

# Reproducible particle size and shape image analysis



## CLEMEX PSA

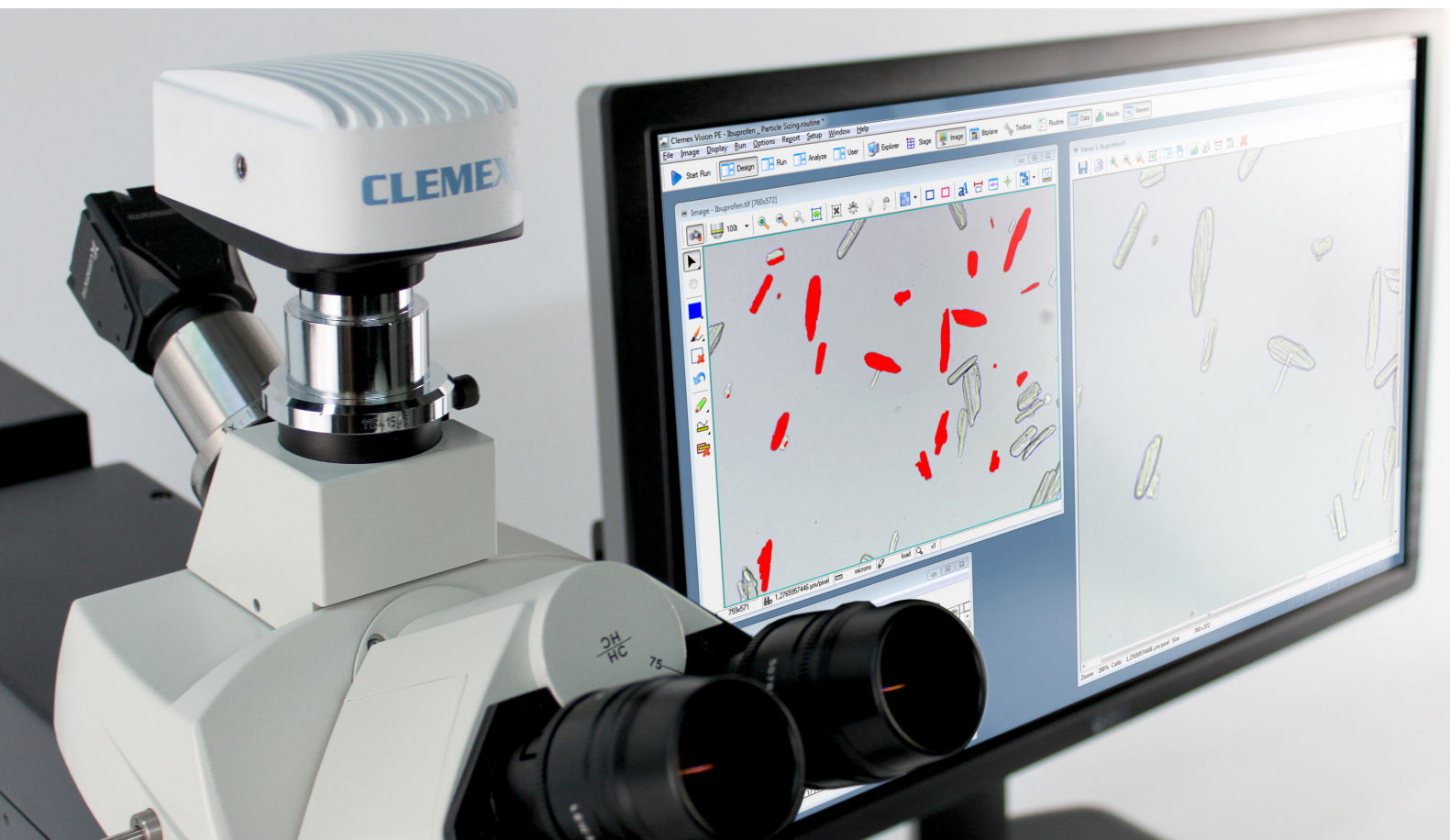
### Real size and shape measurements

#### Perfect dispersion

The computer controlled Clemex Powder Disperser ensures reliable and repeatable results and no damaged or broken particles.

#### Particle size and shape reports

Analyze particle size distribution of crystalline powder particles, ceramic powder particles, dry pharmaceutical powder particles and more.



## Understanding your challenges

### More efficient lab production

The level of automation available with Clemex PSA will certainly help your lab reach maximum effectiveness. Generating statistical and individual data for tens of thousands of particles becomes reality, while manufacturing efficiency and product performance are easily attained.

### Traceability requirements

The Clemex PSA system's user rights management conforms with regulatory requirements such as FDA 21 CFR part 11 ensuring data integrity.

### Reproducible measurements

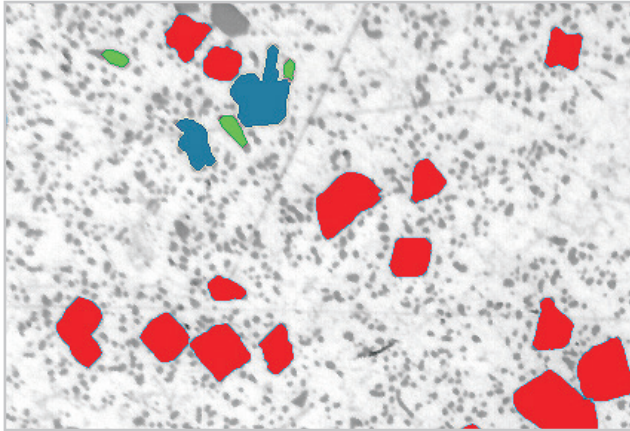
Optical microscopy is the best way to look at large samples of particles that lie in their most mechanically stable position and the only way to obtain real shape measurements.

### Powder cluster dispersion

As a stand-alone unit beside the Clemex PSA, the Clemex Powder Dispenser breaks agglomerates, without damaging the particles, so that they might be easily observed and differentiated by optical microscopy.

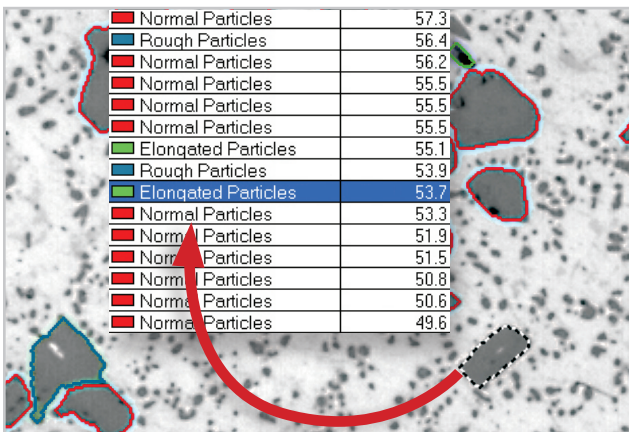
# Reproducible particle size & shape image analysis

Addressing a need in the field of particle characterization, the Clemex PSA is a versatile particle size and shape image analysis tool that can be used in a wide range of applications - particularly in the pharmaceutical industry and in materials science for quality control. Clemex image analysis methods offer an essential advantage: obtaining real size and shape measurements with results that are accurate, reliable and reproducible. The same sample, the same results.



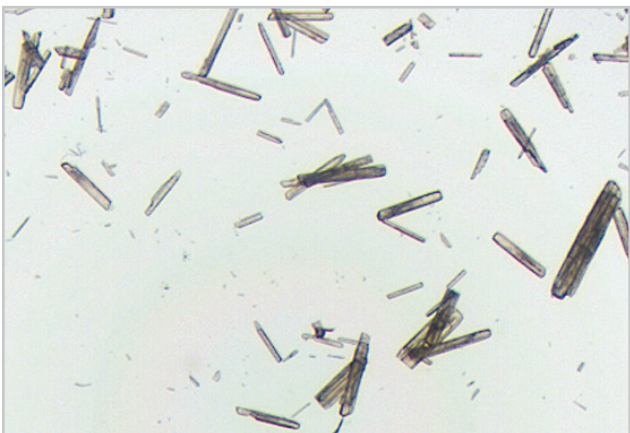
## Isolate particles of interest

Clemex PSA isolates only the particles that matter. Objects can be categorized or eliminated by any desired shape, size, color, or texture attribute regardless of whether they are opaque, semi-transparent or transparent.



## Data validation

Every single particle data is listed in the unique Clemex Data Browser and is linked instantly to the corresponding field of view along with the highlighted object. The Data Browser tool allows validation or elimination of data.



## Separate crossed fibers

Clemex PSA separates crossing fibers as individual particles and assigns each one accurate size and shape parameters. The image analysis system is capable of proper characterization of fibers or elongated crystals, a very important control issue in the pharmaceutical industry.

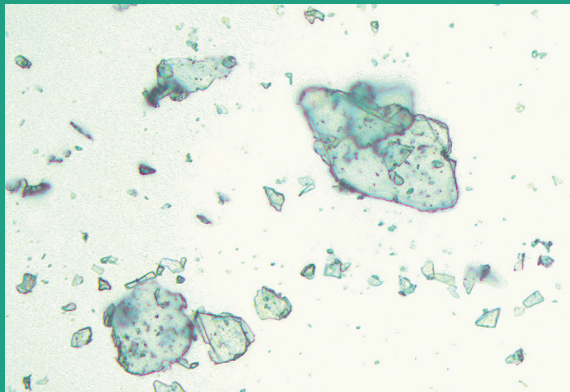
# Particle analysis in 3 easy steps

Clemex PSA can scan large or small areas on any number of samples according to pre-defined patterns. Users always maintain complete control of the microscope and the stage.



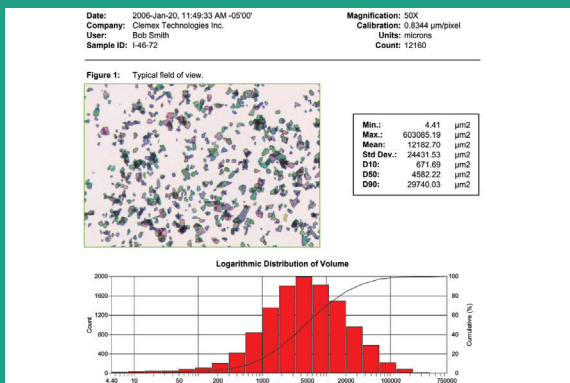
## Step 1 - Your sample

Samples are placed in holders. Any number of pattern formats can be pre-defined for any number of slides. All system parameters, such as automated magnification, light intensity, x/y/z stage movements, and calibration, are software controlled.



## Step 2 - Choose attributes

Clemex PSA offers an incredible range of properties and customizable parameters that can be used to isolate only the particles that matter. Objects can be categorized or eliminated by any desired shape, size, color, or texture attribute.



## Step 3 - Results

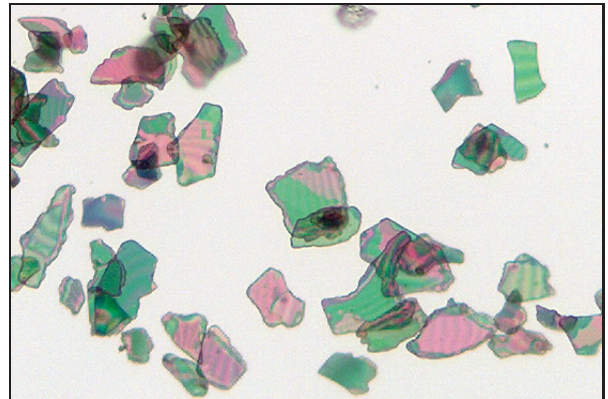
Reports can be tailored to user specifications, to produce either a secure printable report for distribution and review, or to save to a spreadsheet program for further analysis and calculation.

# Product Features



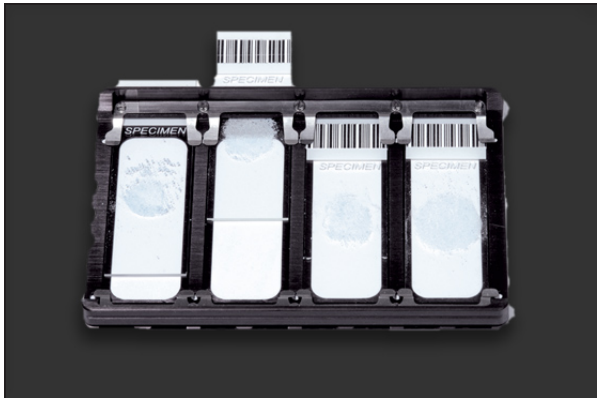
+ Clemex Powder Dispenser

While most dispersers use fluidized beds or high-pressure aerosol, the Clemex Powder Dispenser uses vacuum, insuring that no particle is damaged or changed by the disperser's environment. This allows for perfectly reproducible results. Optional.



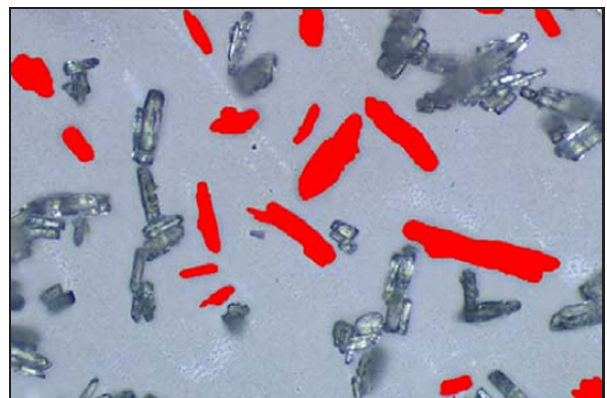
Color Detection

Sometimes your images may need the extra flexibility of a Color Threshold to distinguish phases or objects with a particular hue. The pink phase in the particles in this image can only be detected using Color Threshold.



High Throughput

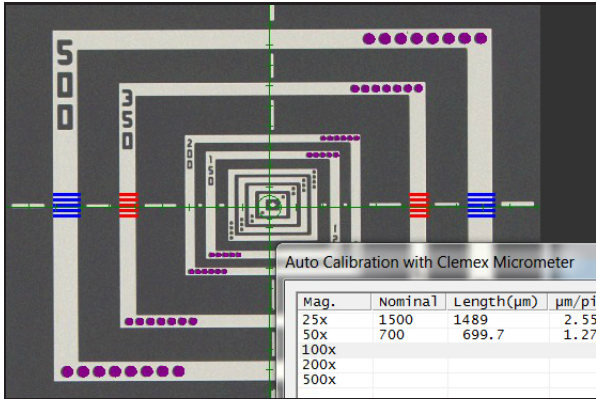
Data collection is achieved through multiple field analysis using a Clemex 4-slide sample holder and motorized stage. Our robotic image analysis system will allow the user to measure large number of slides simultaneously without any operator intervention.



True Particle Shape

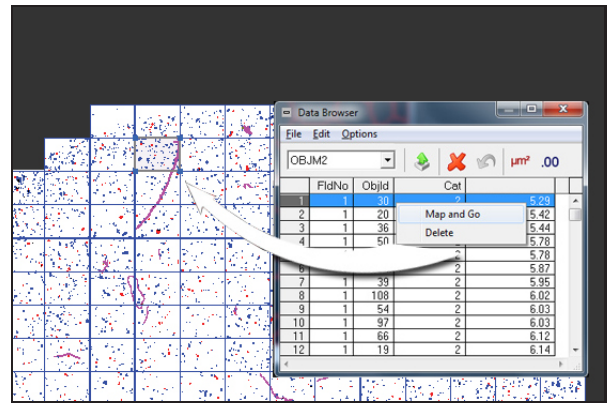
Characterize particle shape in addition to particle size, to gain a better understanding of how shape can effect the various properties of a product. Clemex PSA provides true particle shape information which is not determined by "correction factors" but which is rather based on exactly what is seen in the microscope.

# Product Features



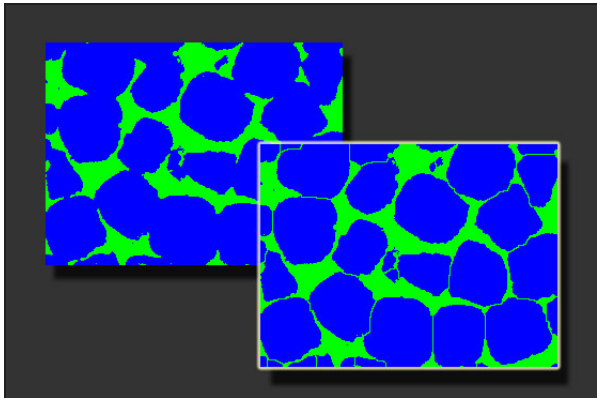
## NIST-Traceable Auto Calibration

Using our NIST traceable micrometer, Clemex software automatically calibrates each lens, eliminating operator subjectivity. The system returns accurate, reproducible and traceable results.



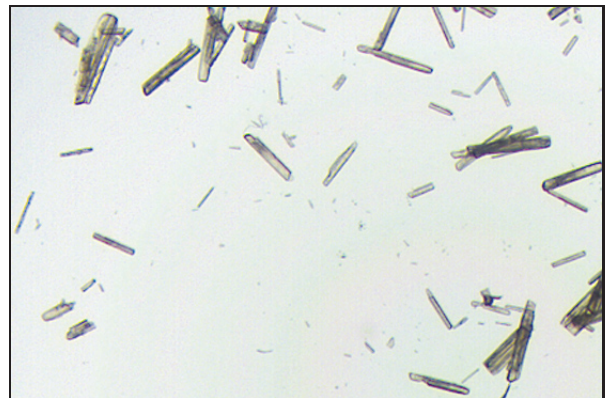
## Object Tracking

Primarily a built-in spreadsheet, the Data Browser also remembers the positions of all analyzed objects, even in multiple-field environments. This allows you to validate detected objects, delete artifacts, and sort the final results.



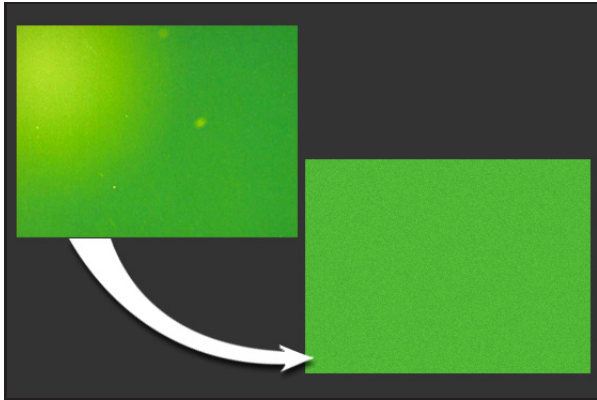
## Separate Adjacent Objects

Particles that touch each other can be easily separated with a variety of automated tools. The end result being that each object is counted separately, yielding more precise results.



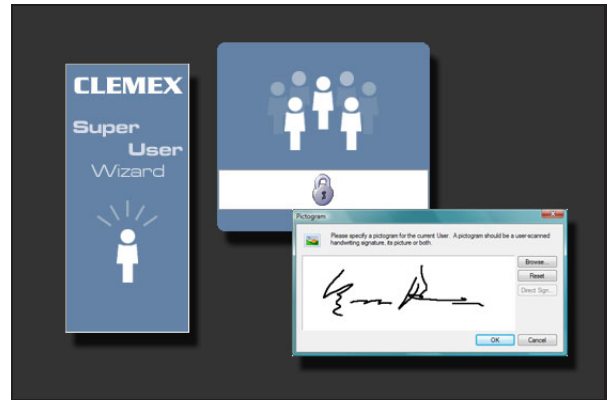
## Volume Measurements

Clemex PSA features excellent resolution and detection of micronized particles as small as 0.5 microns. Particle volume determination is based on absolute 2D measurements and thus not limited to spheroids.



## Automatic Shading Corrector

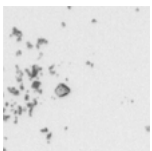
Our software's unique fully automated shading correction feature ensures even illumination for images captured using the system's camera. The image on the left was captured without a shading corrector. A pseudo-color LUT was applied to show the differences in gray levels.



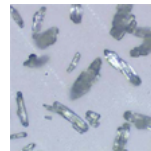
## User Rights Management

Clemex PSA allows the management of user rights, audit trail of critical interventions, electronic signatures as well as overwrite protection of all electronic documents produced by the Clemex PSA imaging workstation. All of these security features are designed to conform to regulatory requirements such as FDA 21 CFR part 11 ensuring data integrity.

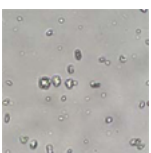
## Related Web Reports



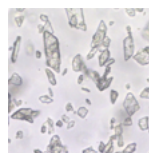
**Crystalline powder particles**



**Dry transparent pharmaceutical particles**



**Pharmaceutical powder particles in liquid**



**Pharmaceutical powder particles in oil**

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