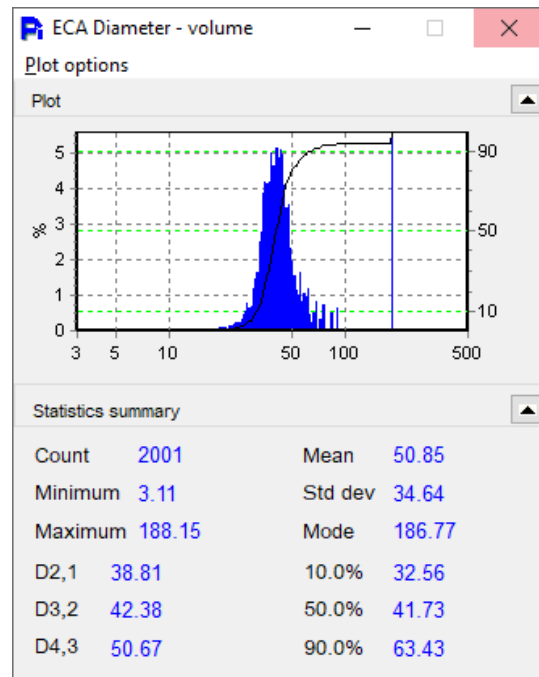
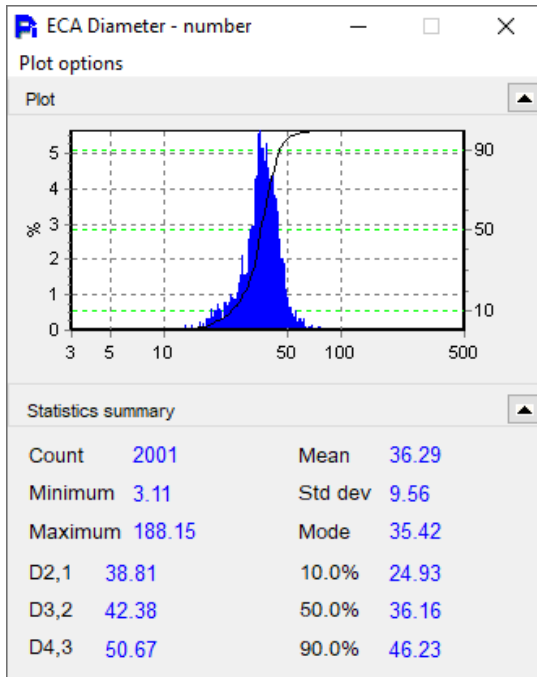


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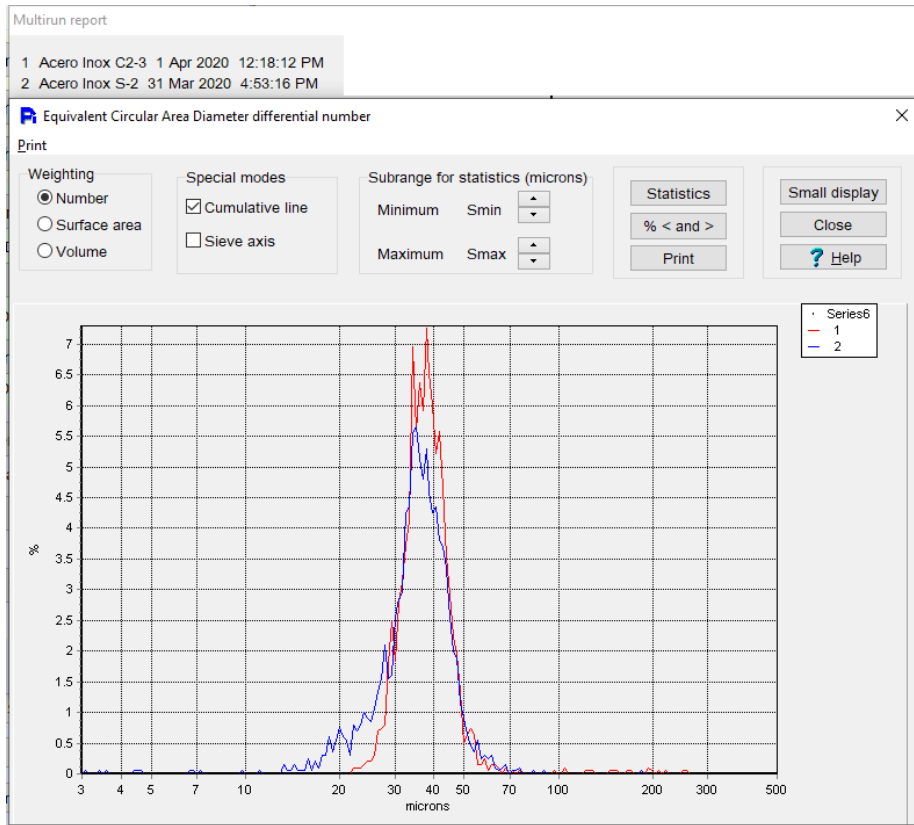
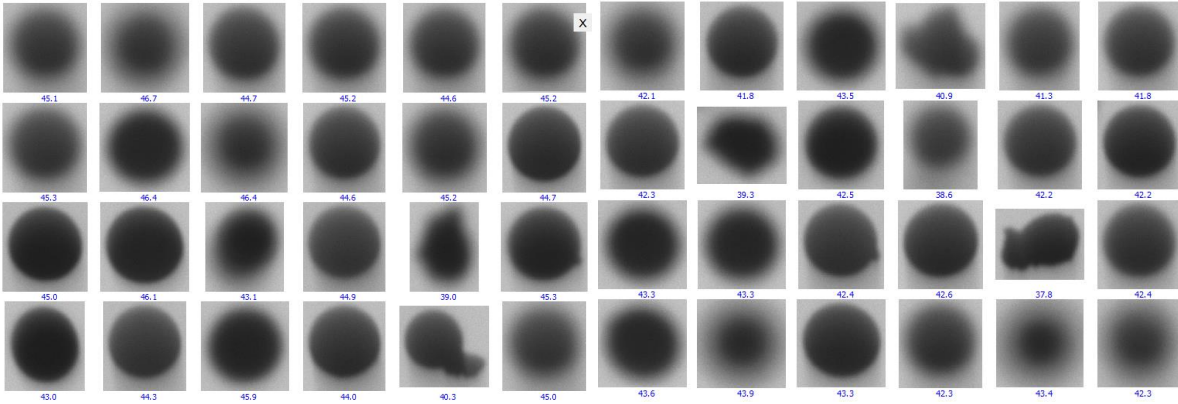


Correlation Feature to identify outlier particles and view them

Acero Inox S - Size Summary & Typical Thumbnails

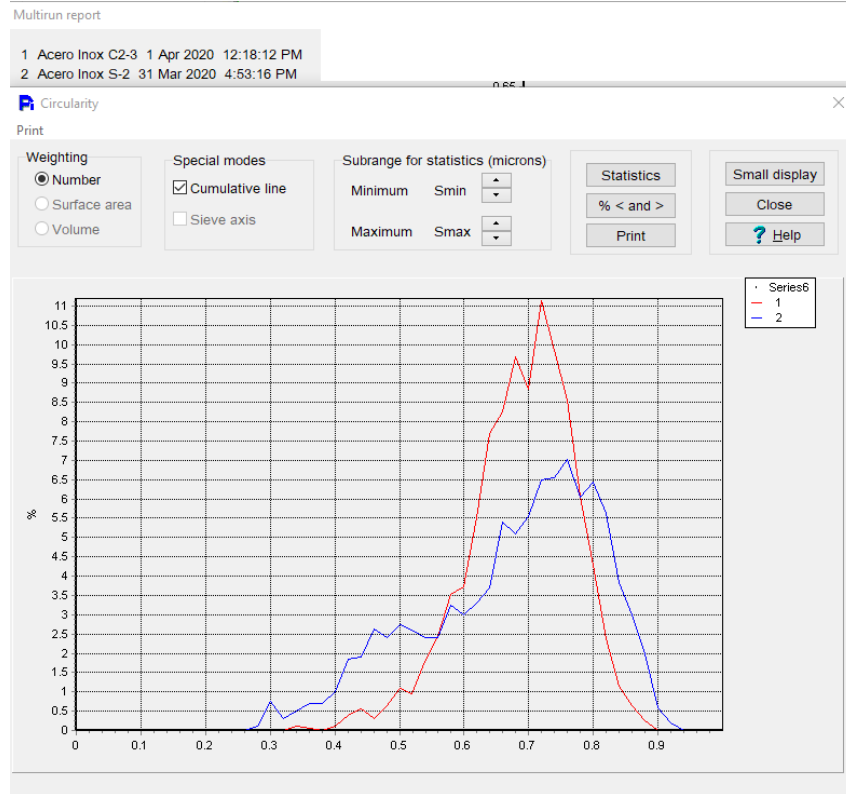


DEMONSTRATION REPORT



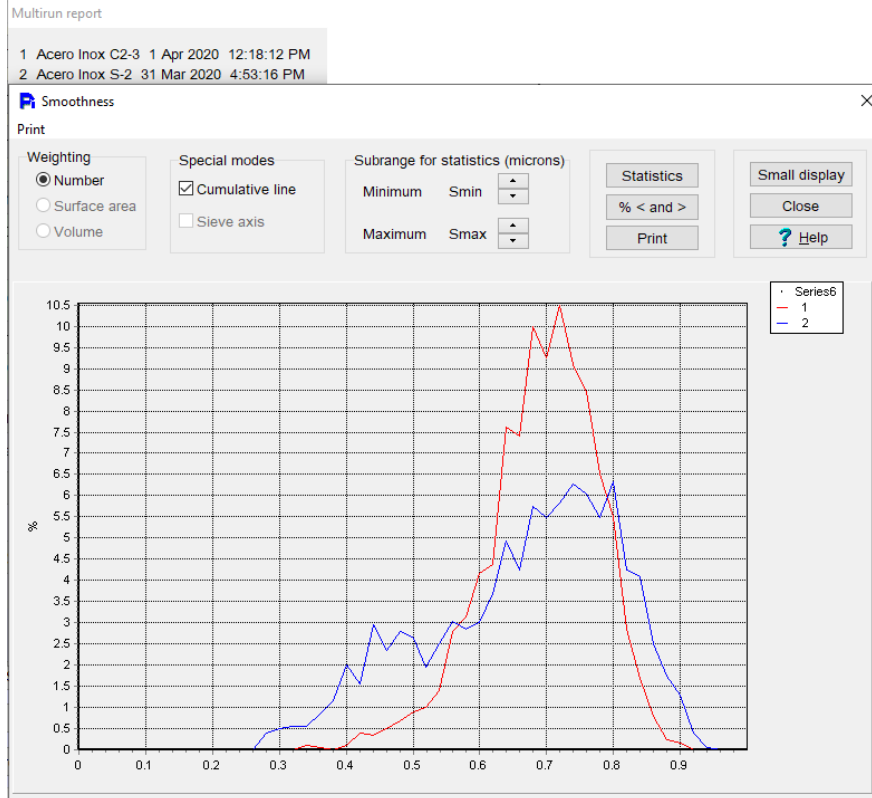
Size comparison by Number shows that these two samples are very similar in SIZE.

DEMONSTRATION REPORT



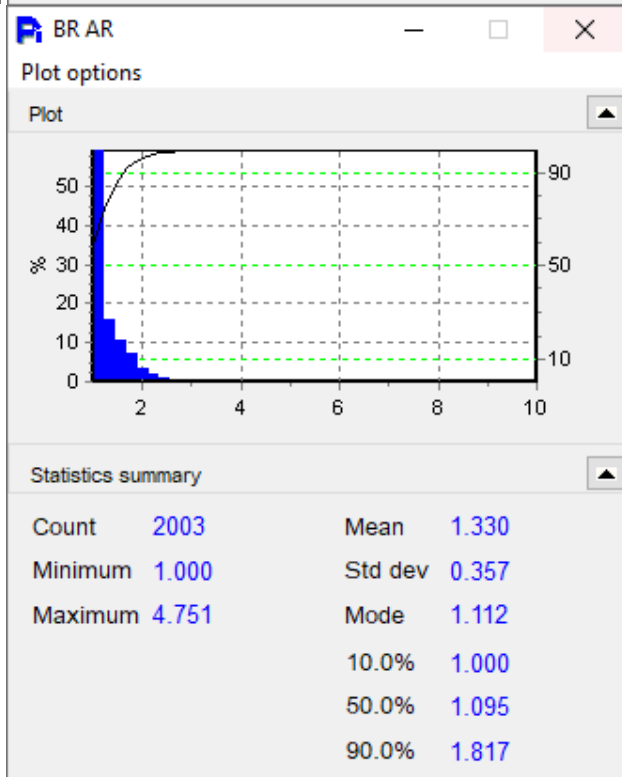
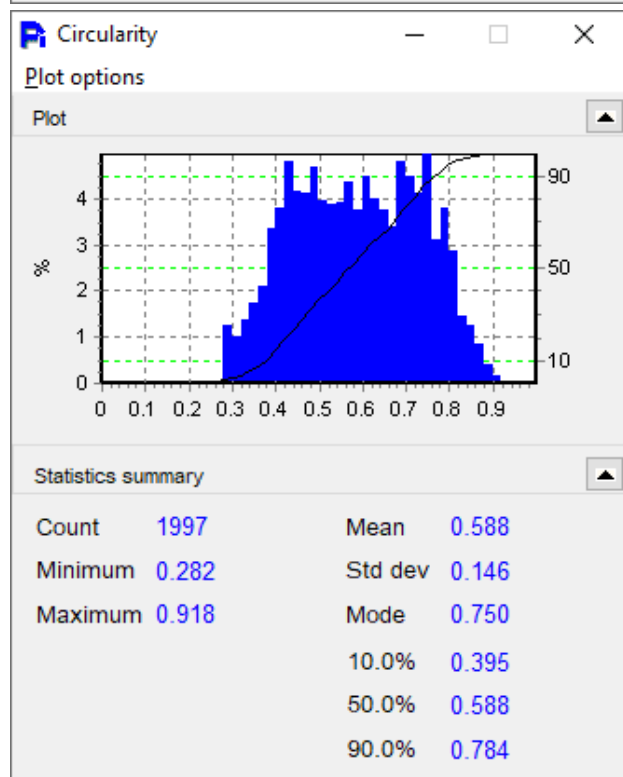
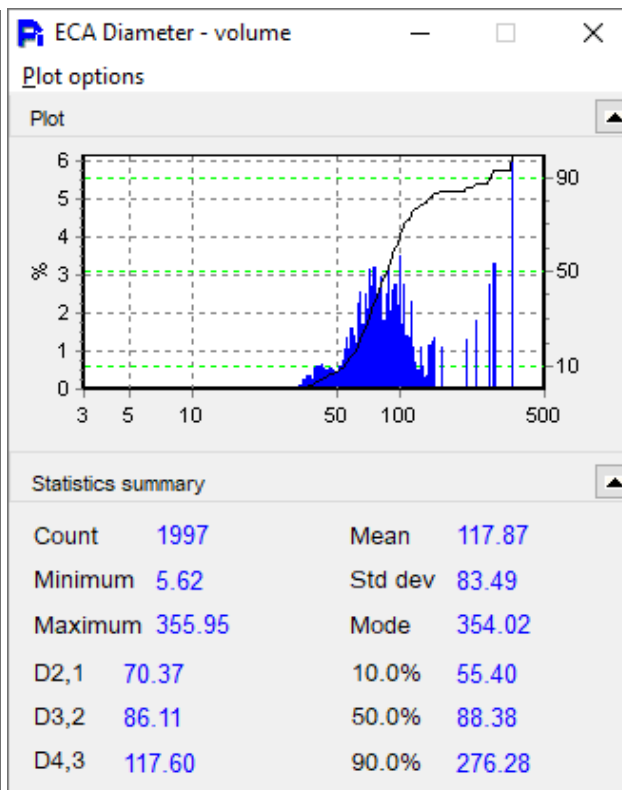
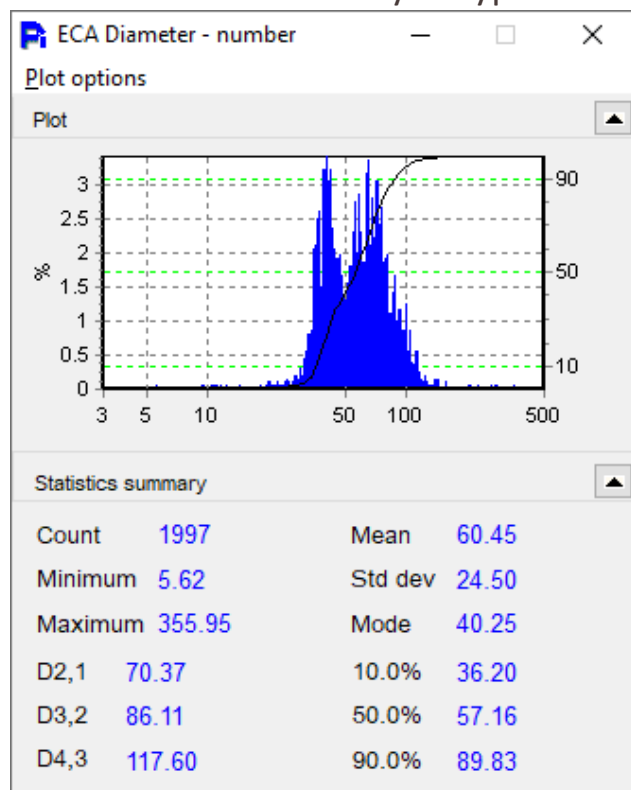
Circularity comparisons show Very Differences between the two Stainless Steel samples.

DEMONSTRATION REPORT

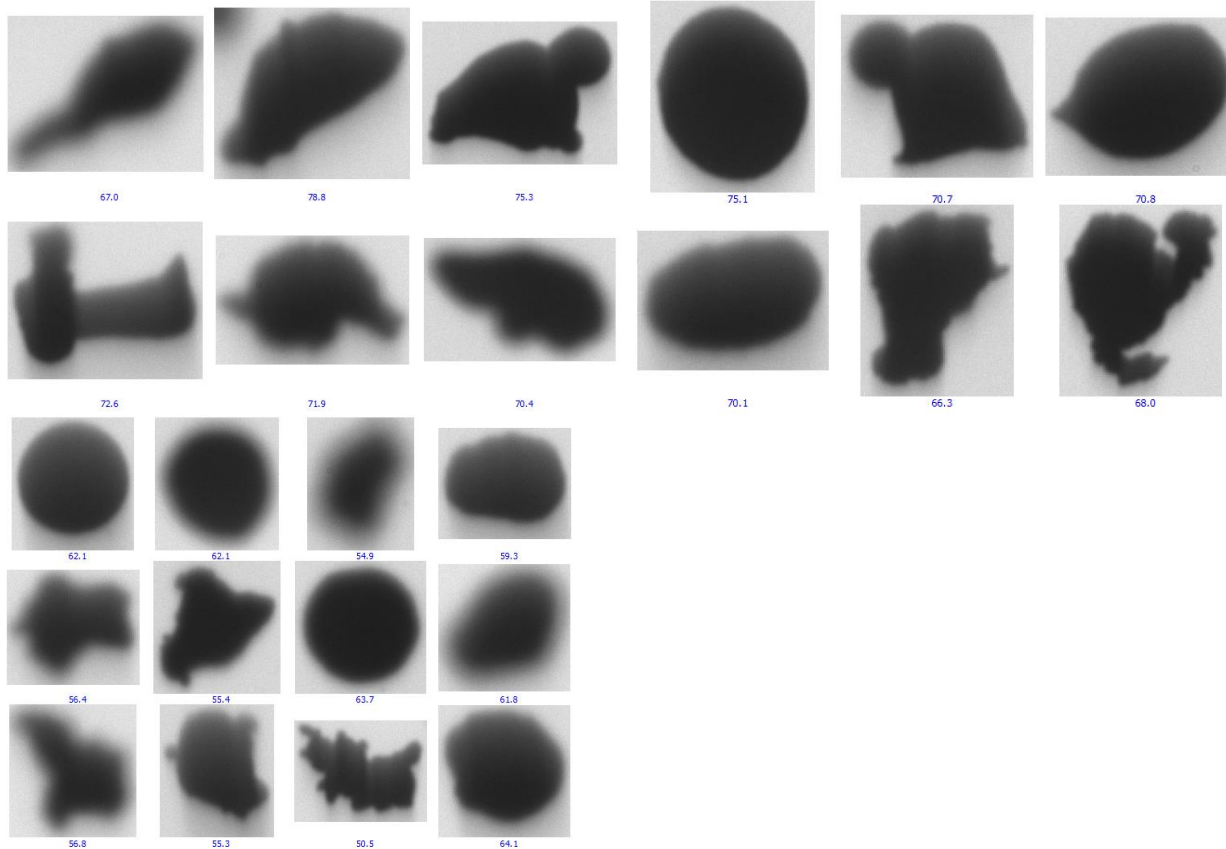


Smoothness can also show great differences between the two Stainless Steel Samples.

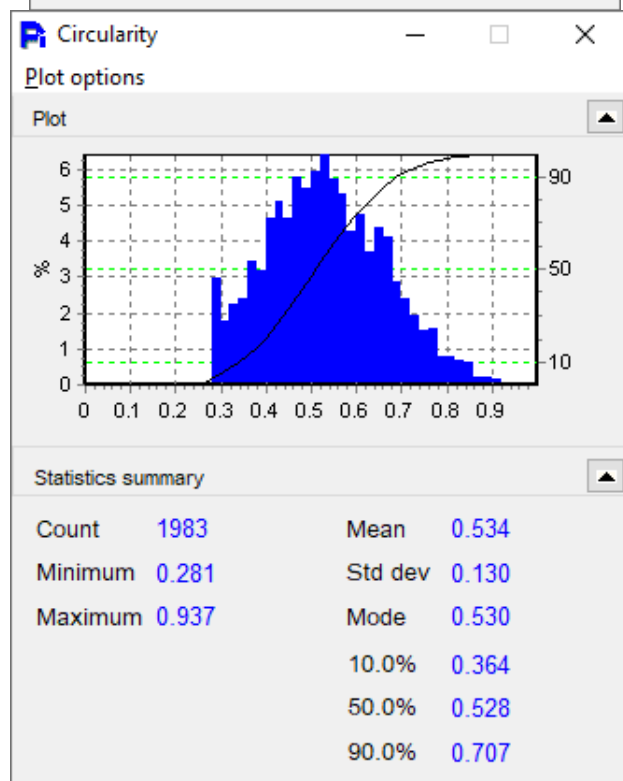
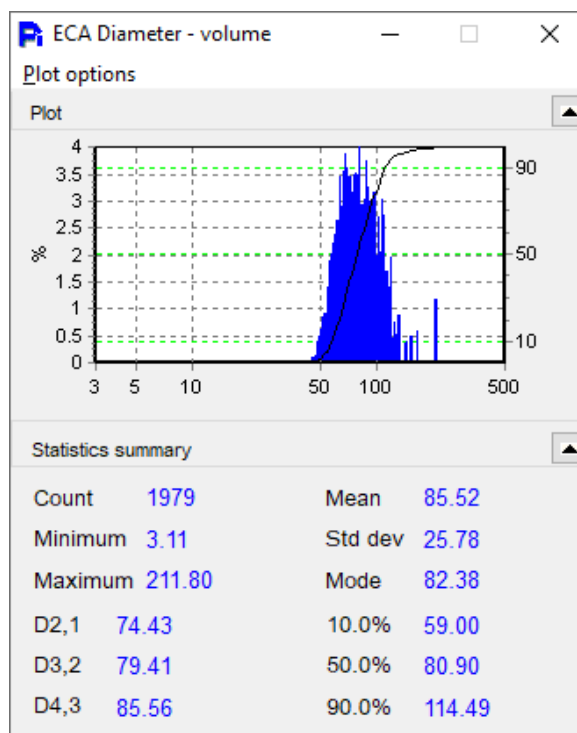
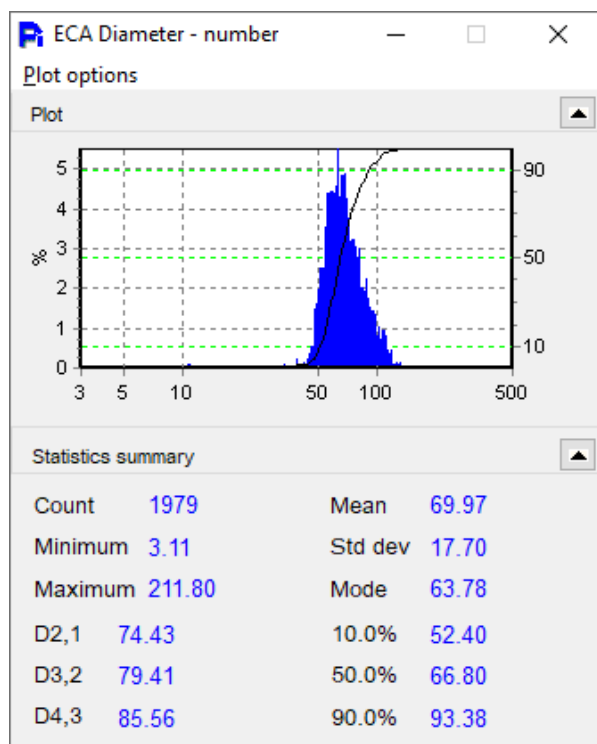
Cobre M - Size Summary & Typical Thumbnails



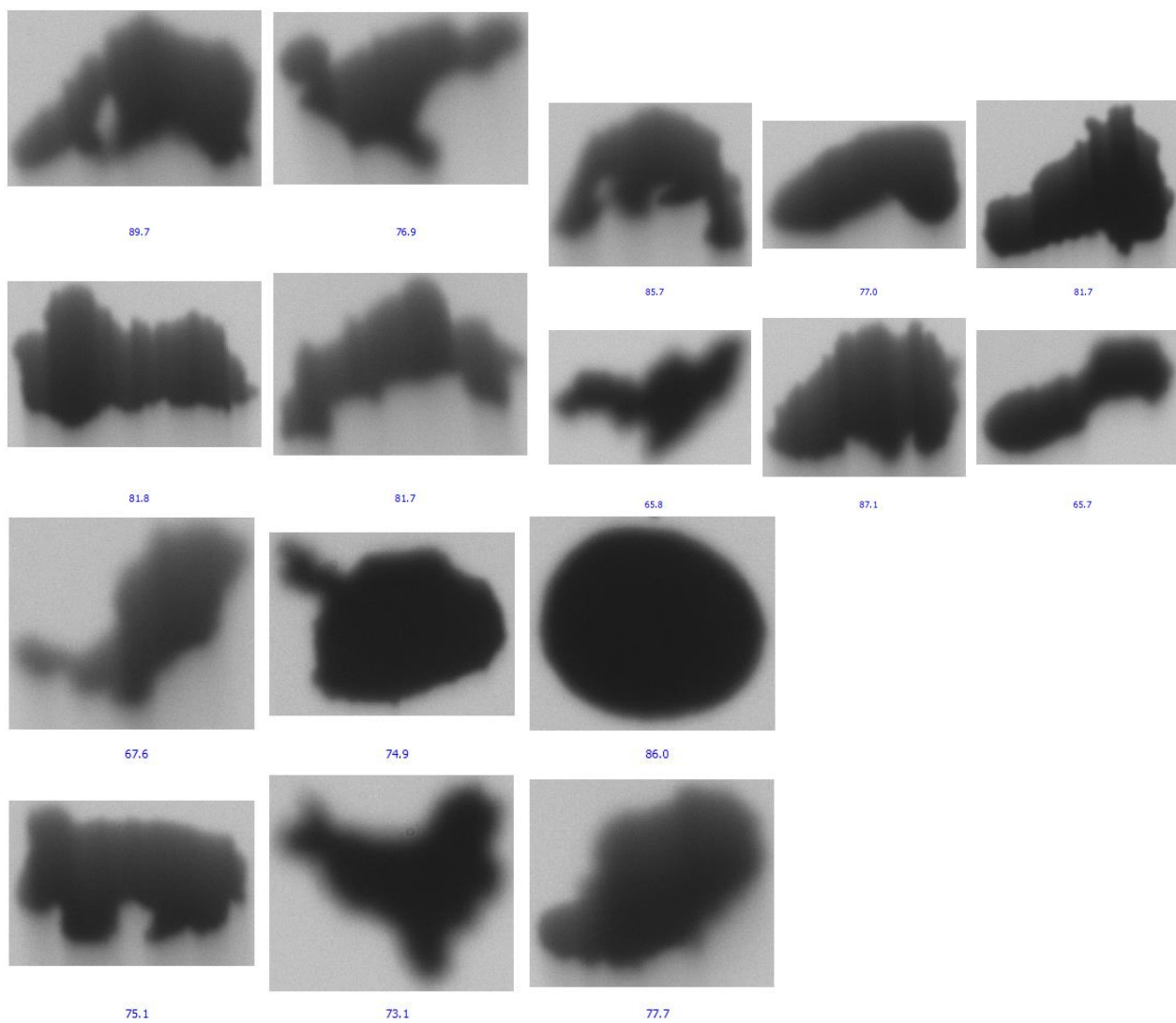
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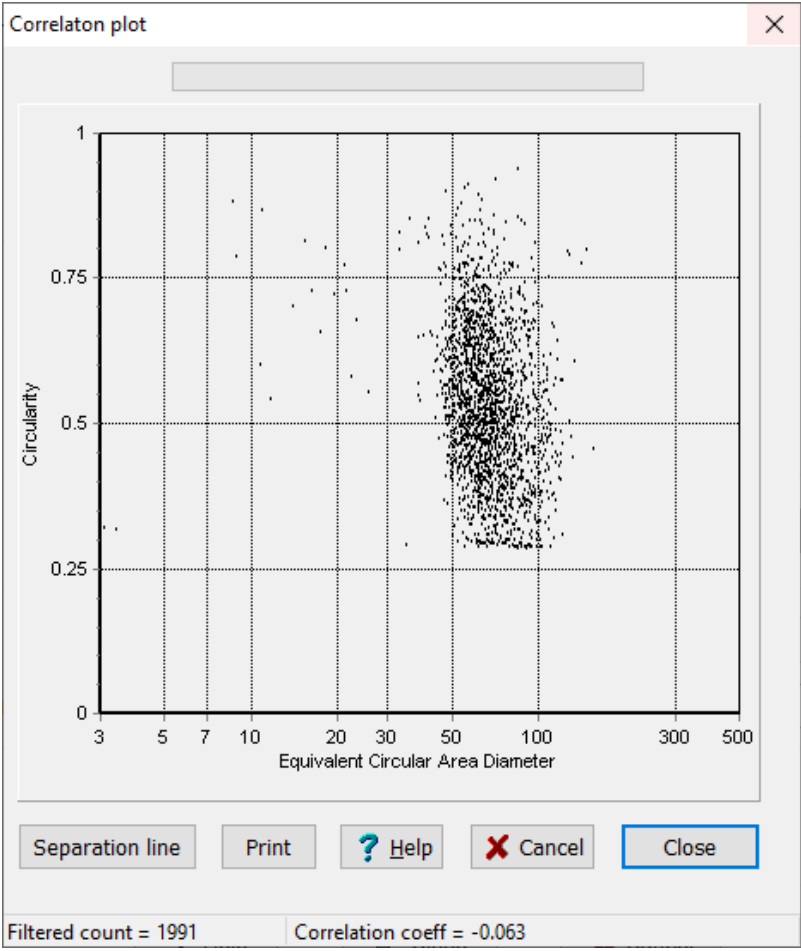
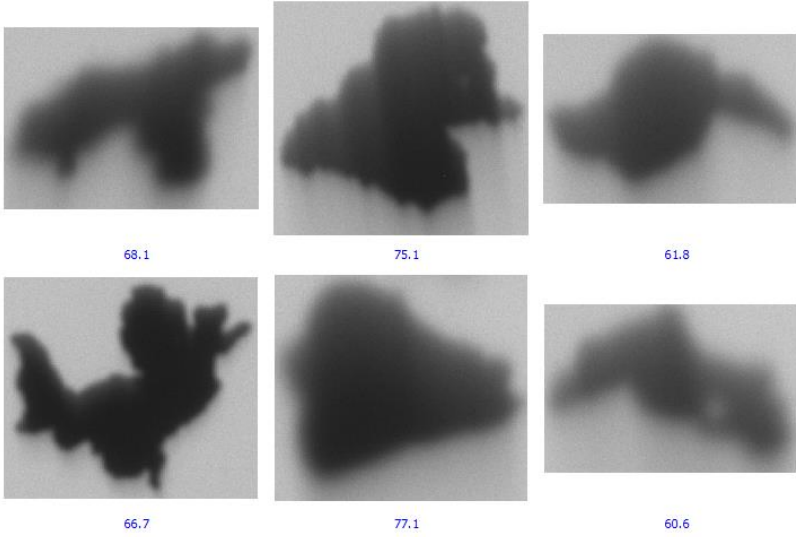
Bronze M - Size Summary & Typical Thumbnails



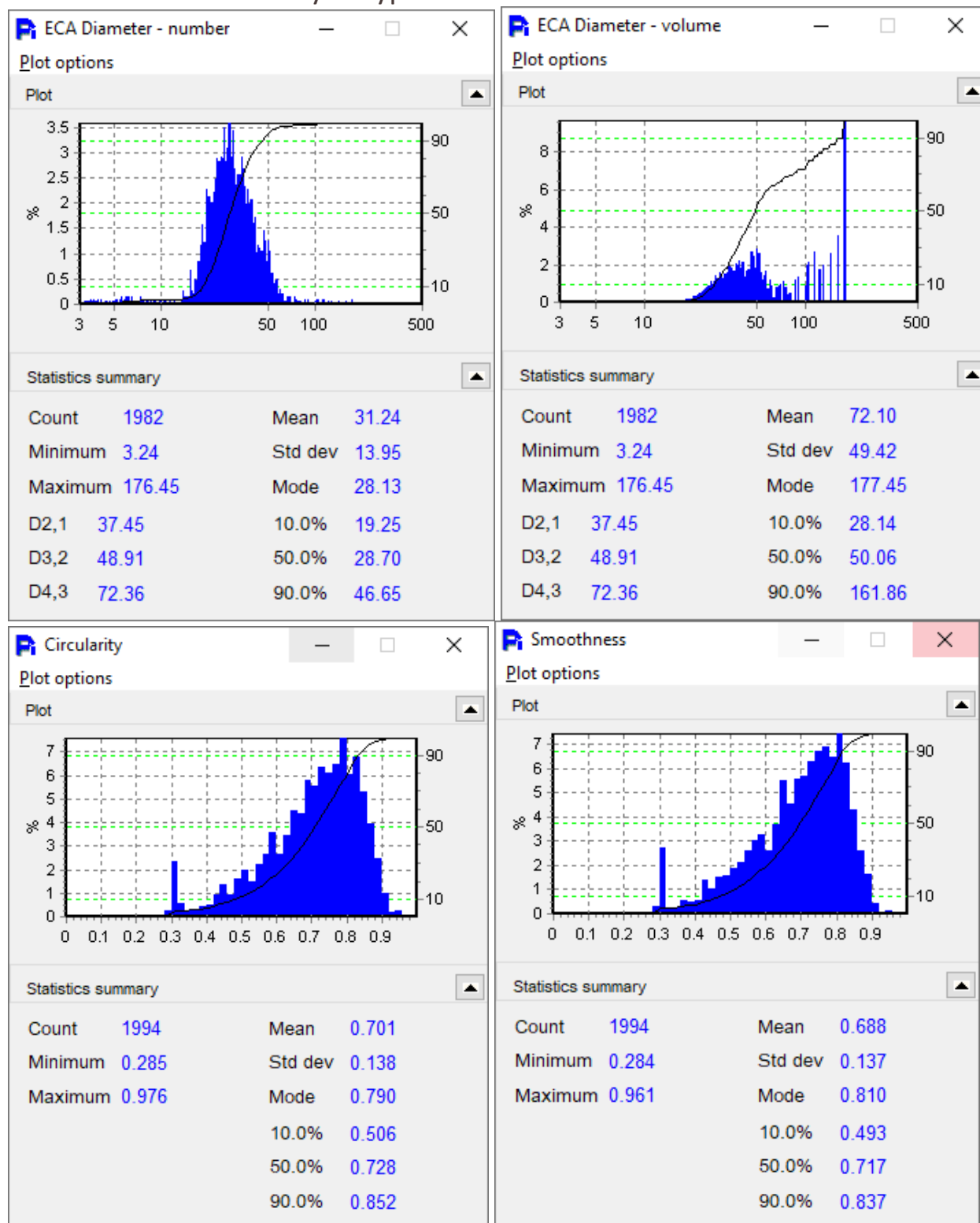
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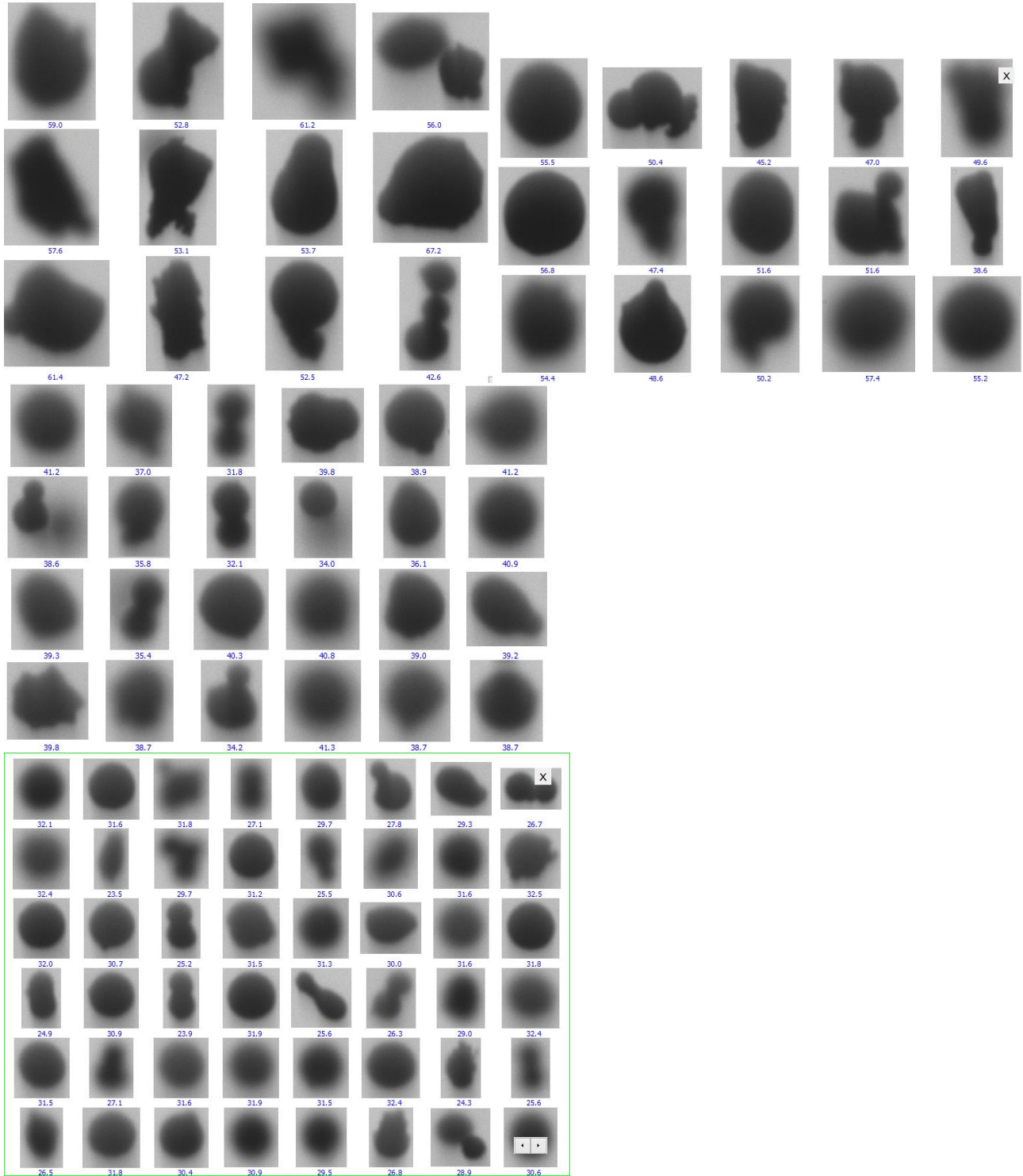
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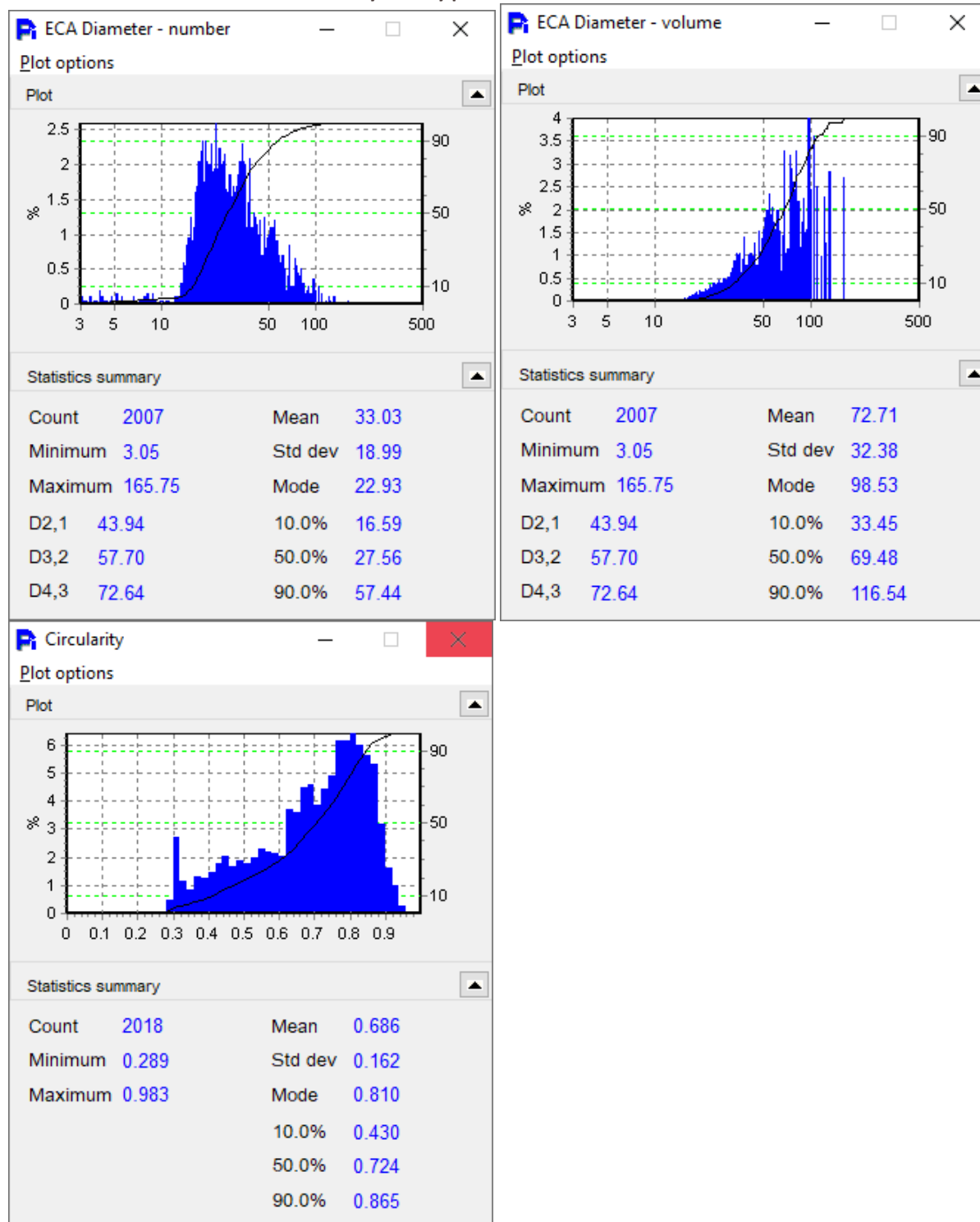
Bronze C - Size Summary & Typical Thumbnails



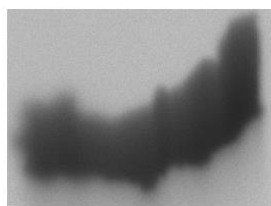
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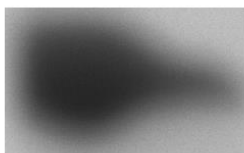
Bronze M+C - Size Summary & Typical Thumbnails



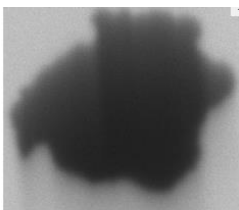
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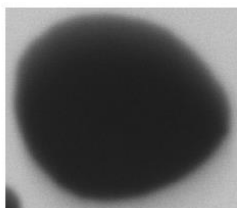
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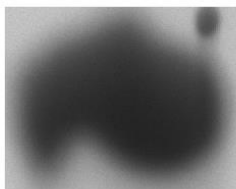
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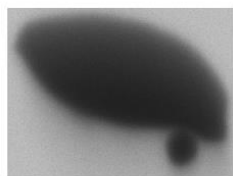
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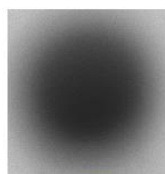
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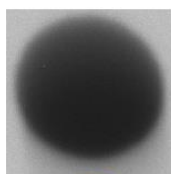
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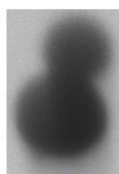
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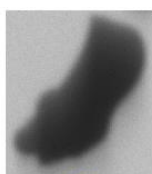
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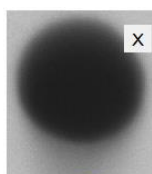
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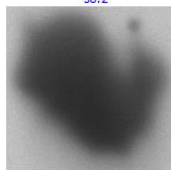
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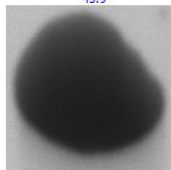
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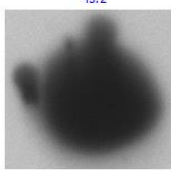
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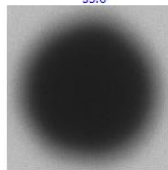
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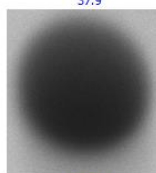
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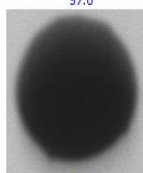
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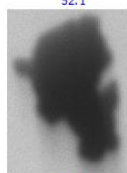
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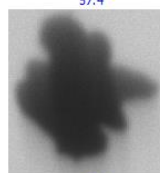
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52.4



43.0



48.2

