

Component Liberation Analysis Image Analysis Report 402

Sample Description

Three mineral samples containing gangue, pyrite, sphalerite, chalcopyrite and other components, were submitted for analysis.

Purpose of Analysis

Demonstrate the ability of the Clemex Vision image analyzer to discriminate the sphalerite and the chalcopyrite. The system must measure the area percentage of these components and also their respective liberation percentage.

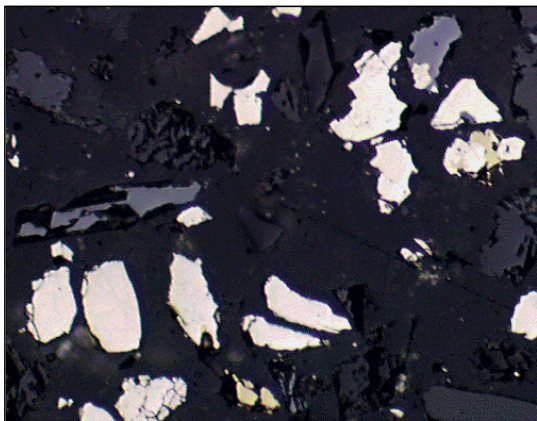


Figure 1: Original image at 200x. Calibration factor: 0.6383 $\mu\text{m}/\text{pixel}$.

Procedure

The two components were binarized using color thresholding. Gray threshold was used to binarize all particles for area reference purposes. Artifacts were eliminated using binary tools. Length measurements were then performed on both components. Several other binary operations were applied to isolate liberated phases from other phases. Area percentage measurements were performed before and after the identification of liberated particles.

Procedure (continued)

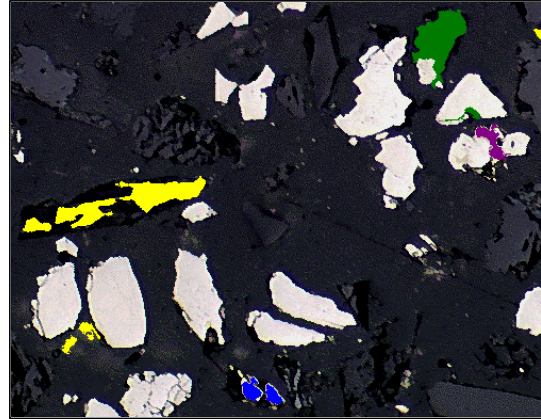


Figure 2: Chalcopyrite in blue and brown (mixed), sphalerite in yellow and green (mixed).

Results Summary

Results are cumulated for automated statistics and graph generation. Final results are printed directly from Clemex Vision. Raw data are linked to their respective object and can be exported in Excel format.

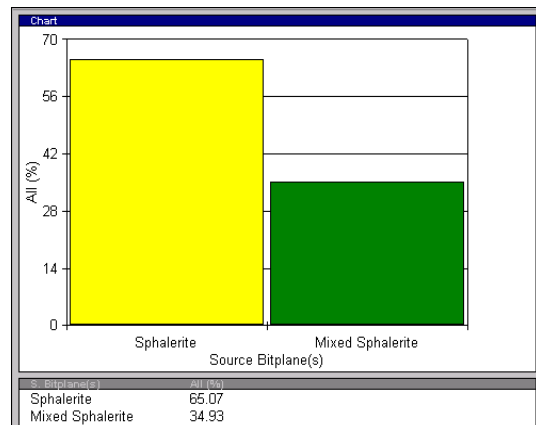


Figure 3: Cumulative graph and statistics showing the percentage of sphalerite liberation.

It is possible to separate and measure most of the particles. The smallest ones are removed with the artifacts. Shadows around particle edges may be mistaken for other components in some cases.

Equipment

Image Analysis

System: Clemex Vision PE
Camera: Sony DXC-950P (760 x 572)
Microscope: Nikon Optiphot 150
Objective: Nikon 20x, 50x (Mag.: 200x, 500x)
Motorized Stage: Marzhauser