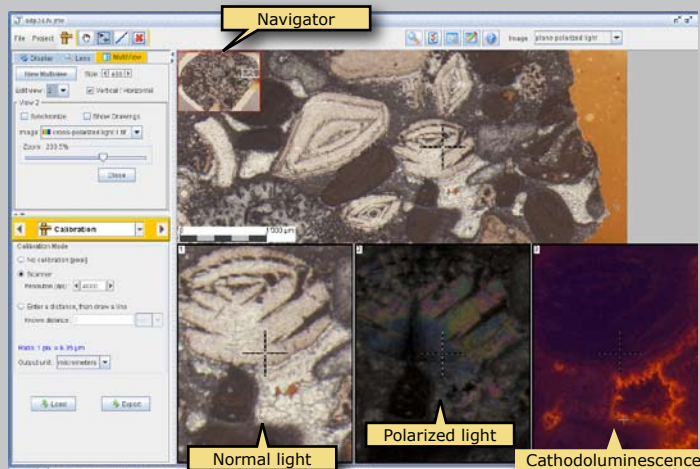




SIMULTANEOUS VISUALIZATION



The Multiview tool allows displaying simultaneously several images with a particular zoom factor for each image. The images are either image operations or added thin images of the same thin section that have been acquired with different devices (e.g. cathodoluminescence, fluorescence, polarized light).

An image rectification module using control points for geometric corrections helps to match images that represent the same scene but have a different size,

orientation or deformation.

USER-FRIENDLY SOFTWARE FOR ANALYSING LARGE IMAGES

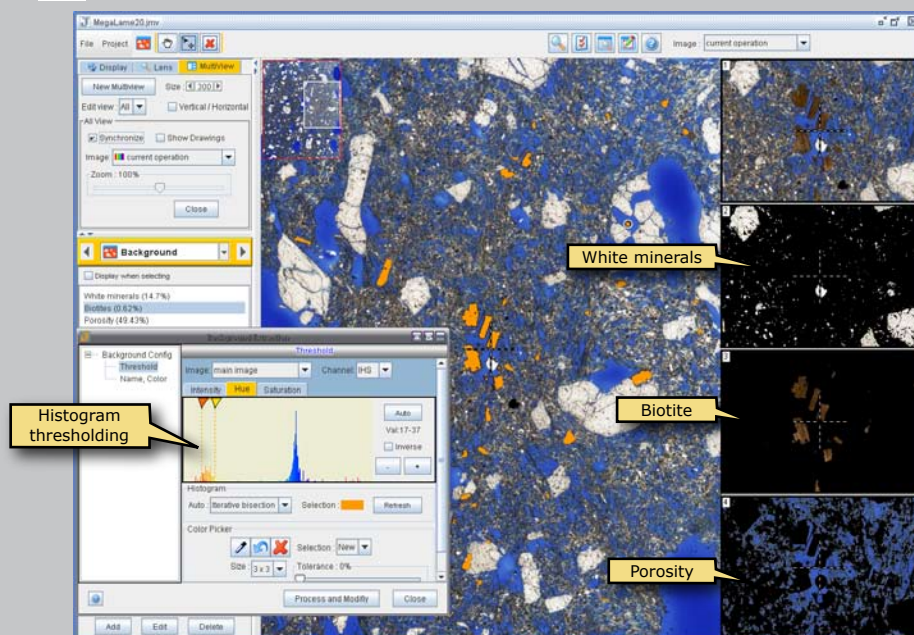


JMicroVision has a simple and intuitive user interface with powerful features. Using it does not require to be a specialist of image analysis, basic knowledge is enough.

JMicroVision has been developed especially to analyze high definition images of rock thin sections, but it can easily be used in other domains. It contains tools to quantify either manually or automatically.



ESTIMATION OF POROSITY AND MINERALS



Estimation of white minerals (quartz and plagioclase), biotite and blue dyed porosity by thresholding the luminance, hue and saturation histograms.

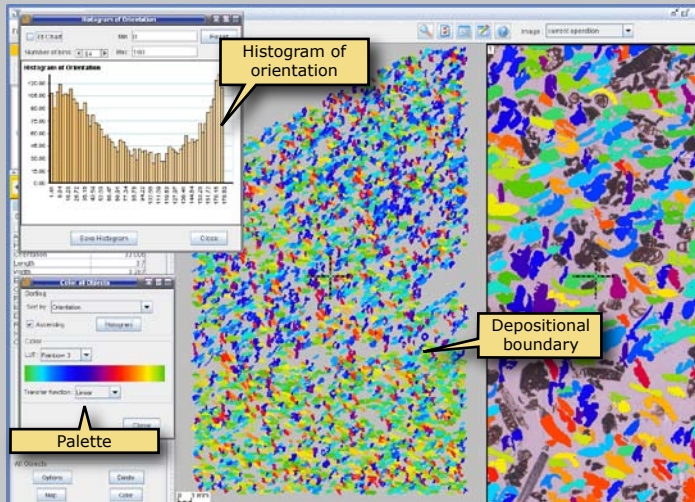
Main Features

- Read images in TIFF, BMP, FlashPiX, GIF, JPEG, PNG, and PNM formats
- Efficient visualization system
- Quantify components: objects or background
- Object analysis (size, shape, orientation, texture ...)
- Object classification
- Image processing (binary and morphology operations, filtering, segmentation...)
- Image rectification (geometric corrections by control points)
- Digital point counting
- Tools for data collection in one or two dimensions
- Image annotation and description card
- Profile (variation of granulometry, density, objects or background)
- Save all measures, data, calibration and preferences in a single project file

Software available for free at <http://www.jmicrovision.com>
Supported platforms: Windows all versions, Linux x86, Solaris x86, Solaris Sparc and Mac OS X



GRAIN ORIENTATION IN AN EOLIAN SAND

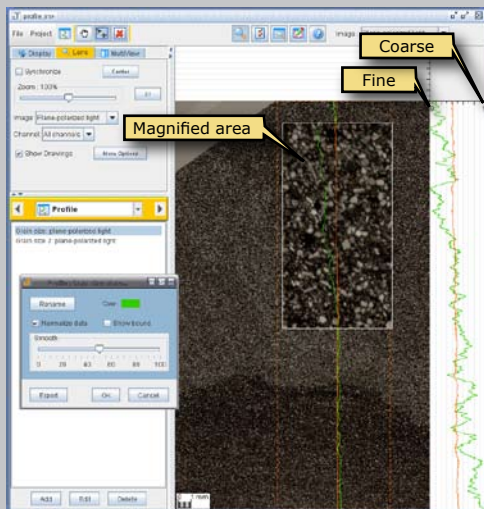


The image represents a grainfall strata (lower part) overlaid by a grainflow strata (upper part) of an eolian sand dune. First, the grains must be selected by thresholding the dark pixel values and then an algorithm tries to separate the connected particles. The elongated particles are colored according to their orientation by the selected palette. The orientation parameter requires a special palette with the same color in the extremities. The lower part of the image contains more green and yellow grains (horizontal particles). On the other side, the blue is more abundant in the upper part; it represents the direction of the grainfall (avalanches).

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GRANULOMETRIC PROFILE



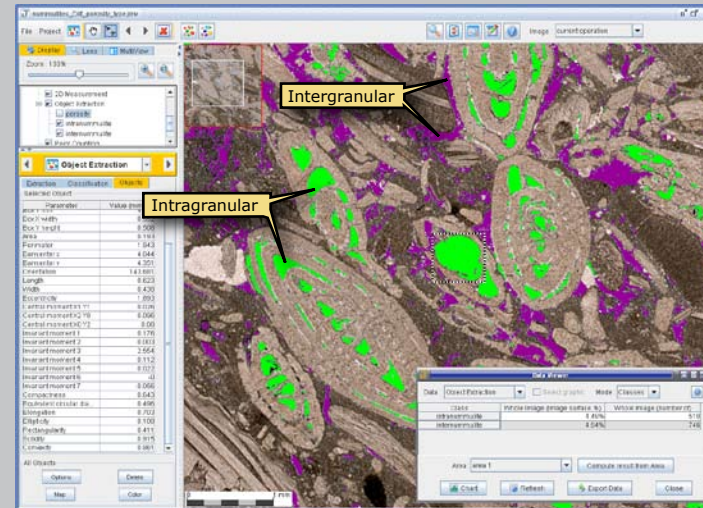
The profiles are created from a rectangular area according to a direction in order to show the variation of the grain size, the variation of the pixel color or the variation of a component previously extracted with the Background or Object Extraction tool. The profiles can be normalized to accentuate the variations and smoothed to remove the noise.

The Grain Size mode does not require any pre-processing or manipulation. However, some conditions must be satisfied to obtain valid results: the contrast between the grains and the background must be sufficient, their color must be uniform enough and the space between the grains must be constant.

Fig.: An image of the top of a centimetric contouritic layer. The rectangle with white borders shows a magnified area. The granulometric profiles have been computed using the autocorrelation method proposed by Rubin (2004). The

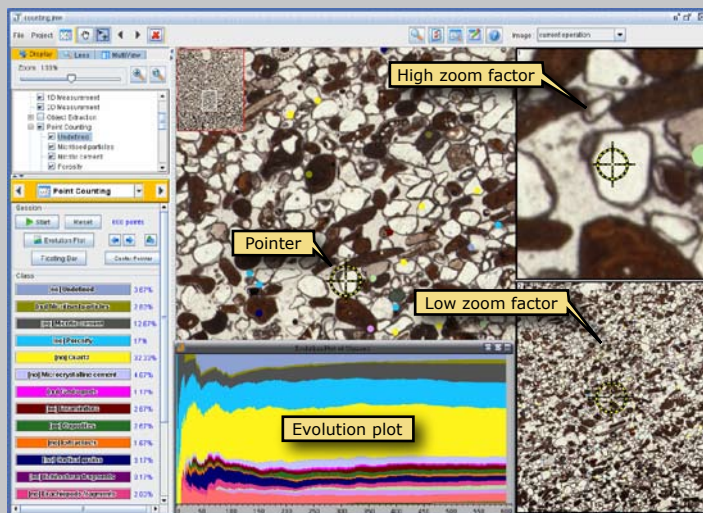
two vertical profiles are identical, except that the green one is normalized to accentuate the variation. The large orange dotted rectangle delineates the area of the profile computation. This profile reveals a fining-up ward sequence that could not be distinguished by human observation. This has been interpreted as a decrease of the bottom current energy.

CLASSIFICATION OF POROSITY



Results of the classification of pore types in a nummulitic limestone. First the porosity must be extracted by histogram thresholding. Then, each pore is individualized and is characterized by several descriptors. In most cases, the shape descriptors are not discriminant enough to differentiate the porosity types. A more relevant parameter called context has been developed, which describes the neighboring environment of pores and helps to discriminate the pore types.

POINT COUNTING



Point counting is a technique to measure the amount of each component present in an image. It consist in laying a grid over the image and counting what is under each grid intersection point.

Point counting is an alternative method to quantify image components stochastically, especially when the contrast between the components is poor or when the image is too complex for using the segmentation methods.

Fig.: Point counting results of a coastal eolian sand after 600 points. The chart shows the evolution of the counting (x-axis: the number of points, y-axis: the amount of each class). The colored dots throughout the main image represent the location and the nature of the previously pointed spots.

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