

AUTOMATED SEM - EDS COUPLED TO A IMAGE ANALYSIS SYSTEM STUDIES ON BRAZILIAN MINERAL INDUSTRY

Kahn, H. ¹; Sant'Agostino, L.M. ¹

Lab. Caracterização Tecnológica - Depto. Engenharia de Minas - Escola Politécnica
Universidade de São Paulo - Av. Prof. Mello de Moraes, 2373 - São Paulo, SP, Brazil

Mineral identification and quantification, as well as morphological measurements studies, have being done for different brazilian ores and industrial minerals in an automated operation without any operator interaction or supervision, supporting mineral processing development or plant optimization.

The applied system consists of a digital SEM and a image analysis equipment (IA), both operating in Microsoft Windows, and a EDS. The IA system have an integral control of the SEM operation through DDE network link, and partial control of the EDS using a remote control software.

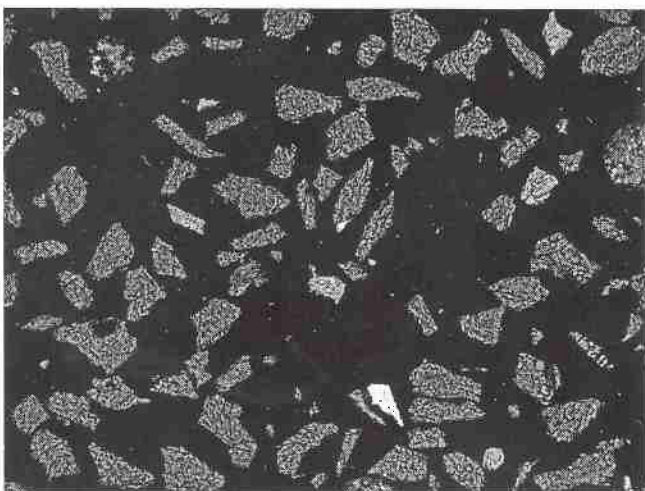
Routines to control the number of samples and fields, SEM stage and magnification, number of BSE images and/or EDS windows or dotmap images were established with the aim of identify and quantify up to 25 mineral phases and to evaluate the liberation degree of valuable minerals (index of attachment with gangue minerals).

The mineral identification procedure is supported by three different approaches:

- only BSE gray levels;
- BSE gray levels plus x ray counts up to 27 windows;
- BSE gray levels plus dotmap images up to 7 elements.

The results are processed in real time by Excel 5.0 spreadsheets controlled by DDE link from the IA system.

BSE GRAY IMAGE



MINERAL PHASES

