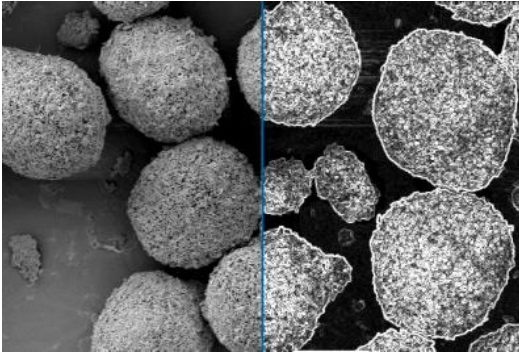# SPHERE CHARACTERIZATION



**Figure 1a:** *Original image.*

**Figure 1b:** *The original image is modified by a gray transformation to outline the spheres.*
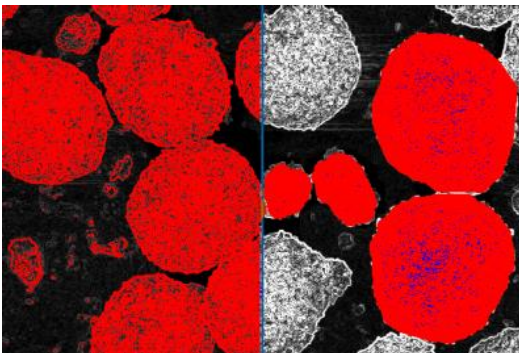


**Figure 2a:** *The sphere outlines are binarized into red bitplane by Gray Thresholding.*

**Figure 2b:** *Final detection of spheres (red) and pores (blue) overlay against the modified gray image.*

## Sample Description

One SEM-SE image of spheres in BMP format.

## Purpose of Analysis

Demonstrate the ability of the Clemex Vision image analysis system to discriminate and measure the spheres and their pores.

## Procedure

A gray transformation was applied on the image to outline the spheres. Certain binary operations were used to complete spheres, remove artifacts and separate spheres. The measurements are done on complete spheres.

## Equipment

| | |
|---|---|
| **Image Analysis System:** | Clemex Vision PE |
| **Source:** | SEM-SE image in BMP format |

## Results

| | Diameter ($\mu m$) | Sphericity |
|---|---|---|
| *Minimum:* | 45.5 | 0.87 |
| *Maximum:* | 180.7 | 0.94 |
| *Mean:* | 111.3 | 0.91 |
| *Standard Deviation:* | 59.7 | 0.03 |
| *Count:* | 8 | |
| *Pores (area %)* | 3.84 | |