

## **IMAGE ANALYSIS LIBERATION AND MODAL ANALYSIS FROM A BARITE PRE-CONCENTRATE**

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Liberation and modal analysis studies for a barite pre-concentrate was performed by image analysis coupled to a scanning electron microscope (SEM). Barite was the sole barium bearing mineral while quartz and mica were the major gangue minerals. A specific routine procedure was established. Each field image were automatically transferred from the SEM to the image analyzer. After analyzing the last field from each sample the liberation and modal data were stored in individual files for further processing and the SEM stage moves to the next sample to get the data from the predefined fields. Thin-polished sections from five size fractions were studied. Each one of them were analyzed five times to evaluate the errors involved. Two major sources of errors were identified. The first one was related to the electron beam instability and the second one to the sample preparation. The drift of the electron beam intensity was clearly observed in the third and fourth samples analyzed usually after three to four hours after starting the measurement. It causes a small change on the predefined brightness and contrast phase discrimination conditions, both established at the beginning of the routine. After few hours they do not properly represent the phases to be measured and the results were biased. The second source was mainly observed in the finest fraction size (-74 +37 $\mu$ m) and was essentially related to the sample polishing and segregation due to different mineral densities.