



Quantification and measurement in digital images of thin sections with JMicroVision

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We have developed JMicroVision software, freely available at <http://www.jmicrovision.com>, to visualize and analyze high-definition 2D images. It was mainly designed to describe, measure, quantify and classify image components. JMicroVision offers a most efficient and low-cost method to analyze thin section images, used in combination with a digital film scanner. This device enables the digitalization of the whole surface of the thin section with a high resolution and no luminosity variation.

JMicroVision has been programmed in Java™ and can be run on different platforms like Windows, Linux, Solaris and Mac OS X. The software architecture combines a tiling scheme and a multi-resolution pyramid, which allows handling and processing very large images, even larger than the computer memory (RAM). JMicroVision is a multithread application where each long process is embedded in a thread that can be stopped at any time.

The program contains most of the common image processing operations but also more advanced features like binary and morphological operations, watershed segmentation by markers, k-means clustering, image rectification by control points, more than forty object descriptors (shape, invariant moments, texture...), and a calibration module. In addition, it has innovative features like point counting, granulometric profiles in all directions, and a particle separation module (new kind of algorithm). Finally, JMicroVision can be used to quantify either in a manual way (e.g. 1D or 2D measurement tools) or in a more automatic way (e.g. segmentation methods). All vectorial graphics, image operations (only the operations not the bitmap) and data are saved in a single project file.

The poster presents different examples:

- Simultaneous visualization: natural and polarized light images.
- Granulometric profile of a contouritic facies: very fine variation observation.
- Point Counting of an eolian sand: quantification of 20 components.
- Classification of porosity types: quantification of the useful and non-useful porosity.
- Separation of particles in a limestone: evolution of the particle orientation.
- Volcanic rock: estimation of minerals and porosity.