FEATURE EXTRACTION FROM QEM*SEM MINERAL MAPS

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QEM*SEM is a fully automated image analyser developed by the CSIRO Division of Mineral Engineering. The system uses X-ray and Electron signals from an SEM to identify the mineral species under the electron beam. The electron beam is digitally scanned over the field of view to create mineral maps of drill cores, crushed ore particles, or complex mineral samples.

The mineral maps are stored in a compact run-length form for later analysis. The original image may be recreated in pixel form by expanding the run-length encoded image. However in QEM*SEM all of the relevant features are extracted directly from the run-length encoded form.

Features extracted in this direct way include parameters which are interpreted to give amounts, distributions, associations, sizes, shapes and orientation of the minerals. For particle samples further features are extracted which lead to sizes, shapes and orientation of the particles themselves together with the degree of liberation of the minerals present.