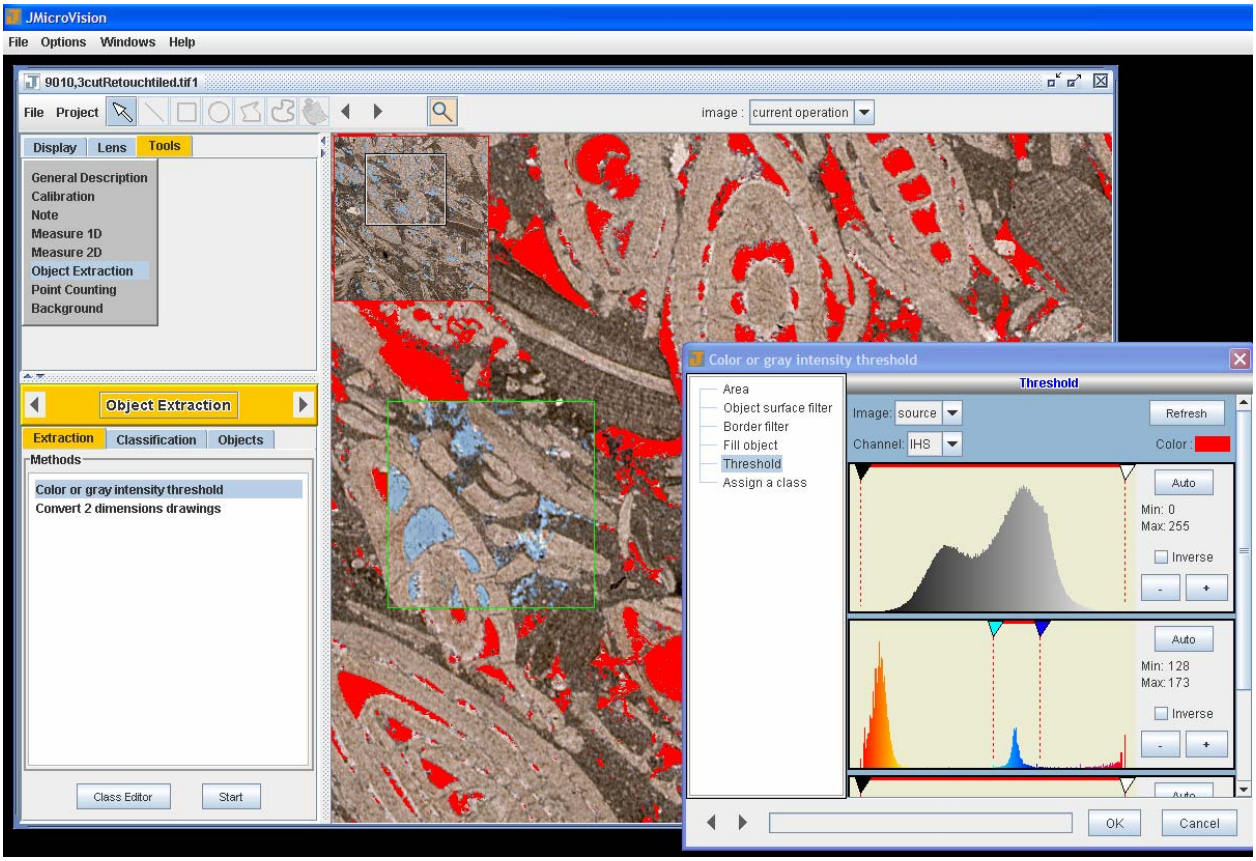
Differentiate porosity types with the context parameter

This is a thin section image of a carbonate rock acquired with digital film scanner, essentially composed of nummulites, in which porosity has been dyed in blue.

1. Open the image "nummulites.tif"
    a. Click **OK** to optimize the data structure of the image (tiling) and save it with a new name (this operation is necessary for large image and computer with few RAM)

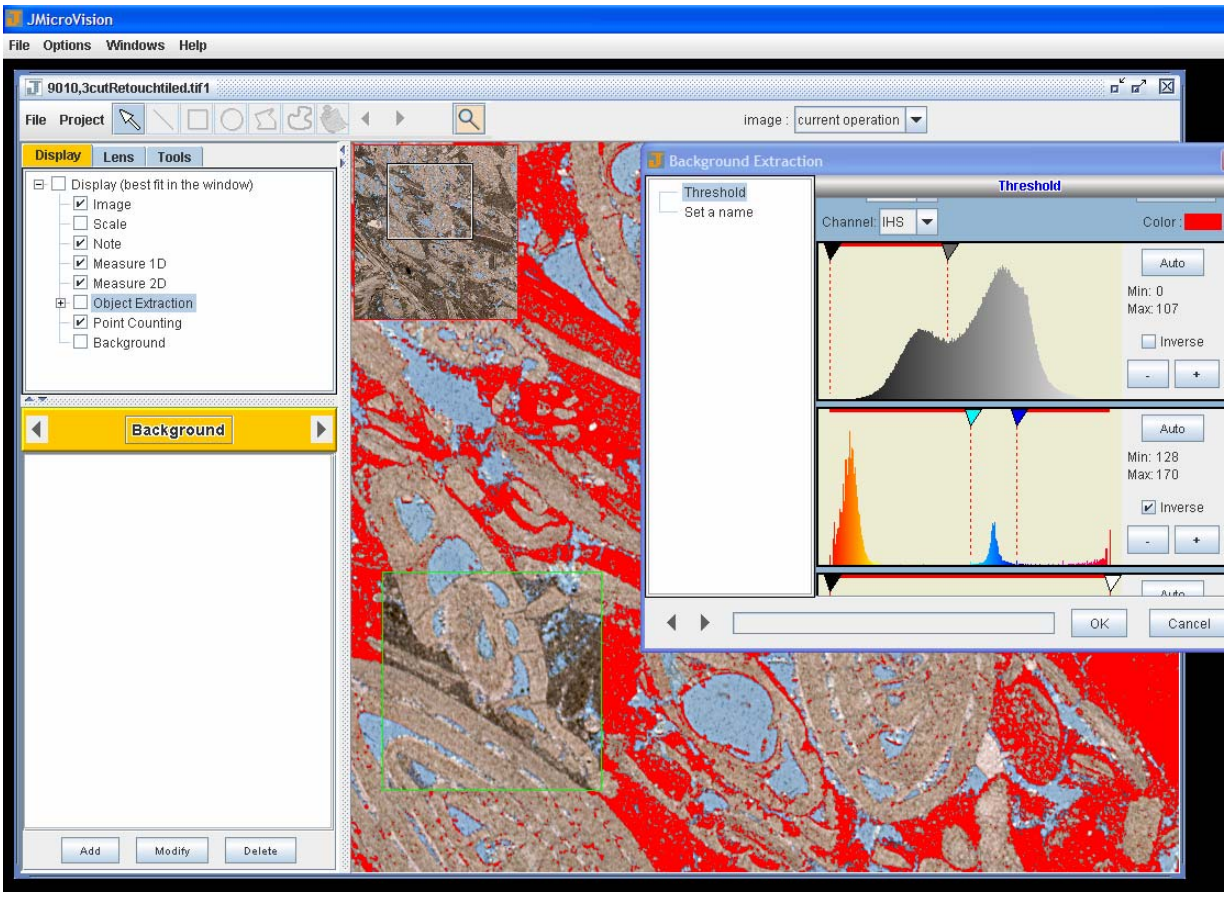
2. Select the **Object Extraction** tool and start **Color and gray intensity threshold**
    a. In **Threshold** menu, select **IHS** (Intensity Hue Saturation) channel
    b. In the second histogram, move triangles to select only the blue hue
    c. Move the **magnifying lens** to check if the red selection matches properly with the porosity (set lens to source image and 1x)
    Another possibility to do it is to activate the **Inverse** selection in the histogram
    d. In the **Assign a class** menu, select a class (if there is no class, use **Class Editor** to add a new class)
    e. Click **OK** to perform the object creation

    Note: The histograms represent the visible part of the image. If the image has been moved, the **Refresh** button must be pressed to match the histograms with the visible part of the image.



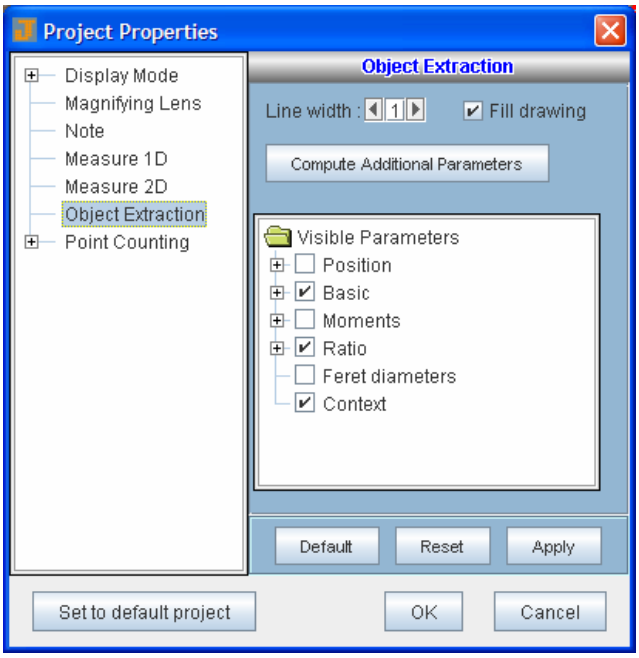
3. Select the **Background** tool and add a new background
    a. In **Threshold** menu, select **IHS** (Intensity Hue Saturation) channel
    b. In the second histogram, move triangles to select only the blue hue and check **Inverse** button. In the first histogram (Intensity), select the first mode (dark values)
    c. In the **Set a name** menu, enter a name (e.g. Matrix) and choose a color
    d. Click **OK** to make the background

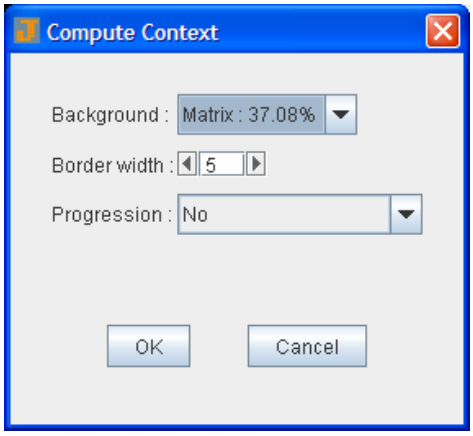
    Note: Once created, the background can be displayed with **Display** tab.



4. The context parameter creates an external border of every object and counts the border pixels superposed with pixels of a selected background. To create a context parameter:
    a. In the **Project** menu, click on **Preferences** to open project properties
    b. In the **Project Properties** window, select **Object Extraction** menu and click on the button **Compute Additional Parameters**
    c. Select the **Context** item and click on **Add** button
    d. Enter a context name (e.g. matrix context)
    e. In the **Compute Context** window, select the appropriate background
    f. Choose a border width (external border in pixel of every object)
    g. Choose a progression (from internal border layer to external border layer)
    h. Click **OK**

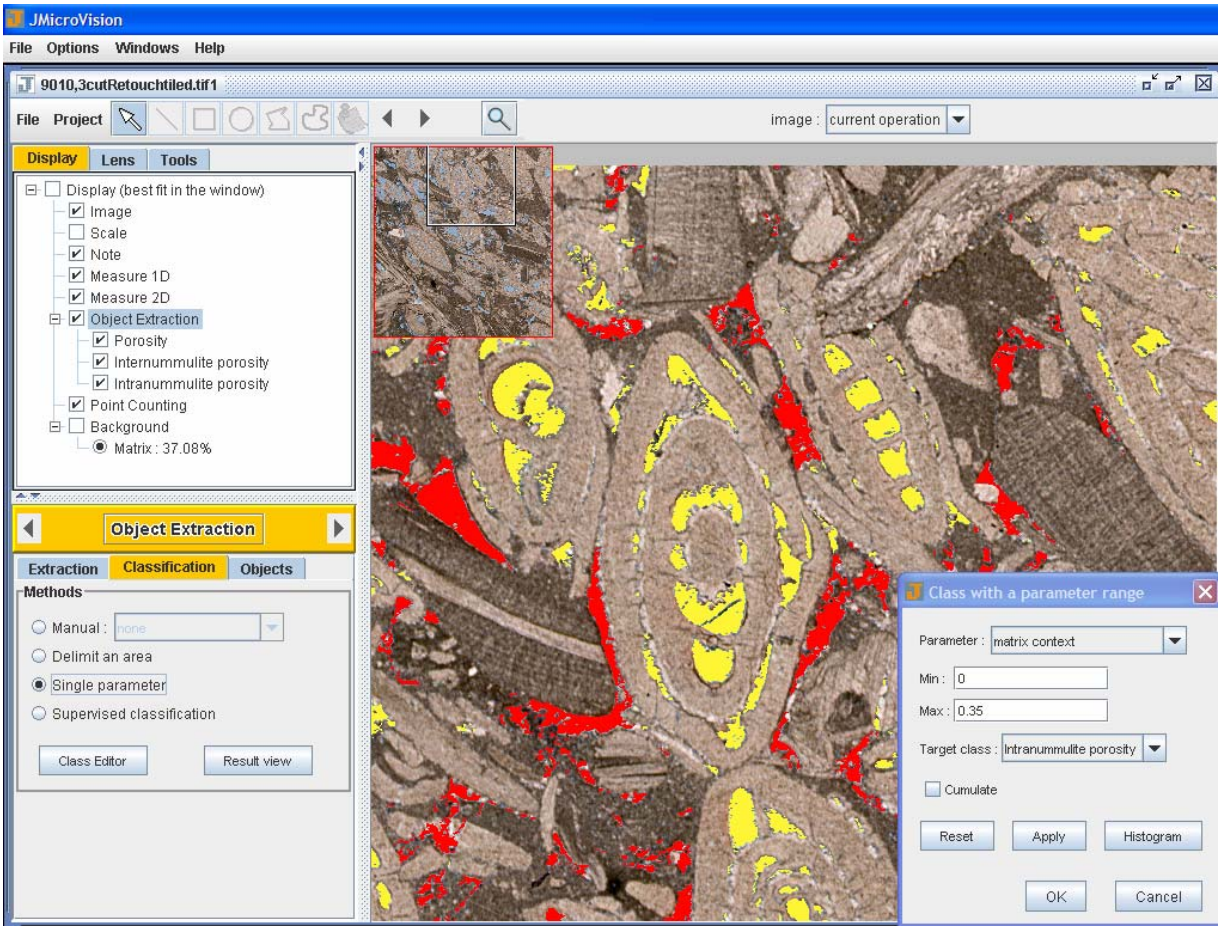
    Note: Additional parameters can not be saved in the project file and in the learning file of the supervised classification.





5. In **Object Extraction** tool, choose **Classification** tab
    a. Select **Single parameter** radio button
    b. In the **Single parameter** window, choose the context parameter created above.
    c. Define a range with **min** and **max** (e.g. 0 - 0.35)
    d. Choose a **Target class** according to the range (e.g. intranummulite porosity)
    e. Click **OK**
    f. For the second class, proceed in the same way as above (select the other part of the range, 0.351 - 1) or deselect the previous target class (intranummulite porosity) in the **Display** tab and apply the second class (internummulite porosity) to all the visible pores
    g. To see result, click on **Result View** button

    Note: - A class is definitely applied when the **OK** button is pressed.
    - Only the visible classes are used in classification methods.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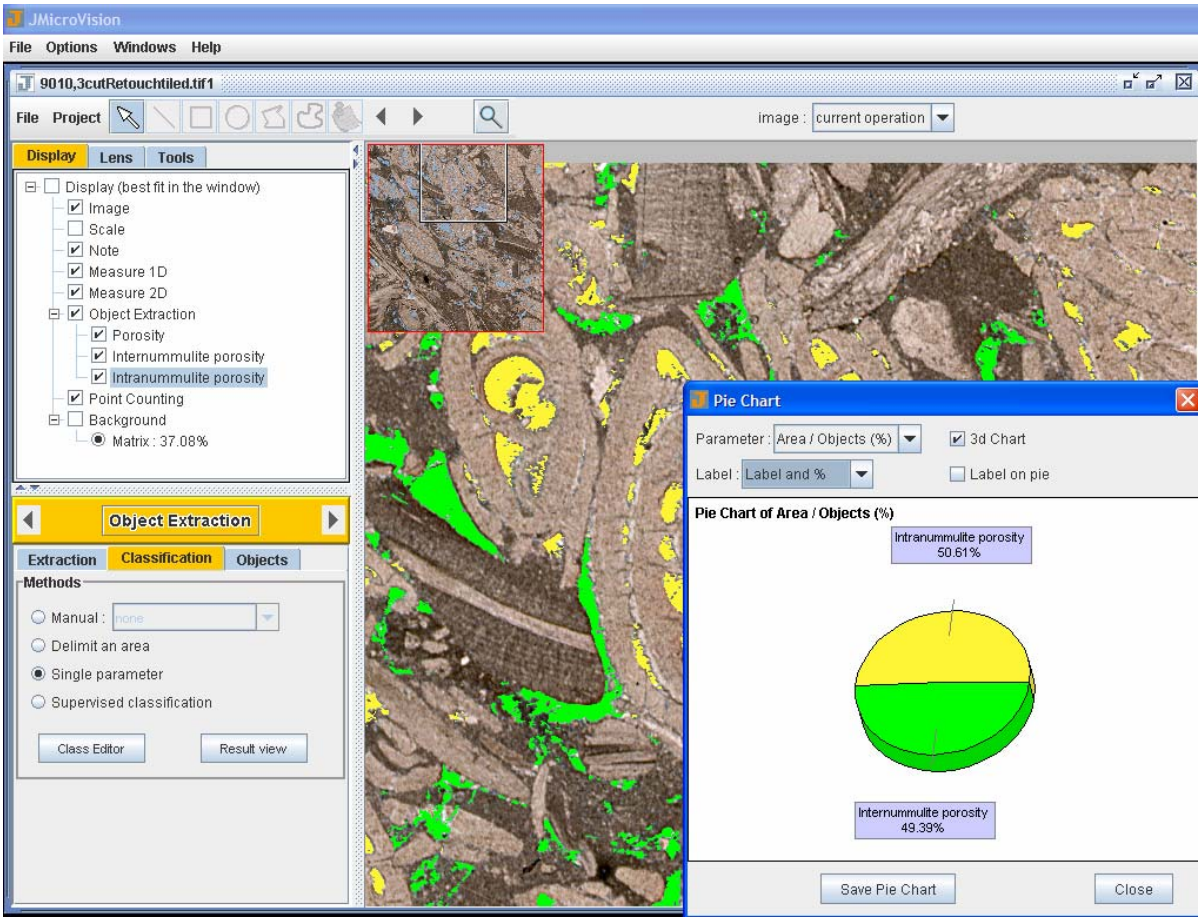
Display Lens Tools
Display (best fit in the window)
Image
Scale
Note
Measure 1D
Measure 2D
Object Extraction
Porosity
Internummulite porosity
Intranummulite porosity
Point Counting
Background
Matrix : 37.08%
Object Extraction
Extraction Classification Objects
Methods
Manual : none
Delimit an area
Single parameter
Supervised classification
Class Editor
Result view
Class with a parameter range
Parameter : matrix context
Min : 0
Max : 0.35
Target class : Intranummulite porosity
Cumulate
Reset
Apply
Histogram
OK
Cancel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