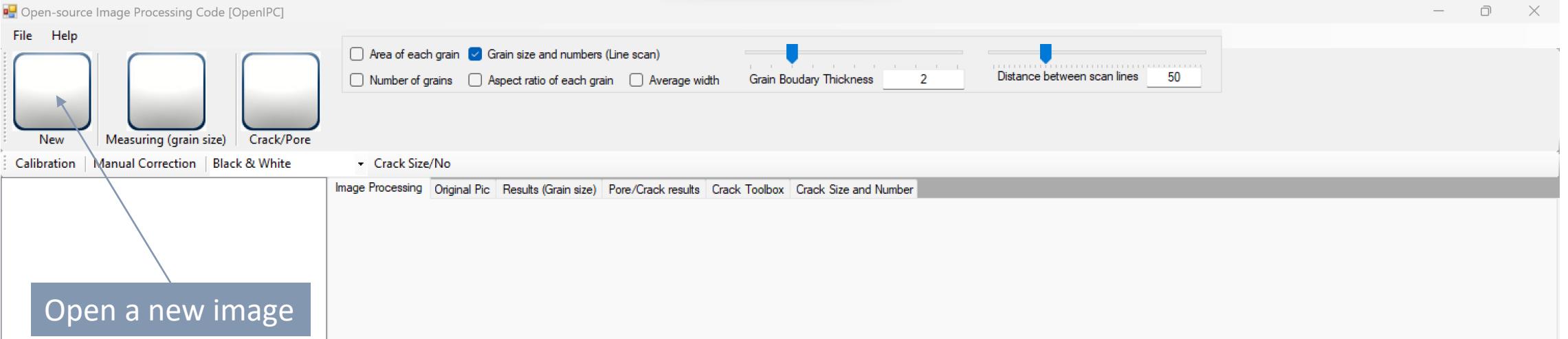
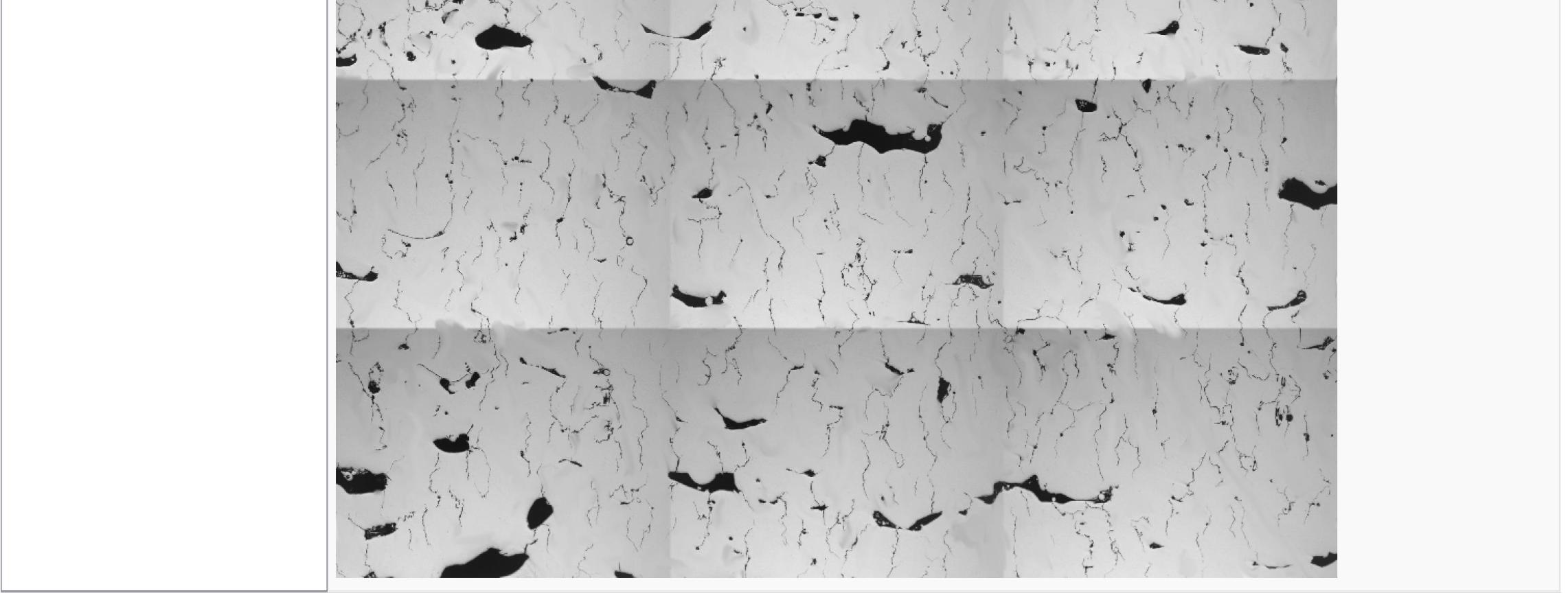
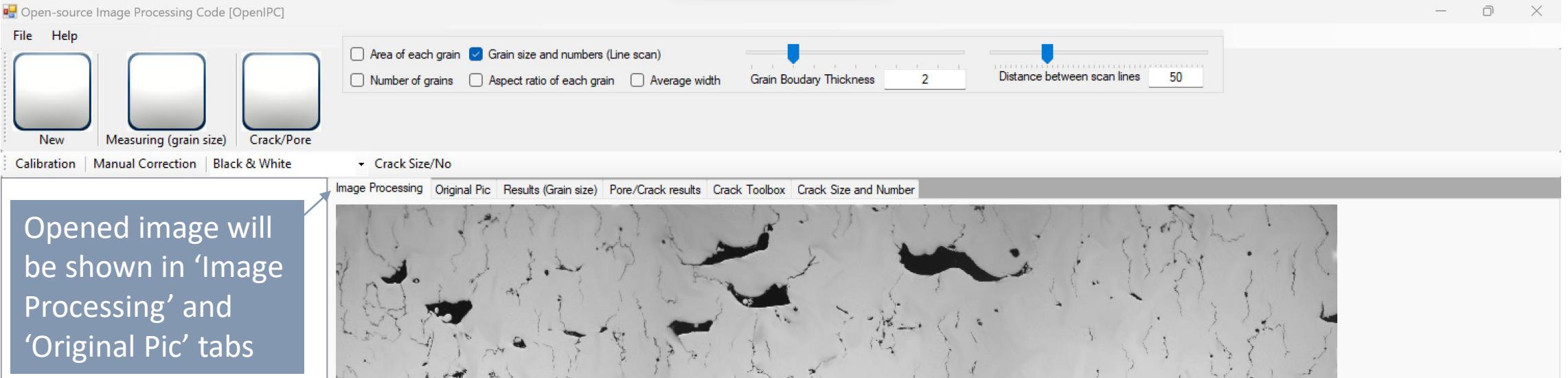


OpenIPC: Open-source Image Processing Code

2023

Section1: Cracks and Pores Percentage





Open-source Image Processing Code [OpenIPC]

File Help

New Measuring (grain size) Crack/Pore

Area of each grain Grain size and numbers (Line scan)
Number of grains Aspect ratio of each grain Average width
Grain Boundary Thickness 2 Distance between scan lines 50

Calibration Manual Correction Black & White

Crack Size/No

Image Processing Original Pic Results (Grain size) Pore/Crack results Crack Toolbox Crack Size and Number

Crack: Grayscale value [0(Black) to 255(white)] 225
Lower than this value will be a candidate.
 Active Method 2
 Active Method 1
Threshold for crack detection (example: 1 to 10) 1 Ignore cracks
1: highest chance of crack detection - Any value more than 1 has a lower chance of crack detection
Note: Start with 1. If the crack detection is exaggerated with 1, please increase the value.

Pore: Grayscale value [0(Black) to 255(white)] 160
Lower than this value will be a candidate.
Min detectable pore size (diameters in pixel) 5 Ignore pores
 Force to detect smaller pores

Active small dots remover
Small dot size in pixel 3 Method2
 Method1
0.8 253

Background remover
D 7
Absolute value of (C1-C2) 7
 Keep active background remover
If background remover is deactivated, the image processing would be slower
C1: Color value of parent
C2: Color value of neighbor
D: Checking distance of parent and neighbors

Precipitates/Powders
 Active precipitates detection
Precipitates grayscale value [0(Black) to 255(white)] 253

Calibration Region
Start Set 100 Start Set

Please check 'Crack Toolbox' for cracks and pores [only percentages] detection options

Try with the default values and settings first!

Open-source Image Processing Code [OpenIPC]

File Help

New Measuring (grain size) Crack/Pore

Area of each grain Grain size and numbers (Line scan)
 Number of grains Aspect ratio of each grain Average width
Grain Boundary Thickness
Distance between scan lines

Calibration Manual Correction Black & White ▾ Crack Size/No

Image Processing Original Pic Results (Grain size) Pore/Crack results Crack Toolbox **Crack Size and Number**

Crack: Grayscale value [0(Black) to 255(white)]
Lower than this value will be a candidate.
 Active Method 2
 Active Method 1
Threshold for crack detection (example: 1 to 10) Ignore cracks
1: highest chance of crack detection - Any value more than 1 has a lower chance of crack detection
Note: Start with 1. If the crack detection is exaggerated with 1, please increase the value.

Pore: Grayscale value [0(Black) to 255(white)]
Lower than this value will be a candidate.
Min detectable pore size (diameters in pixel) Ignore pores
 Force to detect smaller pores

Active small dots remover
Small dot size in pixel Method1 Method2
0.8

Background remover
D
Absolute value of (C1-C2)
 Keep active background remover
If background remover is deactivated, the image processing would be slower

C1: Color value of parent
C2: Color value of neighbor
D: Checking distance of parent and neighbors

Precipitates/Powders
 Active precipitates detection
Precipitates grayscale value [0(Black) to 255(white)]

Calibration
 100

Please check 'Crack Toolbox' for cracks and pores [only percentages] detection options

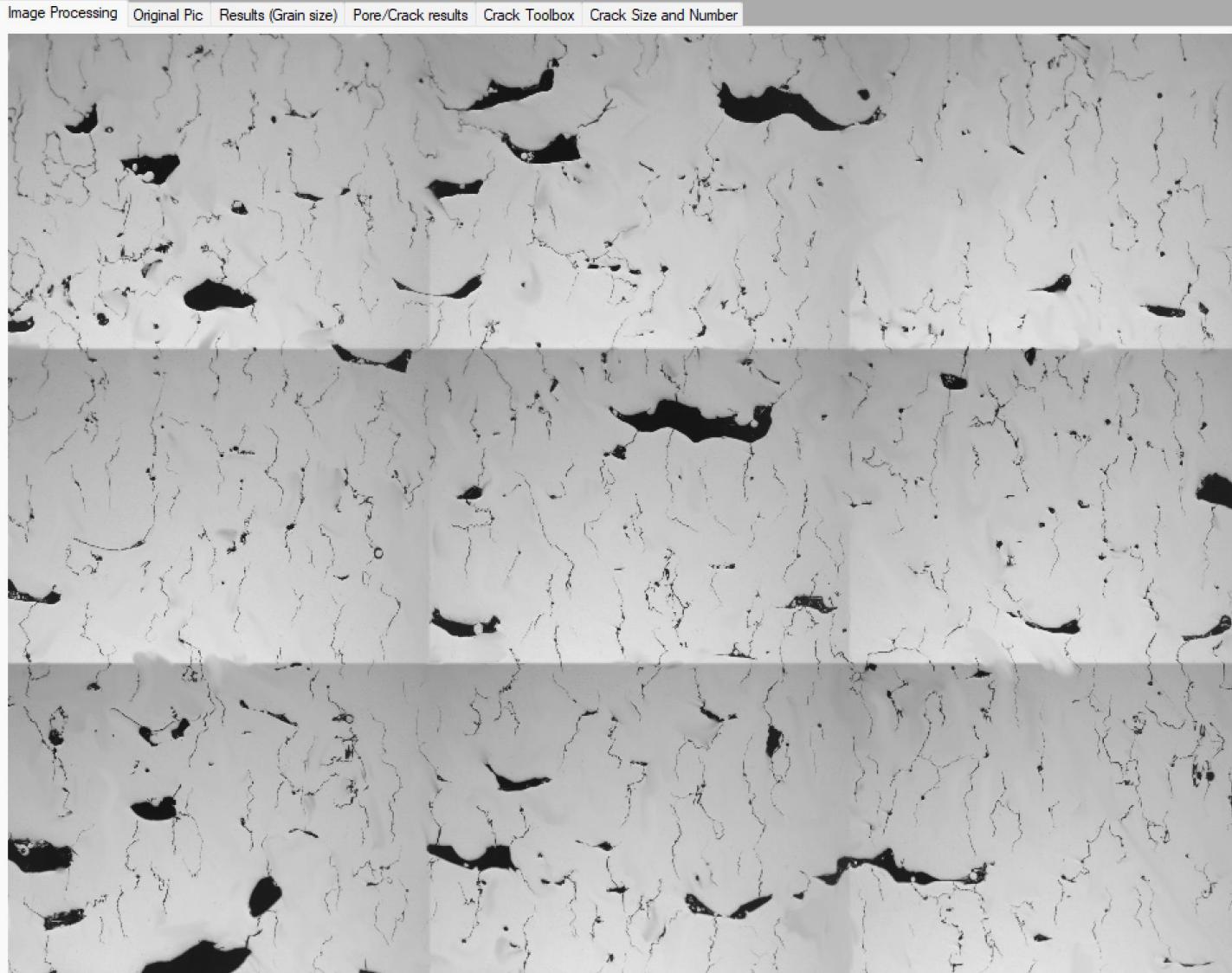
File Help

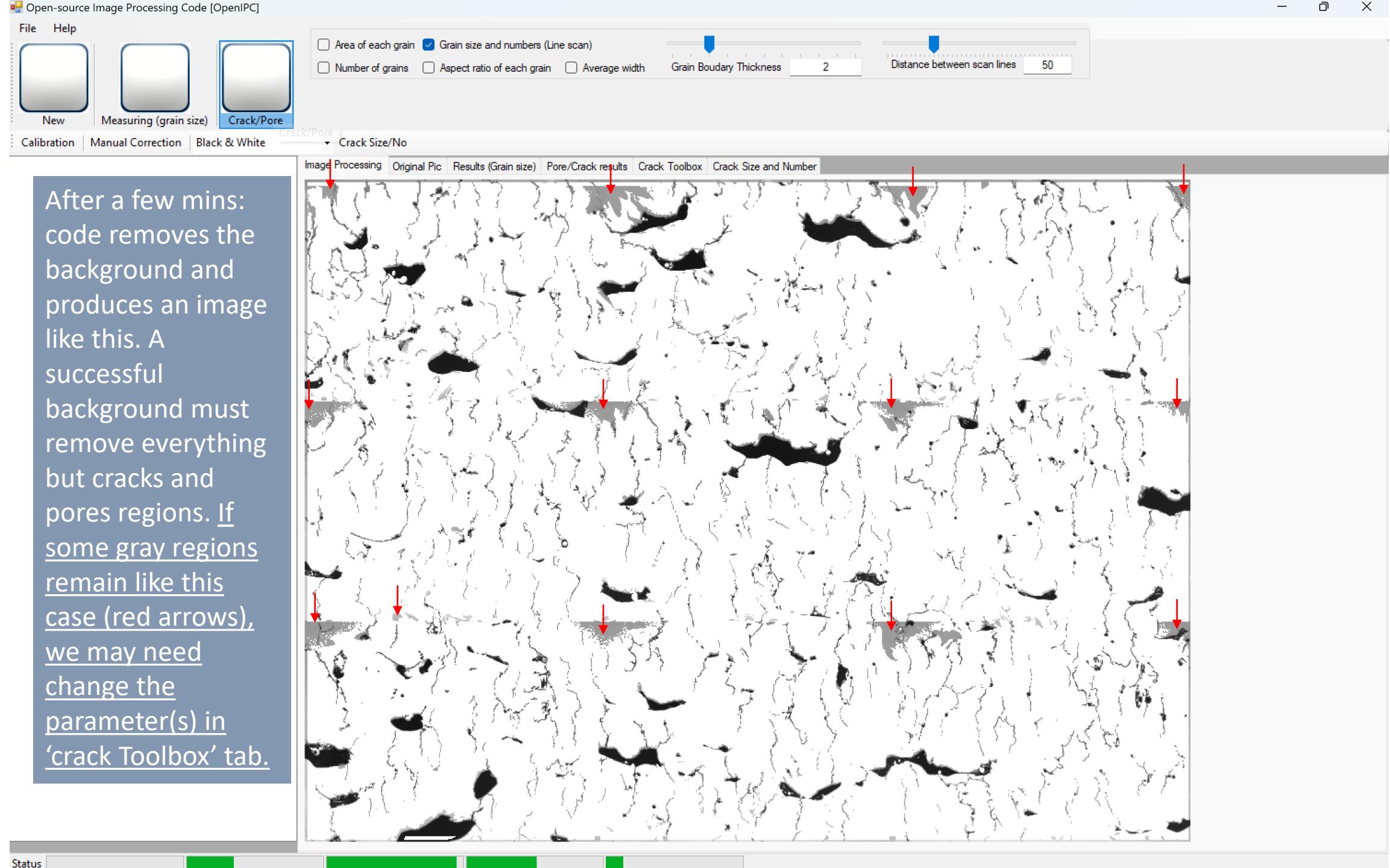


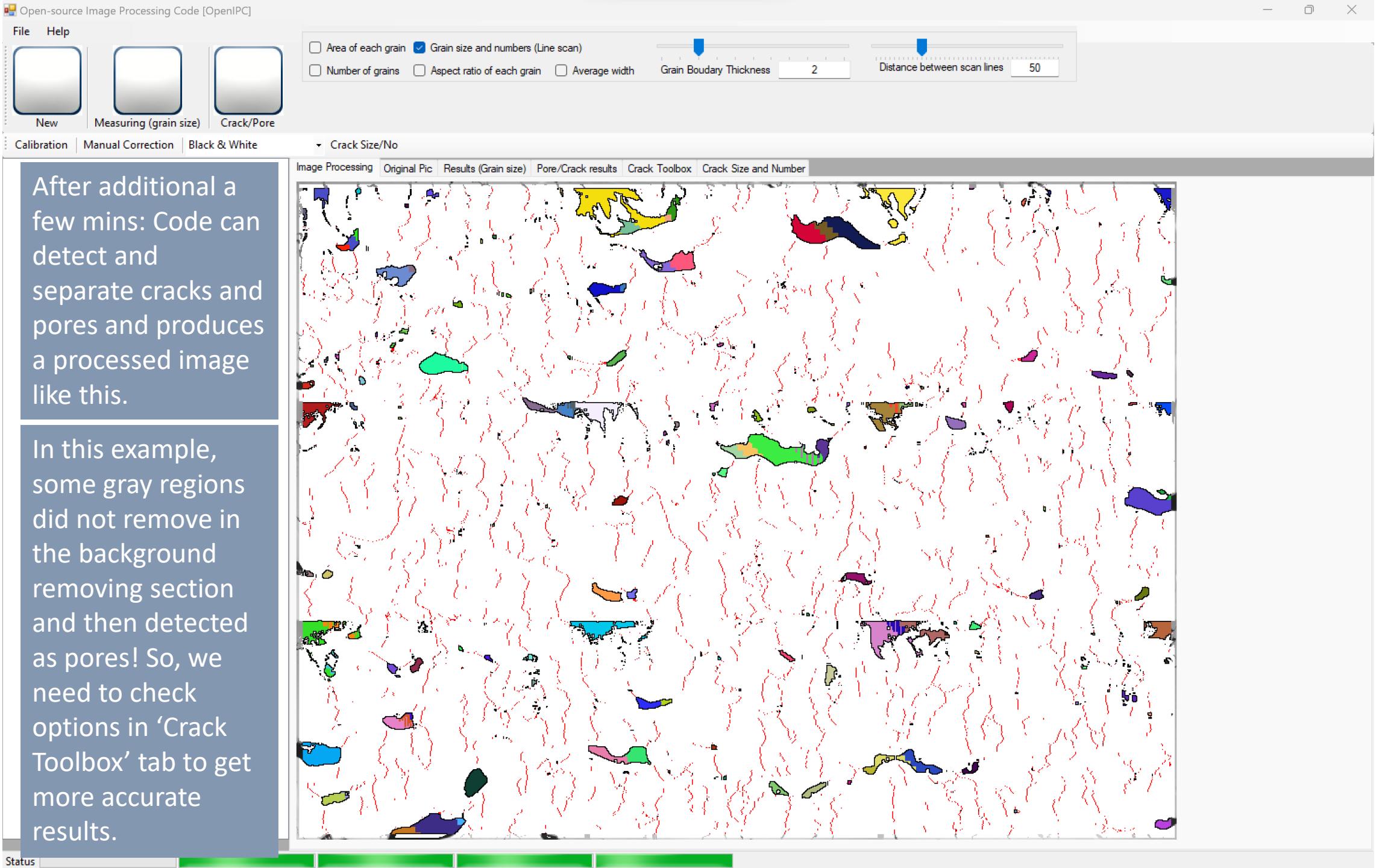
Area of each grain Grain size and numbers (Line scan)
 Number of grains Aspect ratio of each grain Average width
Grain Boundary Thickness
Distance between scan lines

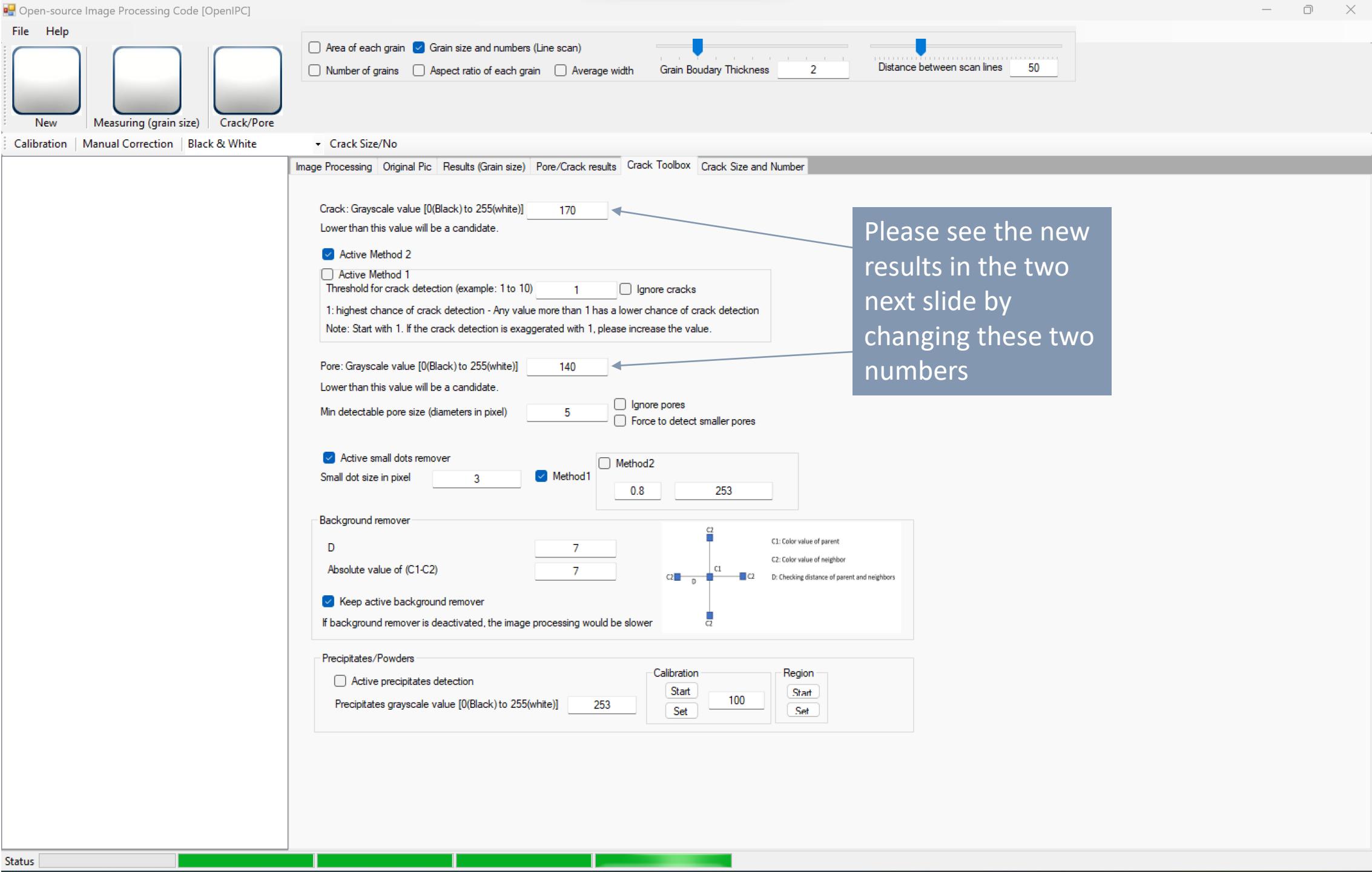
Calibration | Manual Correction | Black & White

▼ Crack Size/No









File Help

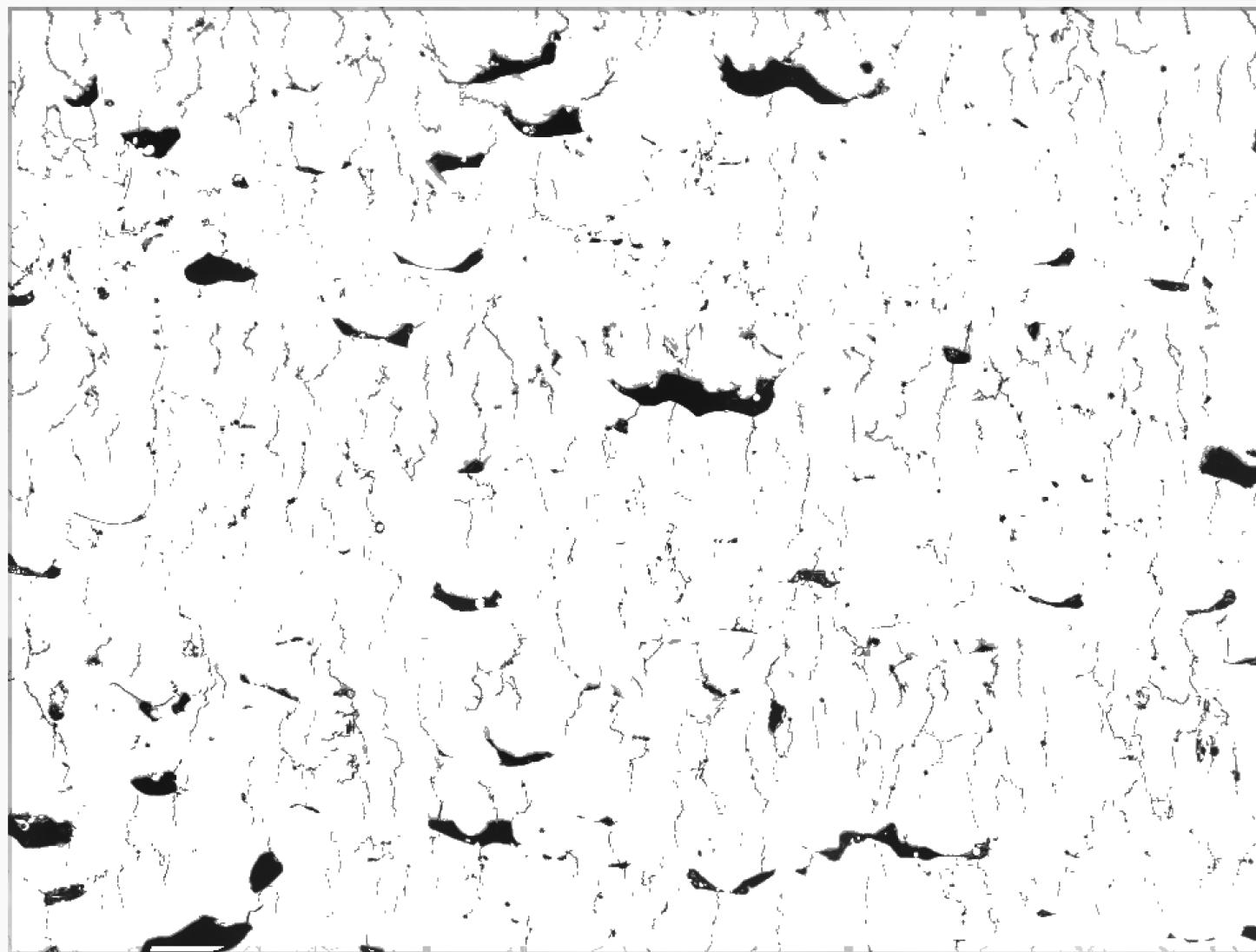


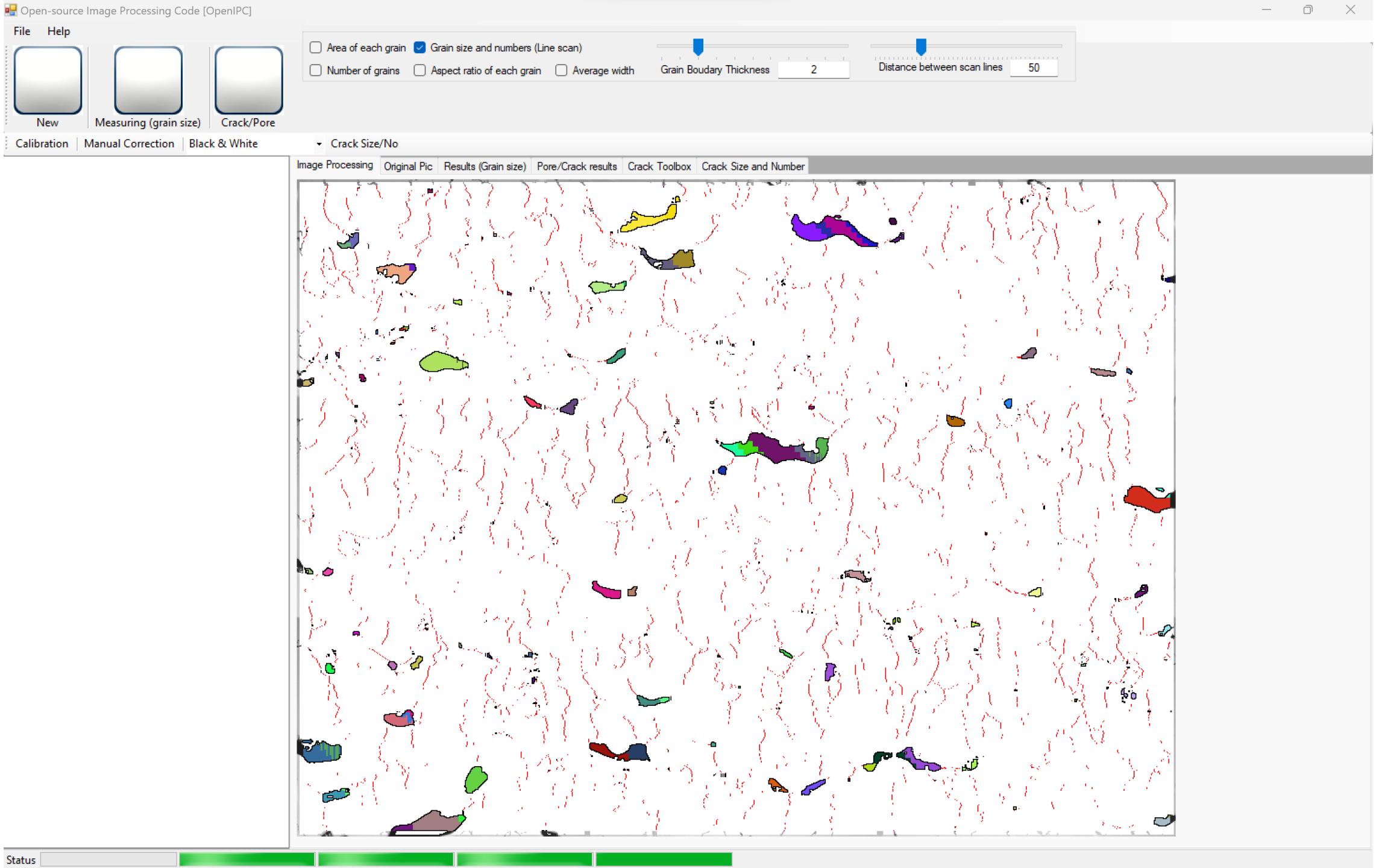
Area of each grain Grain size and numbers (Line scan)
 Number of grains Aspect ratio of each grain Average width
Grain Boundary Thickness
Distance between scan lines

Calibration | Manual Correction | Black & White

▼ Crack Size/No

Image Processing | Original Pic | Results (Grain size) | Pore/Crack results | Crack Toolbox | Crack Size and Number







Area of each grain Grain size and numbers (Line scan)
 Number of grains Aspect ratio of each grain Average width
 Grain Boundary Thickness: 2 Distance between scan lines: 50

Calibration | Manual Correction | Black & White

▼ Crack Size/No

Image Processing Original Pic Results (Grain size) Pore/Crack results Crack Toolbox Crack Size and Number

Final quantified results are available in 'Pore/Crack results' tab

Crack Percentage (%): 1.44
 Pore Percentage (%): 2.91
 Total Porosity Percentage (%): 4.35
 Number of Pores: 279
 Pore1 -- Equivalent radius(um): 0.5643326 -- (Area(um2): 1 -- Perimeter: 1 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 12.56 -- Sphericity (Area/(perimeter*equivalent radius)): 1.77)
 Pore2 -- Equivalent radius(um): 0.9774528 -- (Area(um2): 3 -- Perimeter: 3 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 4.19 -- Sphericity (Area/(perimeter*equivalent radius)): 1.02)
 Pore3 -- Equivalent radius(um): 0.9774528 -- (Area(um2): 3 -- Perimeter: 7 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 0.77 -- Sphericity (Area/(perimeter*equivalent radius)): 0.44)
 Pore4 -- Equivalent radius(um): 3.2418442 -- (Area(um2): 33 -- Perimeter: 20 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 1.04 -- Sphericity (Area/(perimeter*equivalent radius)): 0.51)
 Pore5 -- Equivalent radius(um): 0.7980869 -- (Area(um2): 2 -- Perimeter: 2 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 6.28 -- Sphericity (Area/(perimeter*equivalent radius)): 1.25)
 Pore6 -- Equivalent radius(um): 2.1856509 -- (Area(um2): 15 -- Perimeter: 93 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 0.02 -- Sphericity (Area/(perimeter*equivalent radius)): 0.07)
 Pore7 -- Equivalent radius(um): 0.5643326 -- (Area(um2): 1 -- Perimeter: 23 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 0.02 -- Sphericity (Area/(perimeter*equivalent radius)): 0.08)
 Pore8 -- Equivalent radius(um): 3.7856585 -- (Area(um2): 45 -- Perimeter: 6 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 15.7 -- Sphericity (Area/(perimeter*equivalent radius)): 1.98)
 Pore9 -- Equivalent radius(um): 2.1115394 -- (Area(um2): 14 -- Perimeter: 1 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 175.84 -- Sphericity (Area/(perimeter*equivalent radius)): 6.63)
 Pore10 -- Equivalent radius(um): 3.9098113 -- (Area(um2): 48 -- Perimeter: 2 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 150.72 -- Sphericity (Area/(perimeter*equivalent radius)): 6.14)
 Pore11 -- Equivalent radius(um): 3.6134921 -- (Area(um2): 41 -- Perimeter: 11 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 4.26 -- Sphericity (Area/(perimeter*equivalent radius)): 1.03)
 Pore12 -- Equivalent radius(um): 4.2606181 -- (Area(um2): 57 -- Perimeter: 154 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 0.03 -- Sphericity (Area/(perimeter*equivalent radius)): 0.09)
 Pore13 -- Equivalent radius(um): 2.9323585 -- (Area(um2): 27 -- Perimeter: 3 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 37.68 -- Sphericity (Area/(perimeter*equivalent radius)): 3.07)
 Pore14 -- Equivalent radius(um): 3.7005766 -- (Area(um2): 43 -- Perimeter: 106 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 0.05 -- Sphericity (Area/(perimeter*equivalent radius)): 0.11)
 Pore15 -- Equivalent radius(um): 0.7980869 -- (Area(um2): 2 -- Perimeter: 92 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 0 -- Sphericity (Area/(perimeter*equivalent radius)): 0.03)
 Pore16 -- Equivalent radius(um): 8.3322717 -- (Area(um2): 218 -- Perimeter: 88 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 0.35 -- Sphericity (Area/(perimeter*equivalent radius)): 0.3)
 Pore17 -- Equivalent radius(um): 8.7789557 -- (Area(um2): 242 -- Perimeter: 30 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 3.38 -- Sphericity (Area/(perimeter*equivalent radius)): 0.92)
 Pore18 -- Equivalent radius(um): 0.7980869 -- (Area(um2): 2 -- Perimeter: 8 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 0.39 -- Sphericity (Area/(perimeter*equivalent radius)): 0.31)
 Pore19 -- Equivalent radius(um): 4.0301412 -- (Area(um2): 51 -- Perimeter: 1 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 640.56 -- Sphericity (Area/(perimeter*equivalent radius)): 12.65)
 Pore20 -- Equivalent radius(um): 16.1797231 -- (Area(um2): 822 -- Perimeter: 31 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 10.74 -- Sphericity (Area/(perimeter*equivalent radius)): 1.64)
 Pore21 -- Equivalent radius(um): 5.442227 -- (Area(um2): 93 -- Perimeter: 60 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 0.32 -- Sphericity (Area/(perimeter*equivalent radius)): 0.28)
 Pore22 -- Equivalent radius(um): 0.7980869 -- (Area(um2): 2 -- Perimeter: 2 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 6.28 -- Sphericity (Area/(perimeter*equivalent radius)): 1.25)
 Pore23 -- Equivalent radius(um): 5.3239036 -- (Area(um2): 89 -- Perimeter: 4 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 69.87 -- Sphericity (Area/(perimeter*equivalent radius)): 4.18)
 Pore24 -- Equivalent radius(um): 2.0347303 -- (Area(um2): 13 -- Perimeter: 8 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 2.55 -- Sphericity (Area/(perimeter*equivalent radius)): 0.8)
 Pore25 -- Equivalent radius(um): 4.984051 -- (Area(um2): 78 -- Perimeter: 2 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 244.92 -- Sphericity (Area/(perimeter*equivalent radius)): 7.82)
 Pore26 -- Equivalent radius(um): 4.8872641 -- (Area(um2): 75 -- Perimeter: 13 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 5.57 -- Sphericity (Area/(perimeter*equivalent radius)): 1.18)
 Pore27 -- Equivalent radius(um): 7.9006571 -- (Area(um2): 196 -- Perimeter: 61 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 0.66 -- Sphericity (Area/(perimeter*equivalent radius)): 0.41)
 Pore28 -- Equivalent radius(um): 7.2709176 -- (Area(um2): 166 -- Perimeter: 3 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 231.66 -- Sphericity (Area/(perimeter*equivalent radius)): 7.61)
 Pore29 -- Equivalent radius(um): 11.0586163 -- (Area(um2): 384 -- Perimeter: 6 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 133.97 -- Sphericity (Area/(perimeter*equivalent radius)): 5.79)
 Pore30 -- Equivalent radius(um): 2.5860971 -- (Area(um2): 21 -- Perimeter: 38 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 0.18 -- Sphericity (Area/(perimeter*equivalent radius)): 0.21)
 Pore31 -- Equivalent radius(um): 5.558032 -- (Area(um2): 97 -- Perimeter: 1 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 1218.32 -- Sphericity (Area/(perimeter*equivalent radius)): 17.45)
 Pore32 -- Equivalent radius(um): 0.5643326 -- (Area(um2): 1 -- Perimeter: 5 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 0.5 -- Sphericity (Area/(perimeter*equivalent radius)): 0.35)
 Pore33 -- Equivalent radius(um): 6.3094308 -- (Area(um2): 125 -- Perimeter: 4 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 98.12 -- Sphericity (Area/(perimeter*equivalent radius)): 4.95)
 Pore34 -- Equivalent radius(um): 0.7980869 -- (Area(um2): 2 -- Perimeter: 157 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 0 -- Sphericity (Area/(perimeter*equivalent radius)): 0.02)
 Pore35 -- Equivalent radius(um): 3.338637 -- (Area(um2): 35 -- Perimeter: 6 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 12.21 -- Sphericity (Area/(perimeter*equivalent radius)): 1.75)
 Pore36 -- Equivalent radius(um): 12.5935986 -- (Area(um2): 498 -- Perimeter: 86 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 0.85 -- Sphericity (Area/(perimeter*equivalent radius)): 0.46)
 Pore37 -- Equivalent radius(um): 0.9774528 -- (Area(um2): 3 -- Perimeter: 150 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 0 -- Sphericity (Area/(perimeter*equivalent radius)): 0.02)
 Pore38 -- Equivalent radius(um): 1.8716797 -- (Area(um2): 11 -- Perimeter: 24 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 0.24 -- Sphericity (Area/(perimeter*equivalent radius)): 0.24)
 Pore39 -- Equivalent radius(um): 11.5653777 -- (Area(um2): 420 -- Perimeter: 1 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 5275.2 -- Sphericity (Area/(perimeter*equivalent radius)): 36.32)
 Pore40 -- Equivalent radius(um): 0.5643326 -- (Area(um2): 1 -- Perimeter: 1 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 12.56 -- Sphericity (Area/(perimeter*equivalent radius)): 1.77)
 Pore41 -- Equivalent radius(um): 9.9521146 -- (Area(um2): 311 -- Perimeter: 1 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 3906.16 -- Sphericity (Area/(perimeter*equivalent radius)): 31.25)
 Pore42 -- Equivalent radius(um): 4.4792515 -- (Area(um2): 63 -- Perimeter: 32 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 0.77 -- Sphericity (Area/(perimeter*equivalent radius)): 0.44)
 Pore43 -- Equivalent radius(um): 2.6469547 -- (Area(um2): 22 -- Perimeter: 3 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 30.7 -- Sphericity (Area/(perimeter*equivalent radius)): 2.77)
 Pore44 -- Equivalent radius(um): 2.6469547 -- (Area(um2): 22 -- Perimeter: 2 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 69.08 -- Sphericity (Area/(perimeter*equivalent radius)): 4.16)
 Pore45 -- Equivalent radius(um): 2.6469547 -- (Area(um2): 22 -- Perimeter: 20 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 0.69 -- Sphericity (Area/(perimeter*equivalent radius)): 0.42)
 Pore46 -- Equivalent radius(um): 0.7980869 -- (Area(um2): 2 -- Perimeter: 105 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 0 -- Sphericity (Area/(perimeter*equivalent radius)): 0.02)
 Pore47 -- Equivalent radius(um): 3.9098113 -- (Area(um2): 48 -- Perimeter: 21 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 1.37 -- Sphericity (Area/(perimeter*equivalent radius)): 0.58)
 Pore48 -- Equivalent radius(um): 8.2747409 -- (Area(um2): 215 -- Perimeter: 2 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 675.1 -- Sphericity (Area/(perimeter*equivalent radius)): 12.99)
 Pore49 -- Equivalent radius(um): 5.0789938 -- (Area(um2): 81 -- Perimeter: 11 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 8.41 -- Sphericity (Area/(perimeter*equivalent radius)): 1.45)
 Pore50 -- Equivalent radius(um): 4.984051 -- (Area(um2): 78 -- Perimeter: 4 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 61.23 -- Sphericity (Area/(perimeter*equivalent radius)): 3.91)
 Pore51 -- Equivalent radius(um): 0.5643326 -- (Area(um2): 1 -- Perimeter: 2 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 3.14 -- Sphericity (Area/(perimeter*equivalent radius)): 0.89)
 Pore52 -- Equivalent radius(um): 1.1286653 -- (Area(um2): 4 -- Perimeter: 19 -- Sphericity ($4\pi \cdot \text{Area}/(\text{Perimeter})^2$): 0.14 -- Sphericity (Area/(perimeter*equivalent radius)): 0.19)

Open-source Image Processing Code [OpenIPC]

File Help

New Measuring (grain size) Crack/Pore

Area of each grain Grain size and numbers (Line scan)

Number of grains Aspect ratio of each grain Average width

Grain Boundary Thickness: 2 Distance between scan lines: 50

Calibration | Manual Correction | Black & White

Crack Size/No

Image Processing Original Pic Results (Grain size) Pore/Crack results Crack Toolbox Crack Size and Number

Cracks and Pores %

Crack Percentage (%): 1.44
Pore Percentage (%): 2.91
Total Porosity Percentage (%): 4.35
Number of Pores: 279

Pore1 -- Equivalent radius(um): 0.5643326 -- (Area(um2): 1 -- Perimeter: 1 -- Sphericity (4*pi*Area/(Perimeter)^2): 12.56 -- Sphericity (Area/(perimeter*equivalent radius)): 1.77)
 Pore2 -- Equivalent radius(um): 0.9774528 -- (Area(um2): 3 -- Perimeter: 3 -- Sphericity (4*pi*Area/(Perimeter)^2): 4.19 -- Sphericity (Area/(perimeter*equivalent radius)): 1.02)
 Pore3 -- Equivalent radius(um): 0.9774528 -- (Area(um2): 3 -- Perimeter: 7 -- Sphericity (4*pi*Area/(Perimeter)^2): 0.77 -- Sphericity (Area/(perimeter*equivalent radius)): 0.44)
 Pore4 -- Equivalent radius(um): 3.2418442 -- (Area(um2): 33 -- Perimeter: 20 -- Sphericity (4*pi*Area/(Perimeter)^2): 1.04 -- Sphericity (Area/(perimeter*equivalent radius)): 0.51)
 Pore5 -- Equivalent radius(um): 0.7980869 -- (Area(um2): 2 -- Perimeter: 2 -- Sphericity (4*pi*Area/(Perimeter)^2): 6.28 -- Sphericity (Area/(perimeter*equivalent radius)): 1.25)
 Pore6 -- Equivalent radius(um): 2.1856509 -- (Area(um2): 15 -- Perimeter: 93 -- Sphericity (4*pi*Area/(Perimeter)^2): 0.02 -- Sphericity (Area/(perimeter*equivalent radius)): 0.07)
 Pore7 -- Equivalent radius(um): 0.5643326 -- (Area(um2): 1 -- Perimeter: 23 -- Sphericity (4*pi*Area/(Perimeter)^2): 0.02 -- Sphericity (Area/(perimeter*equivalent radius)): 0.08)
 Pore8 -- Equivalent radius(um): 3.7856585 -- (Area(um2): 45 -- Perimeter: 6 -- Sphericity (4*pi*Area/(Perimeter)^2): 15.7 -- Sphericity (Area/(perimeter*equivalent radius)): 1.98)
 Pore9 -- Equivalent radius(um): 2.1115394 -- (Area(um2): 14 -- Perimeter: 1 -- Sphericity (4*pi*Area/(Perimeter)^2): 175.84 -- Sphericity (Area/(perimeter*equivalent radius)): 6.63)
 Pore10 -- Equivalent radius(um): 3.9098113 -- (Area(um2): 48 -- Perimeter: 2 -- Sphericity (4*pi*Area/(Perimeter)^2): 150.72 -- Sphericity (Area/(perimeter*equivalent radius)): 6.14)
 Pore11 -- Equivalent radius(um): 3.6134921 -- (Area(um2): 41 -- Perimeter: 11 -- Sphericity (4*pi*Area/(Perimeter)^2): 4.26 -- Sphericity (Area/(perimeter*equivalent radius)): 1.03)
 Pore12 -- Equivalent radius(um): 4.2606181 -- (Area(um2): 57 -- Perimeter: 154 -- Sphericity (4*pi*Area/(Perimeter)^2): 0.03 -- Sphericity (Area/(perimeter*equivalent radius)): 0.09)
 Pore13 -- Equivalent radius(um): 2.9323585 -- (Area(um2): 27 -- Perimeter: 3 -- Sphericity (4*pi*Area/(Perimeter)^2): 37.68 -- Sphericity (Area/(perimeter*equivalent radius)): 3.07)
 Pore14 -- Equivalent radius(um): 3.7005766 -- (Area(um2): 43 -- Perimeter: 106 -- Sphericity (4*pi*Area/(Perimeter)^2): 0.05 -- Sphericity (Area/(perimeter*equivalent radius)): 0.11)
 Pore15 -- Equivalent radius(um): 0.7980869 -- (Area(um2): 2 -- Perimeter: 92 -- Sphericity (4*pi*Area/(Perimeter)^2): 0 -- Sphericity (Area/(perimeter*equivalent radius)): 0.03)
 Pore16 -- Equivalent radius(um): 8.3322717 -- (Area(um2): 218 -- Perimeter: 88 -- Sphericity (4*pi*Area/(Perimeter)^2): 0.35 -- Sphericity (Area/(perimeter*equivalent radius)): 0.3)
 Pore17 -- Equivalent radius(um): 8.7789557 -- (Area(um2): 242 -- Perimeter: 30 -- Sphericity (4*pi*Area/(Perimeter)^2): 3.38 -- Sphericity (Area/(perimeter*equivalent radius)): 0.92)
 Pore18 -- Equivalent radius(um): 0.7980869 -- (Area(um2): 2 -- Perimeter: 8 -- Sphericity (4*pi*Area/(Perimeter)^2): 0.39 -- Sphericity (Area/(perimeter*equivalent radius)): 0.31)
 Pore19 -- Equivalent radius(um): 4.0301412 -- (Area(um2): 51 -- Perimeter: 1 -- Sphericity (4*pi*Area/(Perimeter)^2): 640.56 -- Sphericity (Area/(perimeter*equivalent radius)): 12.65)
 Pore20 -- Equivalent radius(um): 16.1797231 -- (Area(um2): 822 -- Perimeter: 31 -- Sphericity (4*pi*Area/(Perimeter)^2): 10.74 -- Sphericity (Area/(perimeter*equivalent radius)): 1.64)
 Pore21 -- Equivalent radius(um): 5.442227 -- (Area(um2): 93 -- Perimeter: 60 -- Sphericity (4*pi*Area/(Perimeter)^2): 0.32 -- Sphericity (Area/(perimeter*equivalent radius)): 0.28)
 Pore22 -- Equivalent radius(um): 0.7980869 -- (Area(um2): 2 -- Perimeter: 2 -- Sphericity (4*pi*Area/(Perimeter)^2): 6.28 -- Sphericity (Area/(perimeter*equivalent radius)): 1.25)
 Pore23 -- Equivalent radius(um): 5.3239036 -- (Area(um2): 89 -- Perimeter: 4 -- Sphericity (4*pi*Area/(Perimeter)^2): 69.87 -- Sphericity (Area/(perimeter*equivalent radius)): 4.18)
 Pore24 -- Equivalent radius(um): 2.0347303 -- (Area(um2): 13 -- Perimeter: 8 -- Sphericity (4*pi*Area/(Perimeter)^2): 2.55 -- Sphericity (Area/(perimeter*equivalent radius)): 0.8)
 Pore25 -- Equivalent radius(um): 4.984051 -- (Area(um2): 78 -- Perimeter: 2 -- Sphericity (4*pi*Area/(Perimeter)^2): 244.92 -- Sphericity (Area/(perimeter*equivalent radius)): 7.82)
 Pore26 -- Equivalent radius(um): 4.8872641 -- (Area(um2): 75 -- Perimeter: 13 -- Sphericity (4*pi*Area/(Perimeter)^2): 5.57 -- Sphericity (Area/(perimeter*equivalent radius)): 1.18)
 Pore27 -- Equivalent radius(um): 7.9006571 -- (Area(um2): 196 -- Perimeter: 61 -- Sphericity (4*pi*Area/(Perimeter)^2): 0.66 -- Sphericity (Area/(perimeter*equivalent radius)): 0.41)
 Pore28 -- Equivalent radius(um): 7.2709176 -- (Area(um2): 166 -- Perimeter: 3 -- Sphericity (4*pi*Area/(Perimeter)^2): 231.66 -- Sphericity (Area/(perimeter*equivalent radius)): 7.61)
 Pore29 -- Equivalent radius(um): 11.0586163 -- (Area(um2): 384 -- Perimeter: 6 -- Sphericity (4*pi*Area/(Perimeter)^2): 133.97 -- Sphericity (Area/(perimeter*equivalent radius)): 5.79)
 Pore30 -- Equivalent radius(um): 2.5860971 -- (Area(um2): 21 -- Perimeter: 38 -- Sphericity (4*pi*Area/(Perimeter)^2): 0.18 -- Sphericity (Area/(perimeter*equivalent radius)): 0.21)
 Pore31 -- Equivalent radius(um): 5.558032 -- (Area(um2): 97 -- Perimeter: 1 -- Sphericity (4*pi*Area/(Perimeter)^2): 1218.32 -- Sphericity (Area/(perimeter*equivalent radius)): 17.45)
 Pore32 -- Equivalent radius(um): 0.5643326 -- (Area(um2): 1 -- Perimeter: 5 -- Sphericity (4*pi*Area/(Perimeter)^2): 0.5 -- Sphericity (Area/(perimeter*equivalent radius)): 0.35)
 Pore33 -- Equivalent radius(um): 6.3094308 -- (Area(um2): 125 -- Perimeter: 4 -- Sphericity (4*pi*Area/(Perimeter)^2): 98.12 -- Sphericity (Area/(perimeter*equivalent radius)): 4.95)
 Pore34 -- Equivalent radius(um): 0.7980869 -- (Area(um2): 2 -- Perimeter: 157 -- Sphericity (4*pi*Area/(Perimeter)^2): 0 -- Sphericity (Area/(perimeter*equivalent radius)): 0.02)
 Pore35 -- Equivalent radius(um): 3.338637 -- (Area(um2): 35 -- Perimeter: 6 -- Sphericity (4*pi*Area/(Perimeter)^2): 12.21 -- Sphericity (Area/(perimeter*equivalent radius)): 1.75)
 Pore36 -- Equivalent radius(um): 12.5935986 -- (Area(um2): 498 -- Perimeter: 86 -- Sphericity (4*pi*Area/(Perimeter)^2): 0.85 -- Sphericity (Area/(perimeter*equivalent radius)): 0.46)
 Pore37 -- Equivalent radius(um): 0.9774528 -- (Area(um2): 3 -- Perimeter: 150 -- Sphericity (4*pi*Area/(Perimeter)^2): 0 -- Sphericity (Area/(perimeter*equivalent radius)): 0.02)
 Pore38 -- Equivalent radius(um): 1.8716797 -- (Area(um2): 11 -- Perimeter: 24 -- Sphericity (4*pi*Area/(Perimeter)^2): 0.24 -- Sphericity (Area/(perimeter*equivalent radius)): 0.24)
 Pore39 -- Equivalent radius(um): 11.5653777 -- (Area(um2): 420 -- Perimeter: 1 -- Sphericity (4*pi*Area/(Perimeter)^2): 5275.2 -- Sphericity (Area/(perimeter*equivalent radius)): 36.32)
 Pore40 -- Equivalent radius(um): 0.5643326 -- (Area(um2): 1 -- Perimeter: 1 -- Sphericity (4*pi*Area/(Perimeter)^2): 12.56 -- Sphericity (Area/(perimeter*equivalent radius)): 1.77)
 Pore41 -- Equivalent radius(um): 9.9521146 -- (Area(um2): 311 -- Perimeter: 1 -- Sphericity (4*pi*Area/(Perimeter)^2): 3906.16 -- Sphericity (Area/(perimeter*equivalent radius)): 31.25)
 Pore42 -- Equivalent radius(um): 4.4792515 -- (Area(um2): 63 -- Perimeter: 32 -- Sphericity (4*pi*Area/(Perimeter)^2): 0.77 -- Sphericity (Area/(perimeter*equivalent radius)): 0.44)
 Pore43 -- Equivalent radius(um): 2.6469547 -- (Area(um2): 22 -- Perimeter: 3 -- Sphericity (4*pi*Area/(Perimeter)^2): 30.7 -- Sphericity (Area/(perimeter*equivalent radius)): 2.77)
 Pore44 -- Equivalent radius(um): 2.6469547 -- (Area(um2): 22 -- Perimeter: 2 -- Sphericity (4*pi*Area/(Perimeter)^2): 69.08 -- Sphericity (Area/(perimeter*equivalent radius)): 4.16)
 Pore45 -- Equivalent radius(um): 2.6469547 -- (Area(um2): 22 -- Perimeter: 20 -- Sphericity (4*pi*Area/(Perimeter)^2): 0.69 -- Sphericity (Area/(perimeter*equivalent radius)): 0.42)
 Pore46 -- Equivalent radius(um): 0.7980869 -- (Area(um2): 2 -- Perimeter: 105 -- Sphericity (4*pi*Area/(Perimeter)^2): 0 -- Sphericity (Area/(perimeter*equivalent radius)): 0.02)
 Pore47 -- Equivalent radius(um): 3.9098113 -- (Area(um2): 48 -- Perimeter: 21 -- Sphericity (4*pi*Area/(Perimeter)^2): 1.37 -- Sphericity (Area/(perimeter*equivalent radius)): 0.58)
 Pore48 -- Equivalent radius(um): 8.2747409 -- (Area(um2): 215 -- Perimeter: 2 -- Sphericity (4*pi*Area/(Perimeter)^2): 675.1 -- Sphericity (Area/(perimeter*equivalent radius)): 12.99)
 Pore49 -- Equivalent radius(um): 5.0789938 -- (Area(um2): 81 -- Perimeter: 11 -- Sphericity (4*pi*Area/(Perimeter)^2): 8.41 -- Sphericity (Area/(perimeter*equivalent radius)): 1.45)
 Pore50 -- Equivalent radius(um): 4.984051 -- (Area(um2): 78 -- Perimeter: 4 -- Sphericity (4*pi*Area/(Perimeter)^2): 61.23 -- Sphericity (Area/(perimeter*equivalent radius)): 3.91)
 Pore51 -- Equivalent radius(um): 0.5643326 -- (Area(um2): 1 -- Perimeter: 2 -- Sphericity (4*pi*Area/(Perimeter)^2): 3.14 -- Sphericity (Area/(perimeter*equivalent radius)): 0.89)
 Pore52 -- Equivalent radius(um): 1.1286653 -- (Area(um2): 4 -- Perimeter: 19 -- Sphericity (4*pi*Area/(Perimeter)^2): 0.14 -- Sphericity (Area/(perimeter*equivalent radius)): 0.19)

Status



Area of each grain Grain size and numbers (Line scan)
 Number of grains Aspect ratio of each grain Average width
 Grain Boundary Thickness
 Distance between scan lines

Calibration | Manual Correction | Black & White

▼ Crack Size/No

Image Processing | Original Pic | Results (Grain size) | Pore/Crack results | Crack Toolbox | Crack Size and Number

Crack Percentage (%): 1.44

Pore Percentage (%): 2.91

Total Porosity Percentage (%): 4.35

Number of Pores: 279

```

Pore1 -- Equivalent radius(um): 0.5643326 -- (Area(um2): 1 -- Perimeter: 1 -- Sphericity (4*pi*Area/(Perimeter)^2): 12.56 -- Sphericity (Area/(perimeter*equivalent radius)): 1.77 )
Pore2 -- Equivalent radius(um): 0.9774528 -- (Area(um2): 3 -- Perimeter: 3 -- Sphericity (4*pi*Area/(Perimeter)^2): 4.19 -- Sphericity (Area/(perimeter*equivalent radius)): 1.02 )
Pore3 -- Equivalent radius(um): 0.9774528 -- (Area(um2): 3 -- Perimeter: 7 -- Sphericity (4*pi*Area/(Perimeter)^2): 0.77 -- Sphericity (Area/(perimeter*equivalent radius)): 0.44 )
Pore4 -- Equivalent radius(um): 3.2418442 -- (Area(um2): 33 -- Perimeter: 20 -- Sphericity (4*pi*Area/(Perimeter)^2): 1.04 -- Sphericity (Area/(perimeter*equivalent radius)): 0.51 )
Pore5 -- Equivalent radius(um): 0.7980869 -- (Area(um2): 2 -- Perimeter: 2 -- Sphericity (4*pi*Area/(Perimeter)^2): 6.28 -- Sphericity (Area/(perimeter*equivalent radius)): 1.25 )
Pore6 -- Equivalent radius(um): 2.1856509 -- (Area(um2): 15 -- Perimeter: 93 -- Sphericity (4*pi*Area/(Perimeter)^2): 0.03 -- Sphericity (Area/(perimeter*equivalent radius)): 0.07 )
Pore7 -- Equivalent radius(um): 0.5643326 -- (Area(um2): 1 -- Perimeter: 23 -- Sphericity (4*pi*Area/(Perimeter)^2): 0.02 -- Sphericity (Area/(perimeter*equivalent radius)): 0.08 )
Pore8 -- Equivalent radius(um): 3.7856585 -- (Area(um2): 45 -- Perimeter: 6 -- Sphericity (4*pi*Area/(Perimeter)^2): 15.7 -- Sphericity (Area/(perimeter*equivalent radius)): 1.98 )
Pore9 -- Equivalent radius(um): 2.1115394 -- (Area(um2): 14 -- Perimeter: 1 -- Sphericity (4*pi*Area/(Perimeter)^2): 175.84 -- Sphericity (Area/(perimeter*equivalent radius)): 6.63 )
Pore10 -- Equivalent radius(um): 3.9098113 -- (Area(um2): 48 -- Perimeter: 2 -- Sphericity (4*pi*Area/(Perimeter)^2): 150.72 -- Sphericity (Area/(perimeter*equivalent radius)): 6.14 )
Pore11 -- Equivalent radius(um): 3.6134921 -- (Area(um2): 41 -- Perimeter: 11 -- Sphericity (4*pi*Area/(Perimeter)^2): 4.26 -- Sphericity (Area/(perimeter*equivalent radius)): 1.03 )
Pore12 -- Equivalent radius(um): 4.2606181 -- (Area(um2): 57 -- Perimeter: 154 -- Sphericity (4*pi*Area/(Perimeter)^2): 0.03 -- Sphericity (Area/(perimeter*equivalent radius)): 0.09 )
Pore13 -- Equivalent radius(um): 2.9323585 -- (Area(um2): 27 -- Perimeter: 3 -- Sphericity (4*pi*Area/(Perimeter)^2): 37.68 -- Sphericity (Area/(perimeter*equivalent radius)): 3.07 )
Pore14 -- Equivalent radius(um): 3.7005766 -- (Area(um2): 43 -- Perimeter: 106 -- Sphericity (4*pi*Area/(Perimeter)^2): 0.05 -- Sphericity (Area/(perimeter*equivalent radius)): 0.11 )
Pore15 -- Equivalent radius(um): 0.7980869 -- (Area(um2): 2 -- Perimeter: 92 -- Sphericity (4*pi*Area/(Perimeter)^2): 0 -- Sphericity (Area/(perimeter*equivalent radius)): 0.03 )
Pore16 -- Equivalent radius(um): 8.3322717 -- (Area(um2): 218 -- Perimeter: 88 -- Sphericity (4*pi*Area/(Perimeter)^2): 0.35 -- Sphericity (Area/(perimeter*equivalent radius)): 0.3 )
Pore17 -- Equivalent radius(um): 8.7789557 -- (Area(um2): 242 -- Perimeter: 30 -- Sphericity (4*pi*Area/(Perimeter)^2): 3.38 -- Sphericity (Area/(perimeter*equivalent radius)): 0.92 )
Pore18 -- Equivalent radius(um): 0.7980869 -- (Area(um2): 2 -- Perimeter: 8 -- Sphericity (4*pi*Area/(Perimeter)^2): 0.39 -- Sphericity (Area/(perimeter*equivalent radius)): 0.31 )
Pore19 -- Equivalent radius(um): 4.0301412 -- (Area(um2): 51 -- Perimeter: 1 -- Sphericity (4*pi*Area/(Perimeter)^2): 640.56 -- Sphericity (Area/(perimeter*equivalent radius)): 12.65 )
Pore20 -- Equivalent radius(um): 16.1797231 -- (Area(um2): 822 -- Perimeter: 31 -- Sphericity (4*pi*Area/(Perimeter)^2): 10.74 -- Sphericity (Area/(perimeter*equivalent radius)): 1.64 )
Pore21 -- Equivalent radius(um): 5.442227 -- (Area(um2): 93 -- Perimeter: 60 -- Sphericity (4*pi*Area/(Perimeter)^2): 0.32 -- Sphericity (Area/(perimeter*equivalent radius)): 0.28 )
Pore22 -- Equivalent radius(um): 0.7980869 -- (Area(um2): 2 -- Perimeter: 2 -- Sphericity (4*pi*Area/(Perimeter)^2): 6.28 -- Sphericity (Area/(perimeter*equivalent radius)): 1.25 )
Pore23 -- Equivalent radius(um): 5.3239036 -- (Area(um2): 89 -- Perimeter: 4 -- Sphericity (4*pi*Area/(Perimeter)^2): 69.87 -- Sphericity (Area/(perimeter*equivalent radius)): 4.18 )
Pore24 -- Equivalent radius(um): 2.0347303 -- (Area(um2): 13 -- Perimeter: 8 -- Sphericity (4*pi*Area/(Perimeter)^2): 2.55 -- Sphericity (Area/(perimeter*equivalent radius)): 0.8 )
Pore25 -- Equivalent radius(um): 4.984051 -- (Area(um2): 78 -- Perimeter: 2 -- Sphericity (4*pi*Area/(Perimeter)^2): 244.92 -- Sphericity (Area/(perimeter*equivalent radius)): 7.82 )
Pore26 -- Equivalent radius(um): 4.8872641 -- (Area(um2): 75 -- Perimeter: 13 -- Sphericity (4*pi*Area/(Perimeter)^2): 5.57 -- Sphericity (Area/(perimeter*equivalent radius)): 1.18 )
Pore27 -- Equivalent radius(um): 7.9006571 -- (Area(um2): 196 -- Perimeter: 61 -- Sphericity (4*pi*Area/(Perimeter)^2): 0.66 -- Sphericity (Area/(perimeter*equivalent radius)): 0.41 )
Pore28 -- Equivalent radius(um): 7.2709176 -- (Area(um2): 166 -- Perimeter: 3 -- Sphericity (4*pi*Area/(Perimeter)^2): 231.66 -- Sphericity (Area/(perimeter*equivalent radius)): 7.61 )
Pore29 -- Equivalent radius(um): 11.0586163 -- (Area(um2): 384 -- Perimeter: 6 -- Sphericity (4*pi*Area/(Perimeter)^2): 133.97 -- Sphericity (Area/(perimeter*equivalent radius)): 5.79 )
Pore30 -- Equivalent radius(um): 2.5860971 -- (Area(um2): 21 -- Perimeter: 38 -- Sphericity (4*pi*Area/(Perimeter)^2): 0.18 -- Sphericity (Area/(perimeter*equivalent radius)): 0.21 )
Pore31 -- Equivalent radius(um): 5.558032 -- (Area(um2): 97 -- Perimeter: 1 -- Sphericity (4*pi*Area/(Perimeter)^2): 1218.32 -- Sphericity (Area/(perimeter*equivalent radius)): 17.45 )
Pore32 -- Equivalent radius(um): 0.5643326 -- (Area(um2): 1 -- Perimeter: 5 -- Sphericity (4*pi*Area/(Perimeter)^2): 0.5 -- Sphericity (Area/(perimeter*equivalent radius)): 0.35 )
Pore33 -- Equivalent radius(um): 6.3094308 -- (Area(um2): 125 -- Perimeter: 4 -- Sphericity (4*pi*Area/(Perimeter)^2): 98.12 -- Sphericity (Area/(perimeter*equivalent radius)): 4.95 )
Pore34 -- Equivalent radius(um): 0.7980869 -- (Area(um2): 2 -- Perimeter: 157 -- Sphericity (4*pi*Area/(Perimeter)^2): 0 -- Sphericity (Area/(perimeter*equivalent radius)): 0.02 )
Pore35 -- Equivalent radius(um): 3.338637 -- (Area(um2): 35 -- Perimeter: 6 -- Sphericity (4*pi*Area/(Perimeter)^2): 12.21 -- Sphericity (Area/(perimeter*equivalent radius)): 1.75 )
Pore36 -- Equivalent radius(um): 12.5935986 -- (Area(um2): 498 -- Perimeter: 86 -- Sphericity (4*pi*Area/(Perimeter)^2): 0.85 -- Sphericity (Area/(perimeter*equivalent radius)): 0.46 )
Pore37 -- Equivalent radius(um): 0.9774528 -- (Area(um2): 3 -- Perimeter: 150 -- Sphericity (4*pi*Area/(Perimeter)^2): 0 -- Sphericity (Area/(perimeter*equivalent radius)): 0.02 )
Pore38 -- Equivalent radius(um): 1.8716797 -- (Area(um2): 11 -- Perimeter: 24 -- Sphericity (4*pi*Area/(Perimeter)^2): 0.24 -- Sphericity (Area/(perimeter*equivalent radius)): 0.24 )
Pore39 -- Equivalent radius(um): 11.5653777 -- (Area(um2): 420 -- Perimeter: 1 -- Sphericity (4*pi*Area/(Perimeter)^2): 5275.2 -- Sphericity (Area/(perimeter*equivalent radius)): 36.32 )
Pore40 -- Equivalent radius(um): 0.5643326 -- (Area(um2): 1 -- Perimeter: 1 -- Sphericity (4*pi*Area/(Perimeter)^2): 12.56 -- Sphericity (Area/(perimeter*equivalent radius)): 1.77 )
Pore41 -- Equivalent radius(um): 9.9521146 -- (Area(um2): 311 -- Perimeter: 1 -- Sphericity (4*pi*Area/(Perimeter)^2): 3906.16 -- Sphericity (Area/(perimeter*equivalent radius)): 31.25 )
Pore42 -- Equivalent radius(um): 4.4792515 -- (Area(um2): 63 -- Perimeter: 32 -- Sphericity (4*pi*Area/(Perimeter)^2): 0.77 -- Sphericity (Area/(perimeter*equivalent radius)): 0.44 )
Pore43 -- Equivalent radius(um): 2.6469547 -- (Area(um2): 22 -- Perimeter: 3 -- Sphericity (4*pi*Area/(Perimeter)^2): 30.7 -- Sphericity (Area/(perimeter*equivalent radius)): 2.77 )
Pore44 -- Equivalent radius(um): 2.6469547 -- (Area(um2): 22 -- Perimeter: 2 -- Sphericity (4*pi*Area/(Perimeter)^2): 69.08 -- Sphericity (Area/(perimeter*equivalent radius)): 4.16 )
Pore45 -- Equivalent radius(um): 2.6469547 -- (Area(um2): 22 -- Perimeter: 20 -- Sphericity (4*pi*Area/(Perimeter)^2): 0.69 -- Sphericity (Area/(perimeter*equivalent radius)): 0.42 )
Pore46 -- Equivalent radius(um): 0.7980869 -- (Area(um2): 2 -- Perimeter: 105 -- Sphericity (4*pi*Area/(Perimeter)^2): 0 -- Sphericity (Area/(perimeter*equivalent radius)): 0.02 )
Pore47 -- Equivalent radius(um): 3.9098113 -- (Area(um2): 48 -- Perimeter: 21 -- Sphericity (4*pi*Area/(Perimeter)^2): 1.37 -- Sphericity (Area/(perimeter*equivalent radius)): 0.58 )
Pore48 -- Equivalent radius(um): 8.2747409 -- (Area(um2): 215 -- Perimeter: 2 -- Sphericity (4*pi*Area/(Perimeter)^2): 675.1 -- Sphericity (Area/(perimeter*equivalent radius)): 12.99 )
Pore49 -- Equivalent radius(um): 5.0789938 -- (Area(um2): 81 -- Perimeter: 11 -- Sphericity (4*pi*Area/(Perimeter)^2): 8.41 -- Sphericity (Area/(perimeter*equivalent radius)): 1.45 )
Pore50 -- Equivalent radius(um): 4.984051 -- (Area(um2): 78 -- Perimeter: 4 -- Sphericity (4*pi*Area/(Perimeter)^2): 61.23 -- Sphericity (Area/(perimeter*equivalent radius)): 3.91 )
Pore51 -- Equivalent radius(um): 0.5643326 -- (Area(um2): 1 -- Perimeter: 2 -- Sphericity (4*pi*Area/(Perimeter)^2): 3.14 -- Sphericity (Area/(perimeter*equivalent radius)): 0.89 )
Pore52 -- Equivalent radius(um): 1.1286653 -- (Area(um2): 4 -- Perimeter: 19 -- Sphericity (4*pi*Area/(Perimeter)^2): 0.14 -- Sphericity (Area/(perimeter*equivalent radius)): 0.19 )

```

Pores number and other values for each pore.
Important Note:
 This section is under construction and the results may not be correct!

File Help



Area of each grain Grain size and numbers (Line scan)
 Number of grains Aspect ratio of each grain Average width
Grain Boundary Thickness
Distance between scan lines

Calibration | Manual Correction | Black & White

Crack Size/No

Image Processing Original Pic Results (Grain size) Pore/Crack results Crack Toolbox Crack Size and Number

Crack Percentage (%): 1.44

Pore Percentage (%): 2.91

Total Porosity Percentage (%): 4

Number of Pores: 279

Pore1 -- Equivalent radius(um):

Pore2 -- Equivalent radius(um):

Pore3 -- Equivalent radius(um):

Pore4 -- Equivalent radius(um):

Pore5 -- Equivalent radius(um):

Pore6 -- Equivalent radius(um):

Pore7 -- Equivalent radius(um):

Pore8 -- Equivalent radius(um):

Pore9 -- Equivalent radius(um):

Pore10 -- Equivalent radius(um):

Pore11 -- Equivalent radius(um):

Pore12 -- Equivalent radius(um):

Pore13 -- Equivalent radius(um):

Pore14 -- Equivalent radius(um):

Pore15 -- Equivalent radius(um):

Pore16 -- Equivalent radius(um):

Pore17 -- Equivalent radius(um):

Pore18 -- Equivalent radius(um):

Pore19 -- Equivalent radius(um):

Pore20 -- Equivalent radius(um):

Pore21 -- Equivalent radius(um):

Pore22 -- Equivalent radius(um):

Pore23 -- Equivalent radius(um):

Pore24 -- Equivalent radius(um):

Pore25 -- Equivalent radius(um):

Pore26 -- Equivalent radius(um):

Pore27 -- Equivalent radius(um):

Pore28 -- Equivalent radius(um):

Pore29 -- Equivalent radius(um):

Pore30 -- Equivalent radius(um):

Pore31 -- Equivalent radius(um):

Pore32 -- Equivalent radius(um):

Pore33 -- Equivalent radius(um):

Pore34 -- Equivalent radius(um):

Pore35 -- Equivalent radius(um):

Pore36 -- Equivalent radius(um):

Pore37 -- Equivalent radius(um):

Pore38 -- Equivalent radius(um):

Pore39 -- Equivalent radius(um):

Pore40 -- Equivalent radius(um):

Pore41 -- Equivalent radius(um):

Pore42 -- Equivalent radius(um):

Pore43 -- Equivalent radius(um):

Pore44 -- Equivalent radius(um):

Pore45 -- Equivalent radius(um):

Pore46 -- Equivalent radius(um):

Pore47 -- Equivalent radius(um):

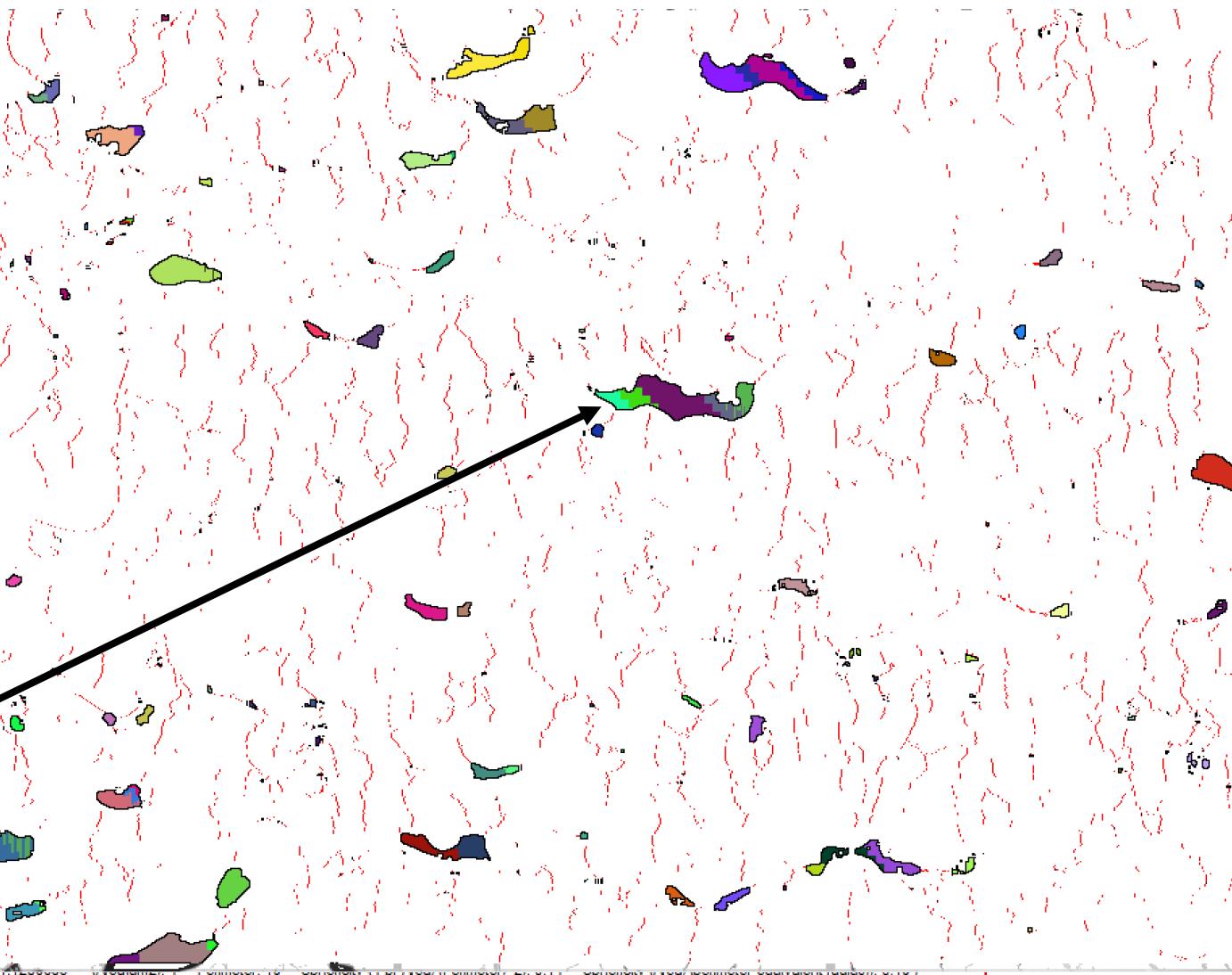
Pore48 -- Equivalent radius(um):

Pore49 -- Equivalent radius(um):

Pore50 -- Equivalent radius(um):

Pore51 -- Equivalent radius(um):

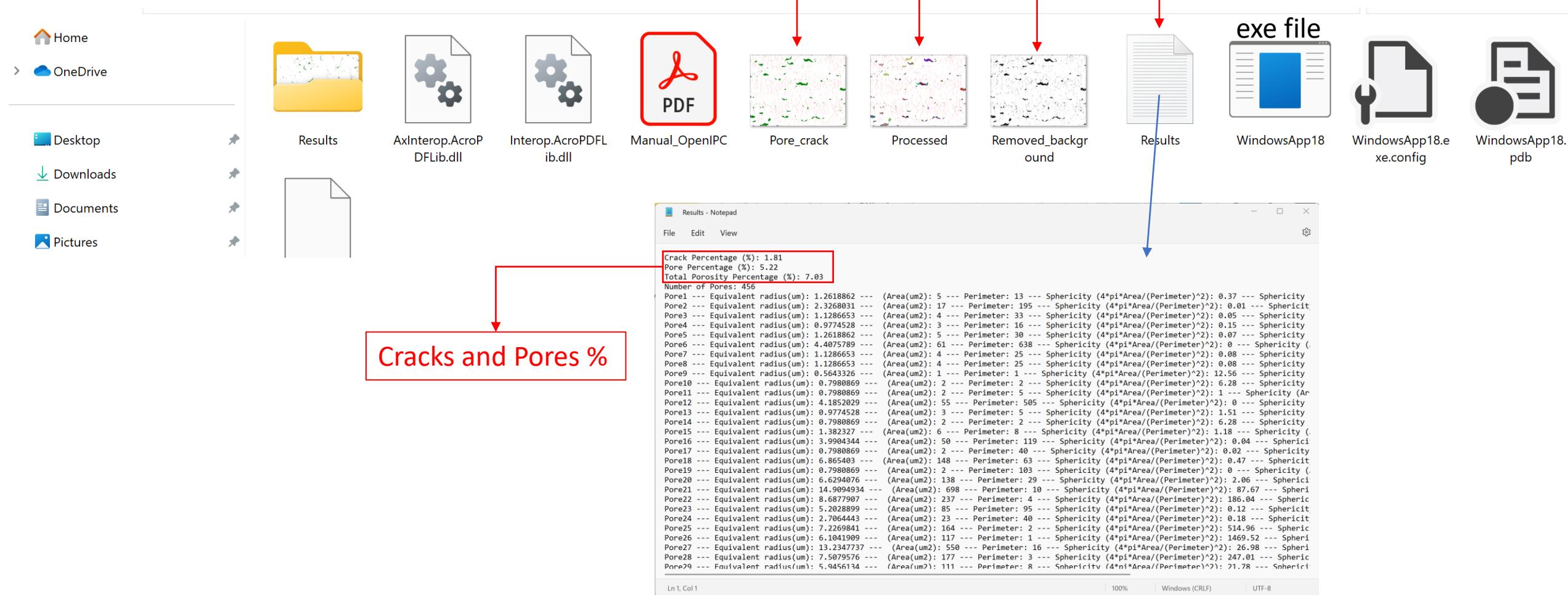
Pore52 -- Equivalent radius(um):



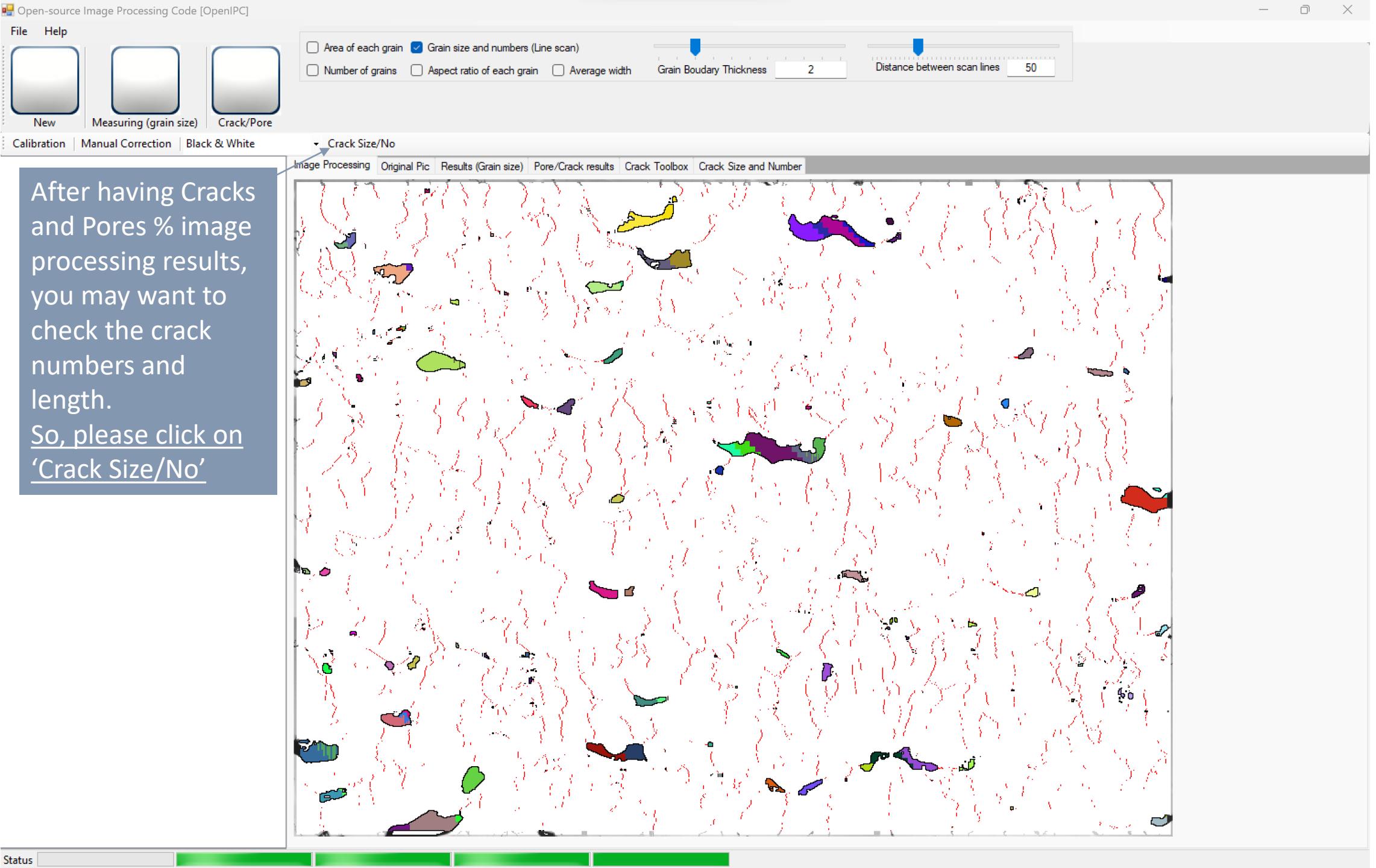
Pores number and other values for each pore.
Important Note:
This section is under construction and the results may not be correct!
The code assigns a color to a detected pore.
In the current version of the code, a pore may be detected as several small pores like

Note:

- In the same folder of the code exe file, code saves images and results in txt file.



Section 2: Cracks Number and Length



File Help

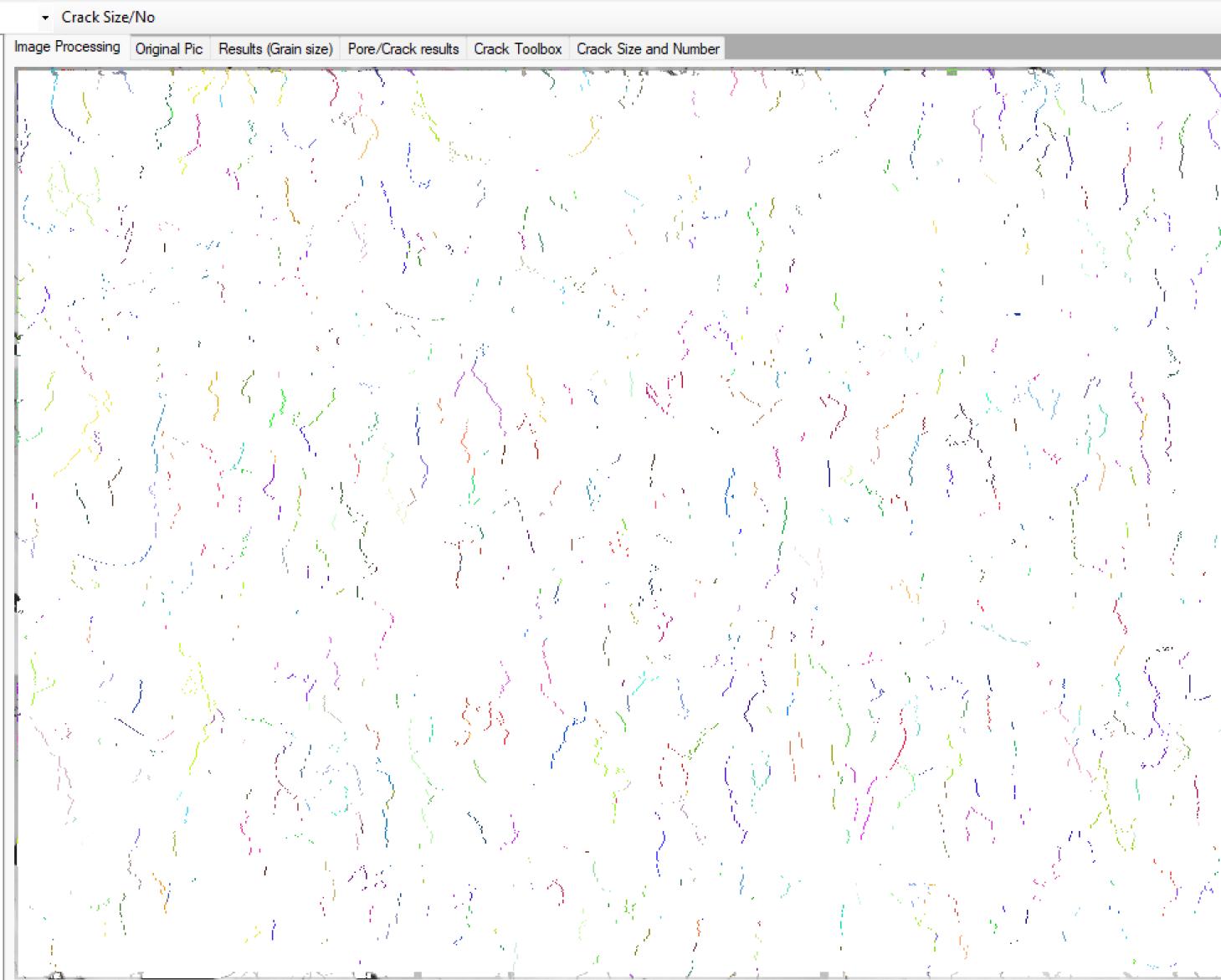


Area of each grain Grain size and numbers (Line scan)
 Number of grains Aspect ratio of each grain Average width
Grain Boundary Thickness
Distance between scan lines

Calibration | Manual Correction | Black & White

Code will remove
the pores and
detects each crack
and color it!

This section of the
code is tested and
almost accurate.
So, please check
the results visually
before using them
to see if they are
correct or not!



Open-source Image Processing Code [OpenIPC]

File Help

New Measuring (grain size) Crack/Pore

Area of each grain Grain size and numbers (Line scan)
 Number of grains Aspect ratio of each grain Average width
Grain Boundary Thickness
Distance between scan lines

Calibration | Manual Correction | Black & White ▾ Crack Size/No

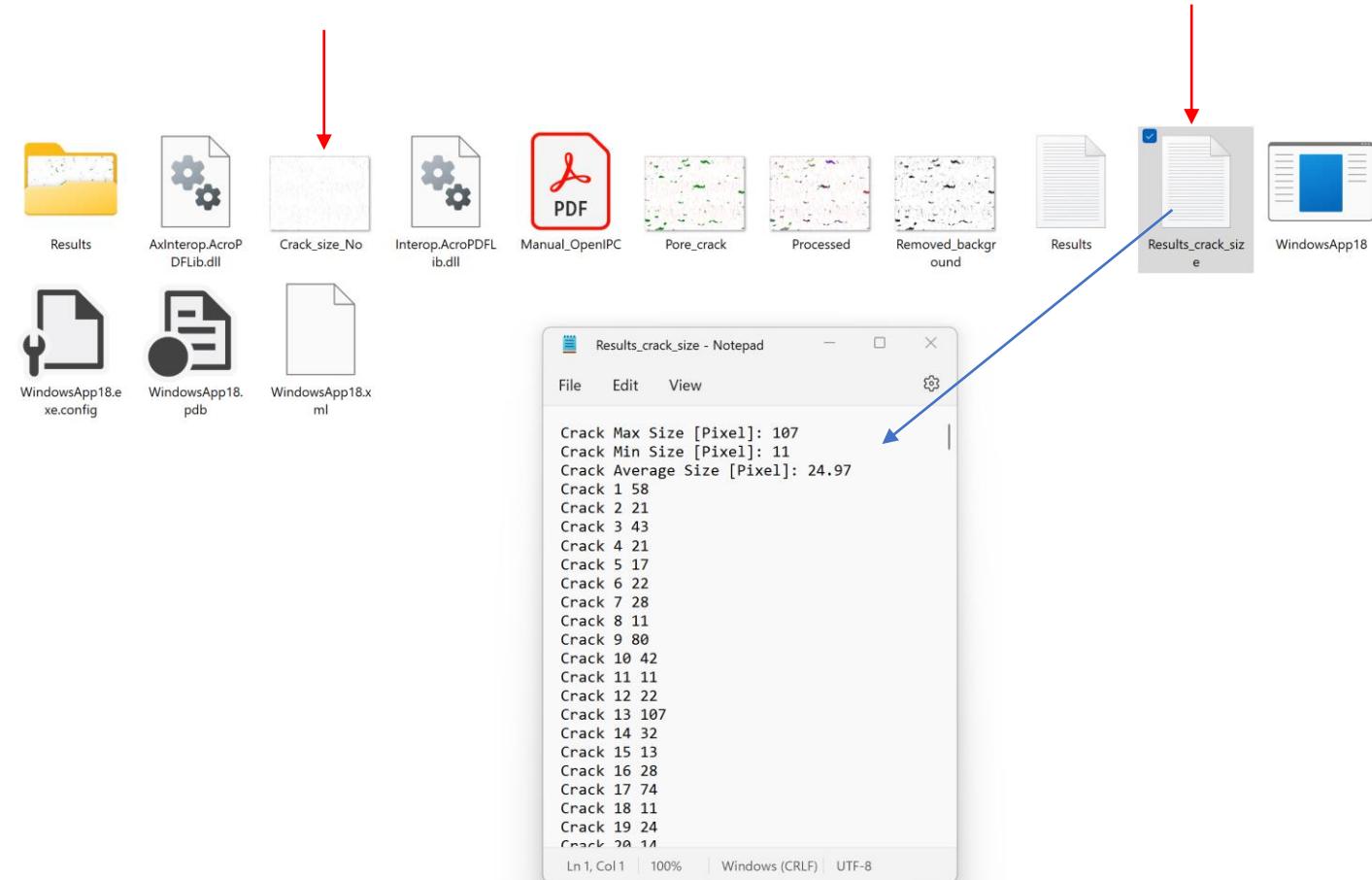
Image Processing Original Pic Results (Grain size) Pore/Crack results Crack Toolbox Crack Size and Number

Crack No.: 1 - Size: 58
Crack No.: 2 - Size: 21
Crack No.: 3 - Size: 43
Crack No.: 4 - Size: 21
Crack No.: 5 - Size: 17
Crack No.: 6 - Size: 22
Crack No.: 7 - Size: 28
Crack No.: 8 - Size: 11
Crack No.: 9 - Size: 80
Crack No.: 10 - Size: 42
Crack No.: 11 - Size: 11
Crack No.: 12 - Size: 22
Crack No.: 13 - Size: 107
Crack No.: 14 - Size: 32
Crack No.: 15 - Size: 13
Crack No.: 16 - Size: 28
Crack No.: 17 - Size: 74
Crack No.: 18 - Size: 11
Crack No.: 19 - Size: 24
Crack No.: 20 - Size: 14
Crack No.: 21 - Size: 14
Crack No.: 22 - Size: 23
Crack No.: 23 - Size: 24
Crack No.: 24 - Size: 16
Crack No.: 25 - Size: 11
Crack No.: 26 - Size: 14
Crack No.: 27 - Size: 15
Crack No.: 28 - Size: 12
Crack No.: 29 - Size: 25
Crack No.: 30 - Size: 30
Crack No.: 31 - Size: 16
Crack No.: 32 - Size: 41
Crack No.: 33 - Size: 24
Crack No.: 34 - Size: 16
Crack No.: 35 - Size: 23
Crack No.: 36 - Size: 15
Crack No.: 37 - Size: 26
Crack No.: 38 - Size: 19
Crack No.: 39 - Size: 30
Crack No.: 40 - Size: 49
Crack No.: 41 - Size: 26
Crack No.: 42 - Size: 34
Crack No.: 43 - Size: 17
Crack No.: 44 - Size: 11
Crack No.: 45 - Size: 13
Crack No.: 46 - Size: 20
Crack No.: 47 - Size: 16
Crack No.: 48 - Size: 31
Crack No.: 49 - Size: 92
Crack No.: 50 - Size: 14
Crack No.: 51 - Size: 11
Crack No.: 52 - Size: 32
Crack No.: 53 - Size: 14
Crack No.: 54 - Size: 38
Crack No.: 55 - Size: 19

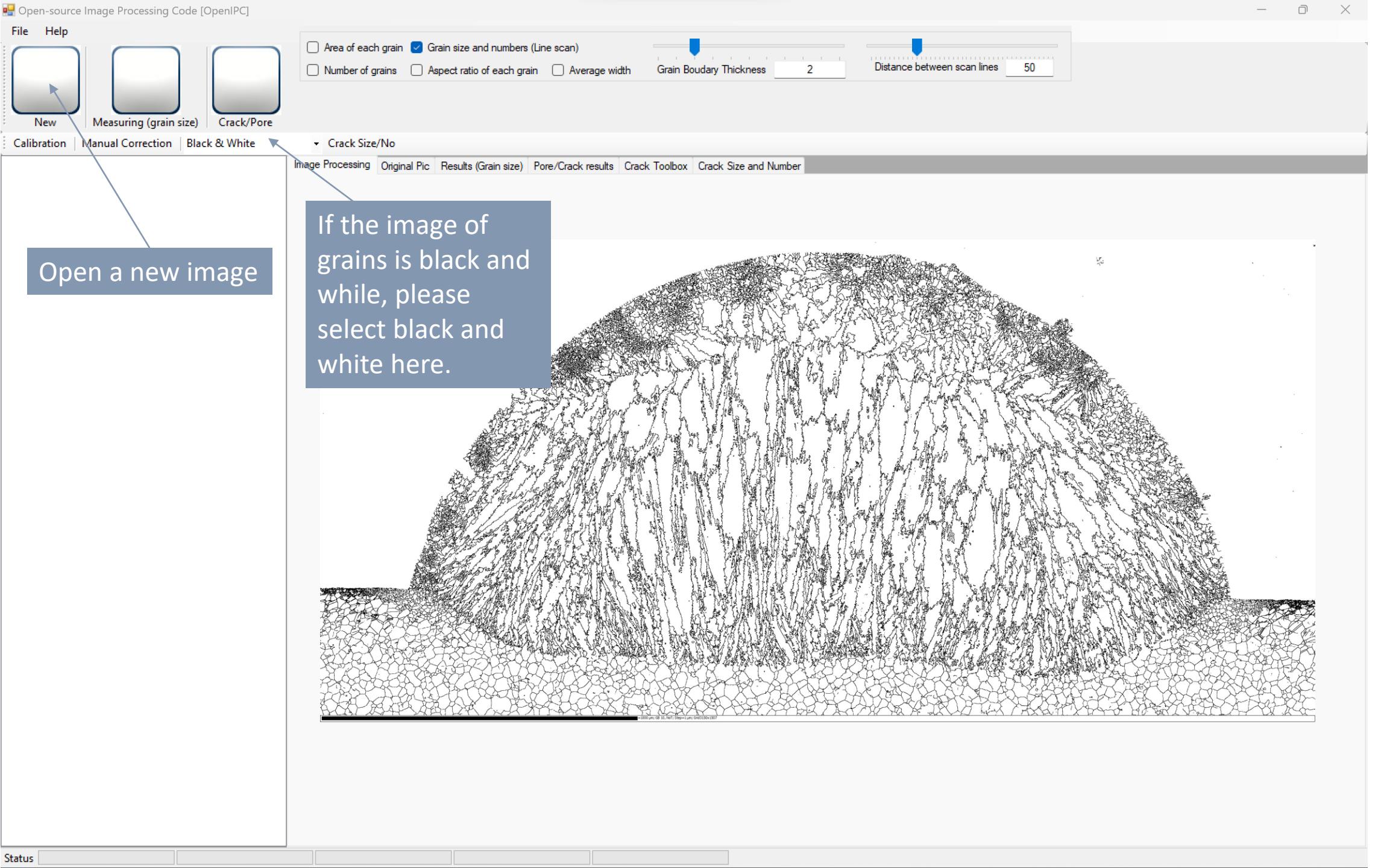
Results are in the 'Crack Size and Number' tab.

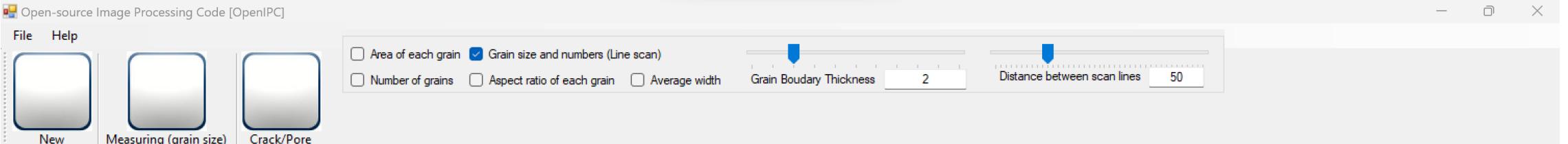
Note:

- In the same folder of the code exe file, code saves an image and results in a txt file.



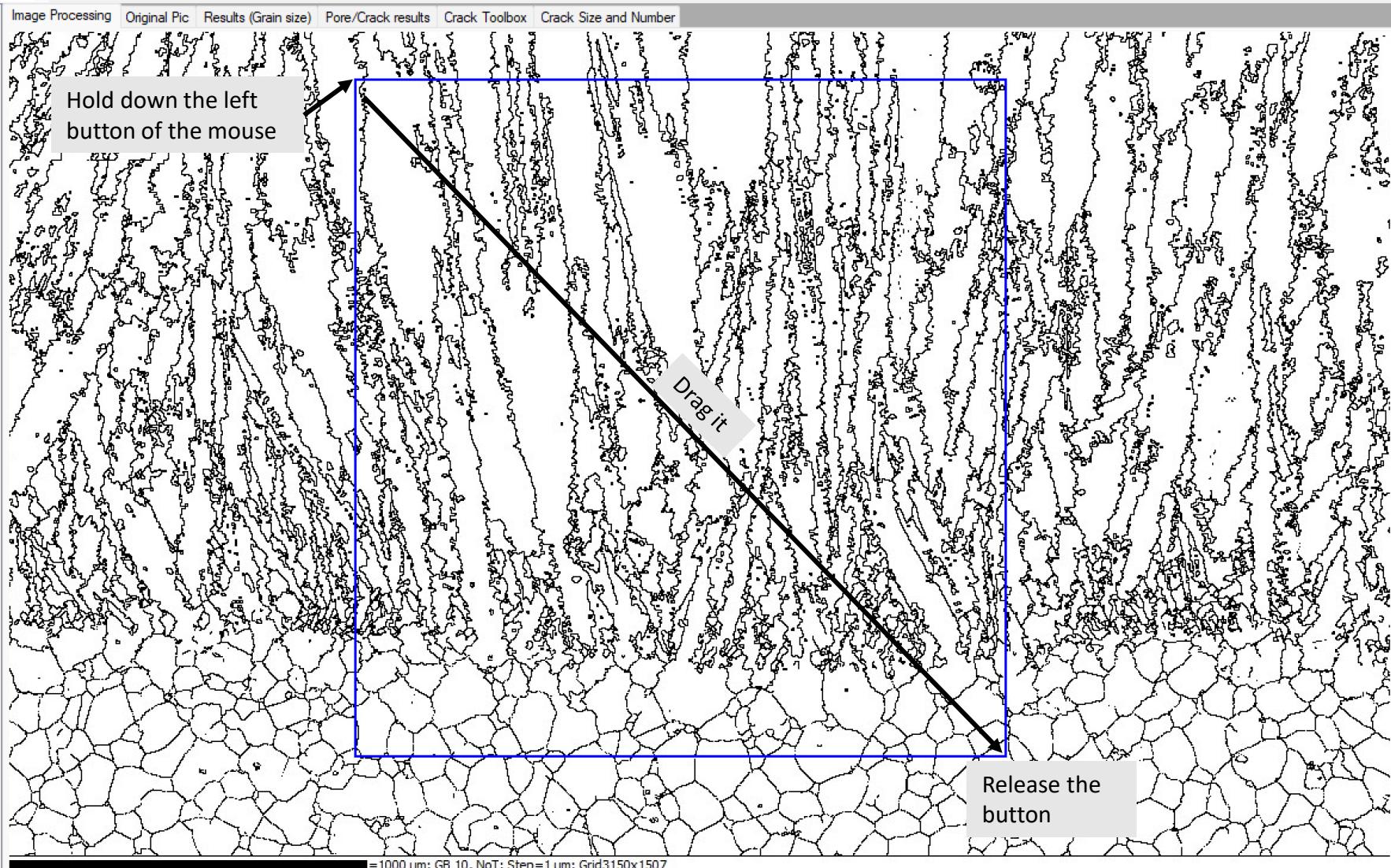
Section 3: Grains Size

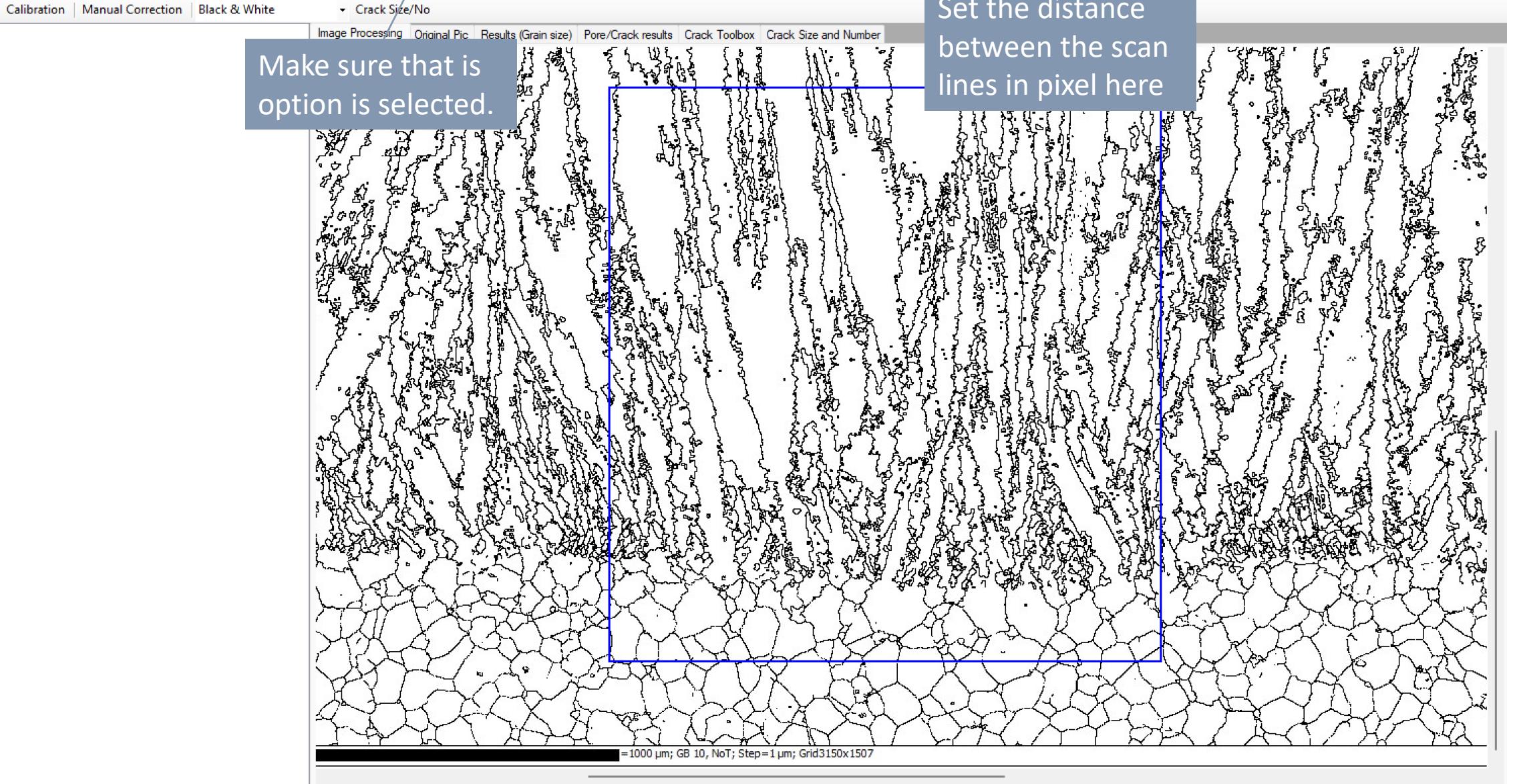
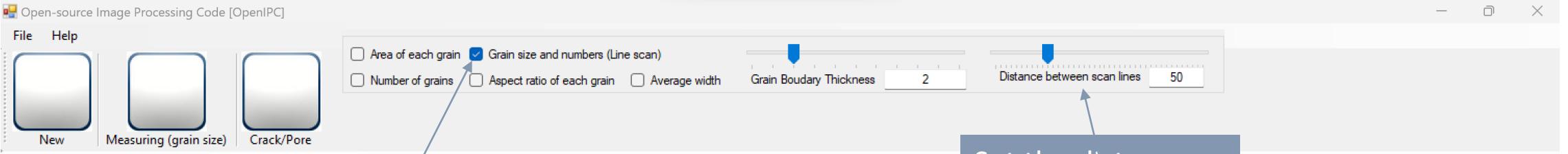


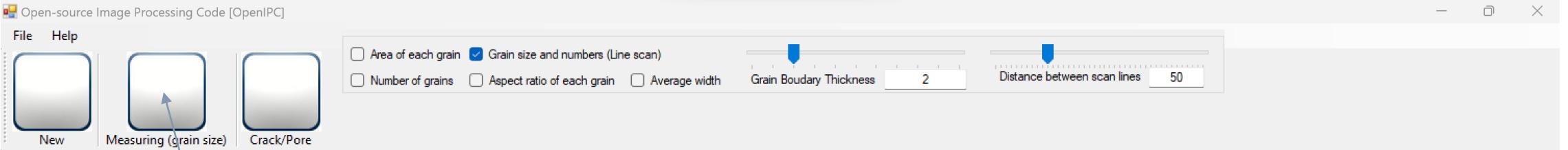


Calibration | Manual Correction | Black & White

Crack Size/No

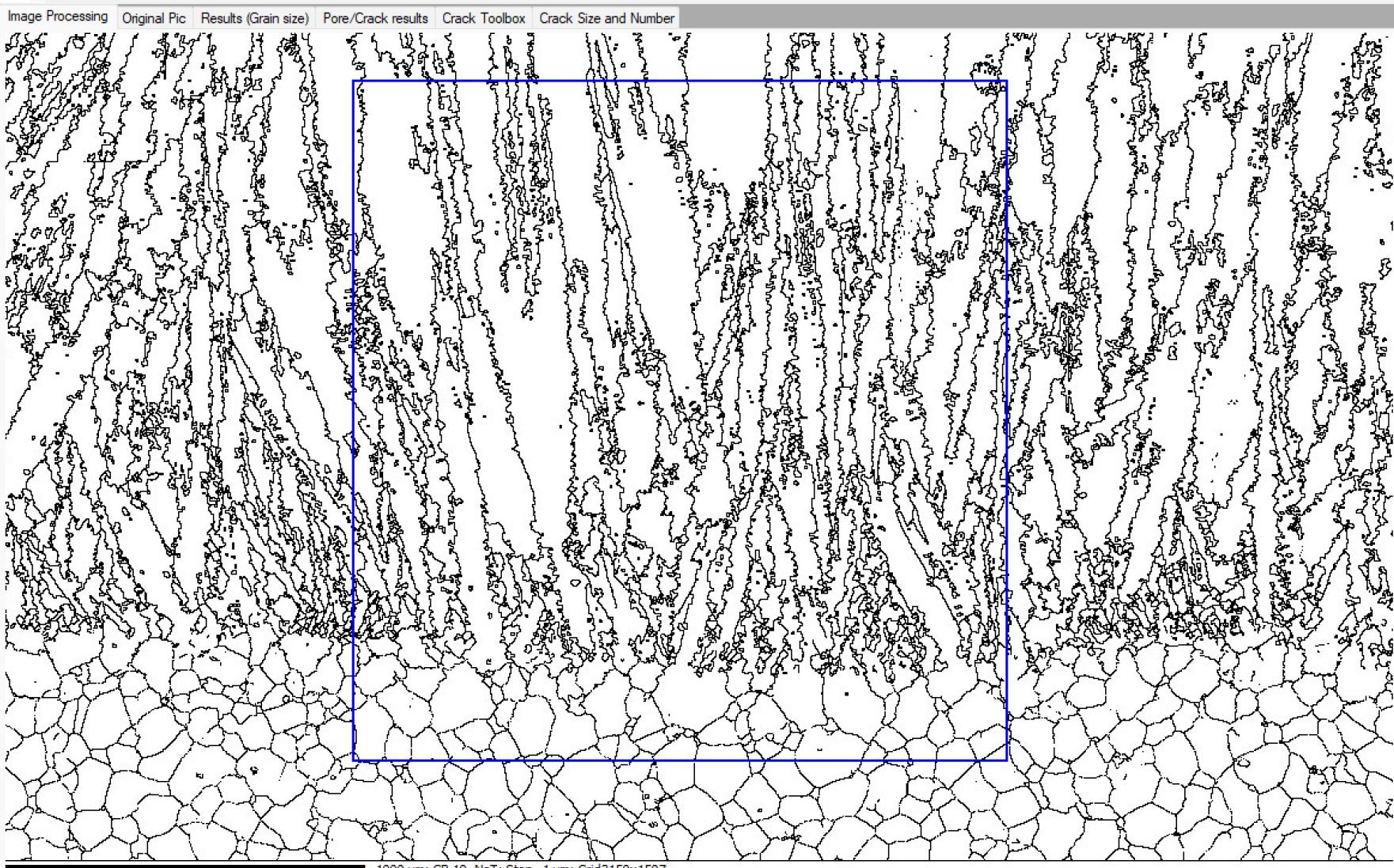


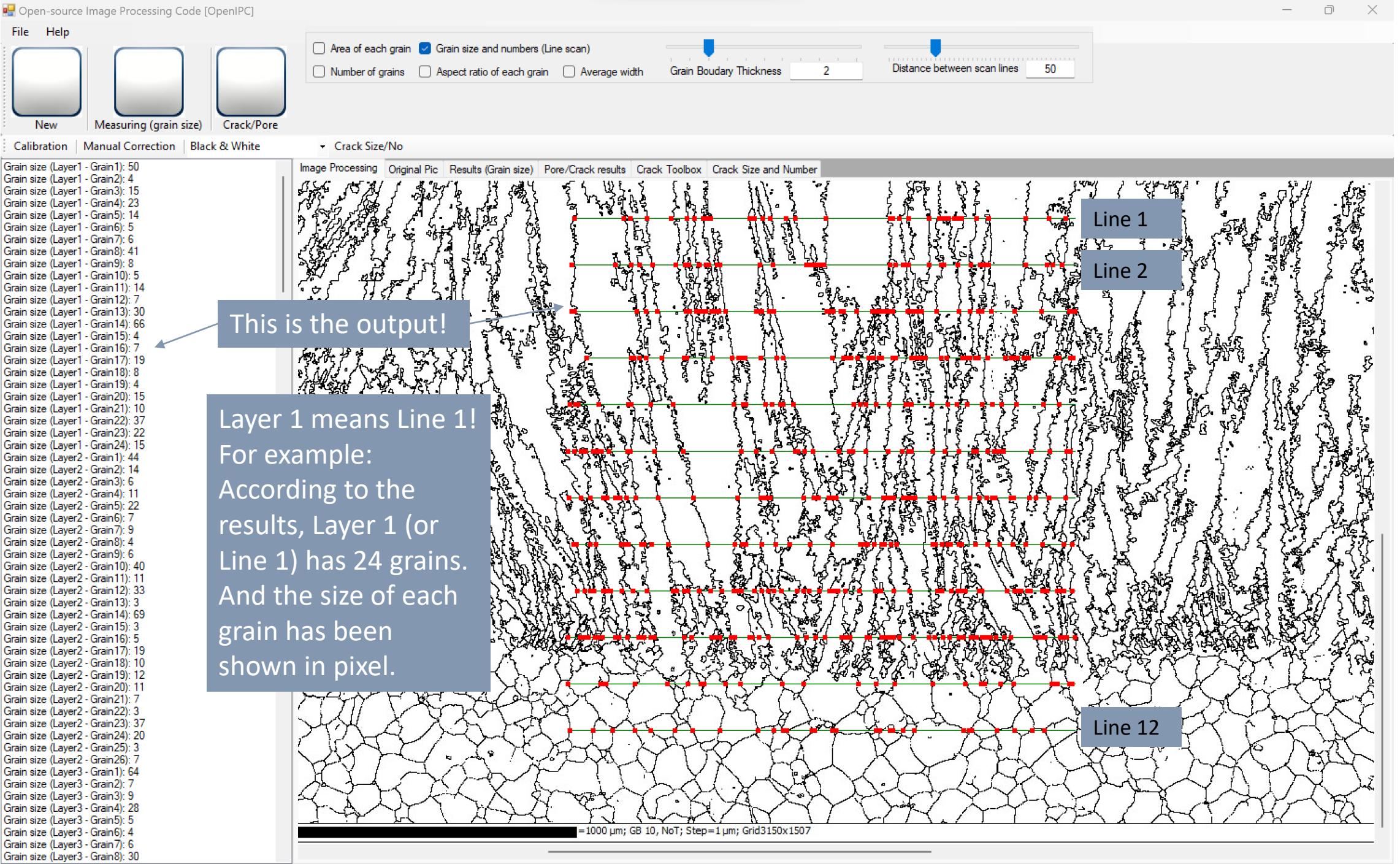


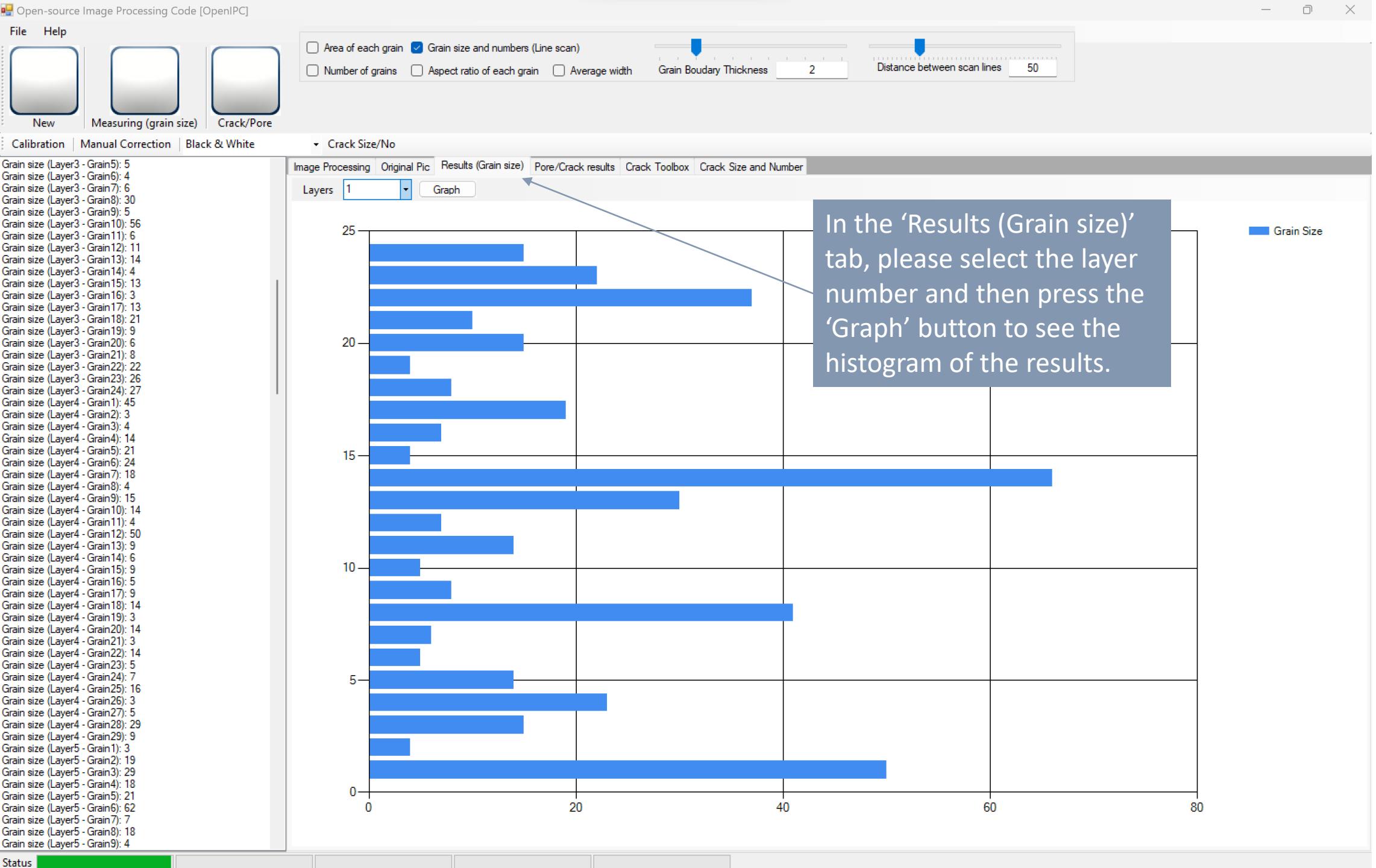


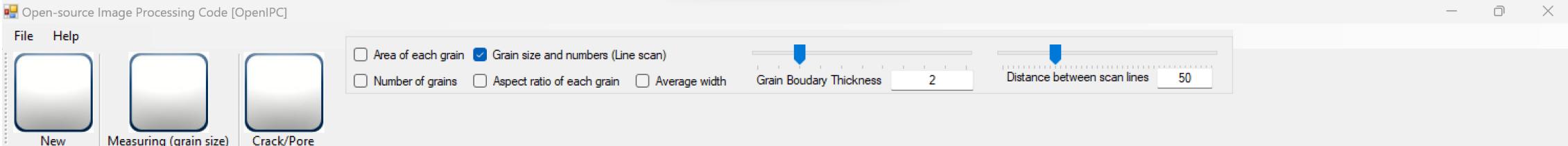
Calibration | Manual Correction | Black & White

Crack Size/No









Calibration | Manual Correction | Black & White

Crack Size/No

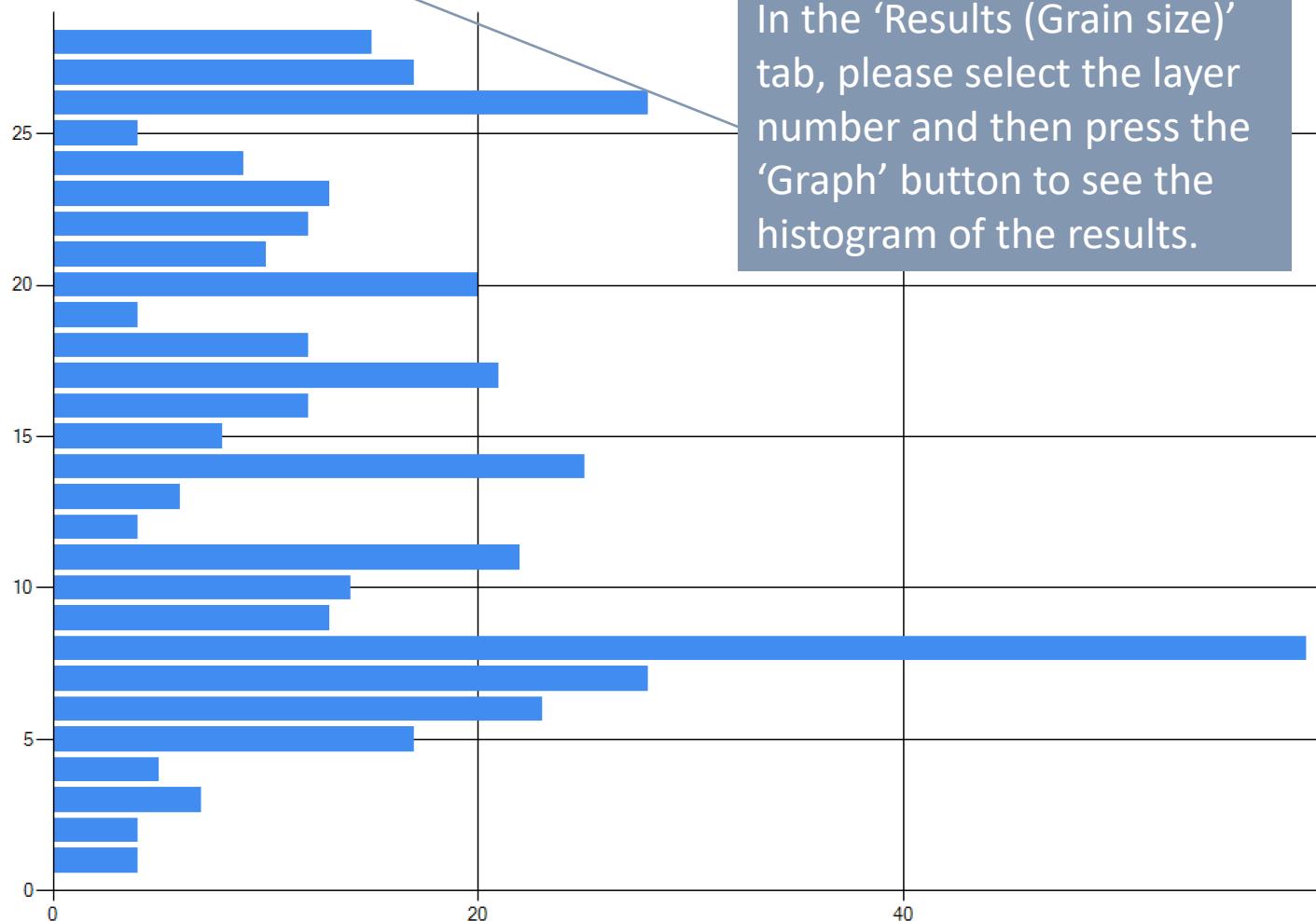
Grain size (Layer3 - Grain5): 5
Grain size (Layer3 - Grain6): 4
Grain size (Layer3 - Grain7): 6
Grain size (Layer3 - Grain8): 30
Grain size (Layer3 - Grain9): 5
Grain size (Layer3 - Grain10): 56
Grain size (Layer3 - Grain11): 6
Grain size (Layer3 - Grain12): 11
Grain size (Layer3 - Grain13): 14
Grain size (Layer3 - Grain14): 4
Grain size (Layer3 - Grain15): 13
Grain size (Layer3 - Grain16): 3
Grain size (Layer3 - Grain17): 13
Grain size (Layer3 - Grain18): 21
Grain size (Layer3 - Grain19): 9
Grain size (Layer3 - Grain20): 6
Grain size (Layer3 - Grain21): 8
Grain size (Layer3 - Grain22): 22
Grain size (Layer3 - Grain23): 26
Grain size (Layer3 - Grain24): 27
Grain size (Layer4 - Grain1): 45
Grain size (Layer4 - Grain2): 3
Grain size (Layer4 - Grain3): 4
Grain size (Layer4 - Grain4): 14
Grain size (Layer4 - Grain5): 21
Grain size (Layer4 - Grain6): 24
Grain size (Layer4 - Grain7): 18
Grain size (Layer4 - Grain8): 4
Grain size (Layer4 - Grain9): 15
Grain size (Layer4 - Grain10): 14
Grain size (Layer4 - Grain11): 4
Grain size (Layer4 - Grain12): 50
Grain size (Layer4 - Grain13): 9
Grain size (Layer4 - Grain14): 6
Grain size (Layer4 - Grain15): 9
Grain size (Layer4 - Grain16): 5
Grain size (Layer4 - Grain17): 9
Grain size (Layer4 - Grain18): 14
Grain size (Layer4 - Grain19): 3
Grain size (Layer4 - Grain20): 14
Grain size (Layer4 - Grain21): 3
Grain size (Layer4 - Grain22): 14
Grain size (Layer4 - Grain23): 5
Grain size (Layer4 - Grain24): 7
Grain size (Layer4 - Grain25): 16
Grain size (Layer4 - Grain26): 3
Grain size (Layer4 - Grain27): 5
Grain size (Layer4 - Grain28): 29
Grain size (Layer4 - Grain29): 9
Grain size (Layer5 - Grain1): 3
Grain size (Layer5 - Grain2): 19
Grain size (Layer5 - Grain3): 29
Grain size (Layer5 - Grain4): 18
Grain size (Layer5 - Grain5): 21
Grain size (Layer5 - Grain6): 62
Grain size (Layer5 - Grain7): 7
Grain size (Layer5 - Grain8): 18
Grain size (Layer5 - Grain9): 4

Image Processing | Original Pic | Results (Grain size) | Pore/Crack results | Crack Toolbox | Crack Size and Number

Layers

6

Graph



In the 'Results (Grain size)' tab, please select the layer number and then press the 'Graph' button to see the histogram of the results.

Grain Size

Status

File Help



<input type="checkbox"/> Area of each grain	<input checked="" type="checkbox"/> Grain size and numbers (Line scan)
<input type="checkbox"/> Number of grains	<input type="checkbox"/> Aspect ratio of each grain
<input type="checkbox"/> Average width	

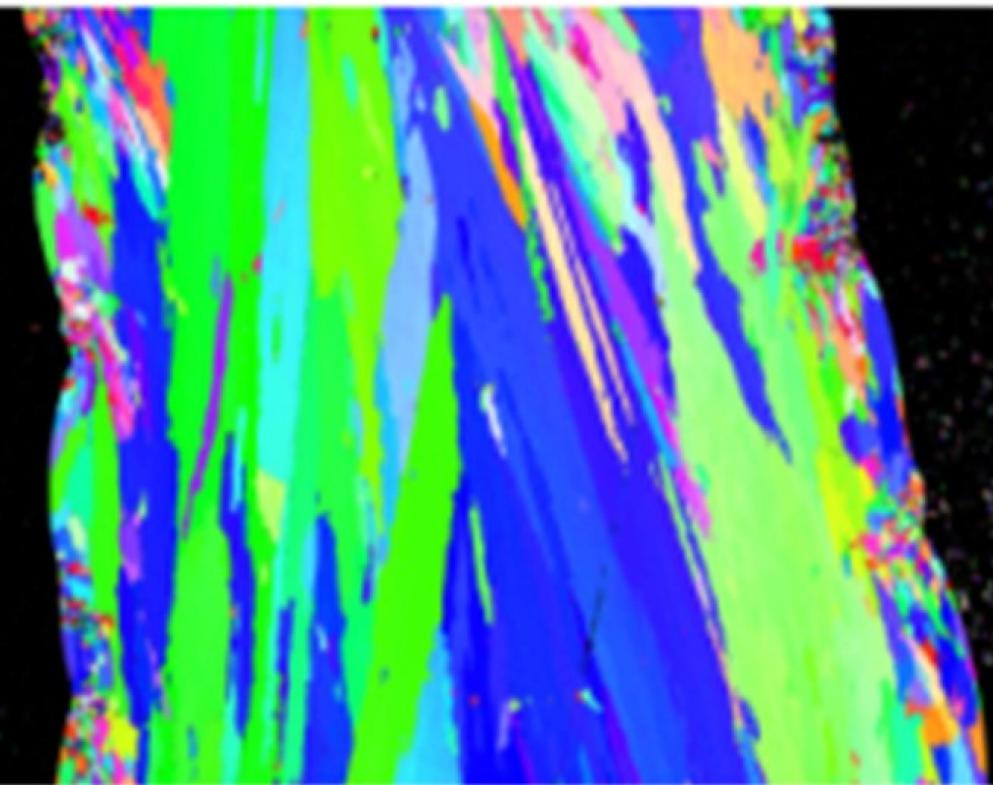
Grain Boundary Thickness: Distance between scan lines:

Calibration | Manual Correction

Black & White

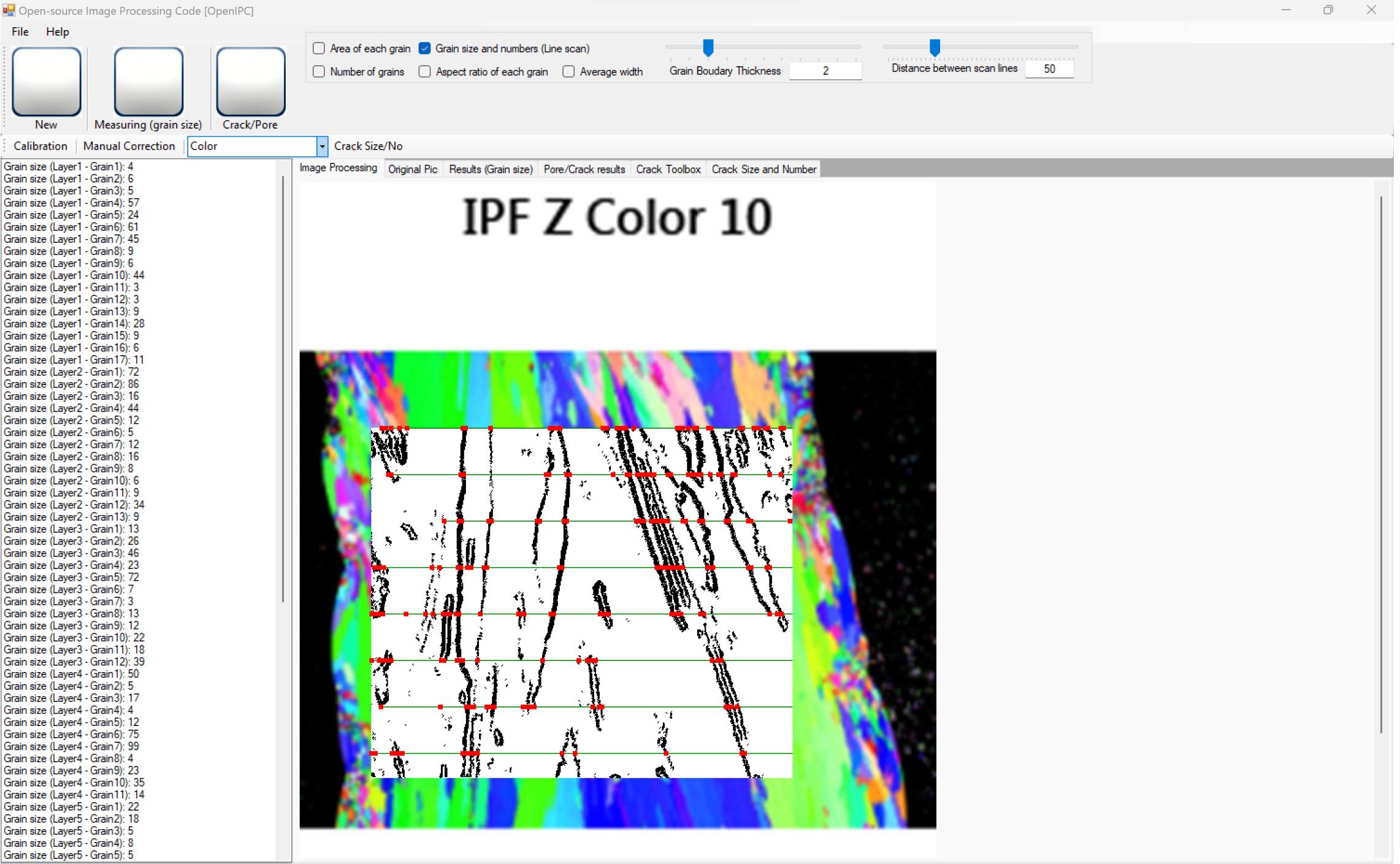
Black & White
Grayscale
Color

If the image of
grains is colorful,
please select color
option here.

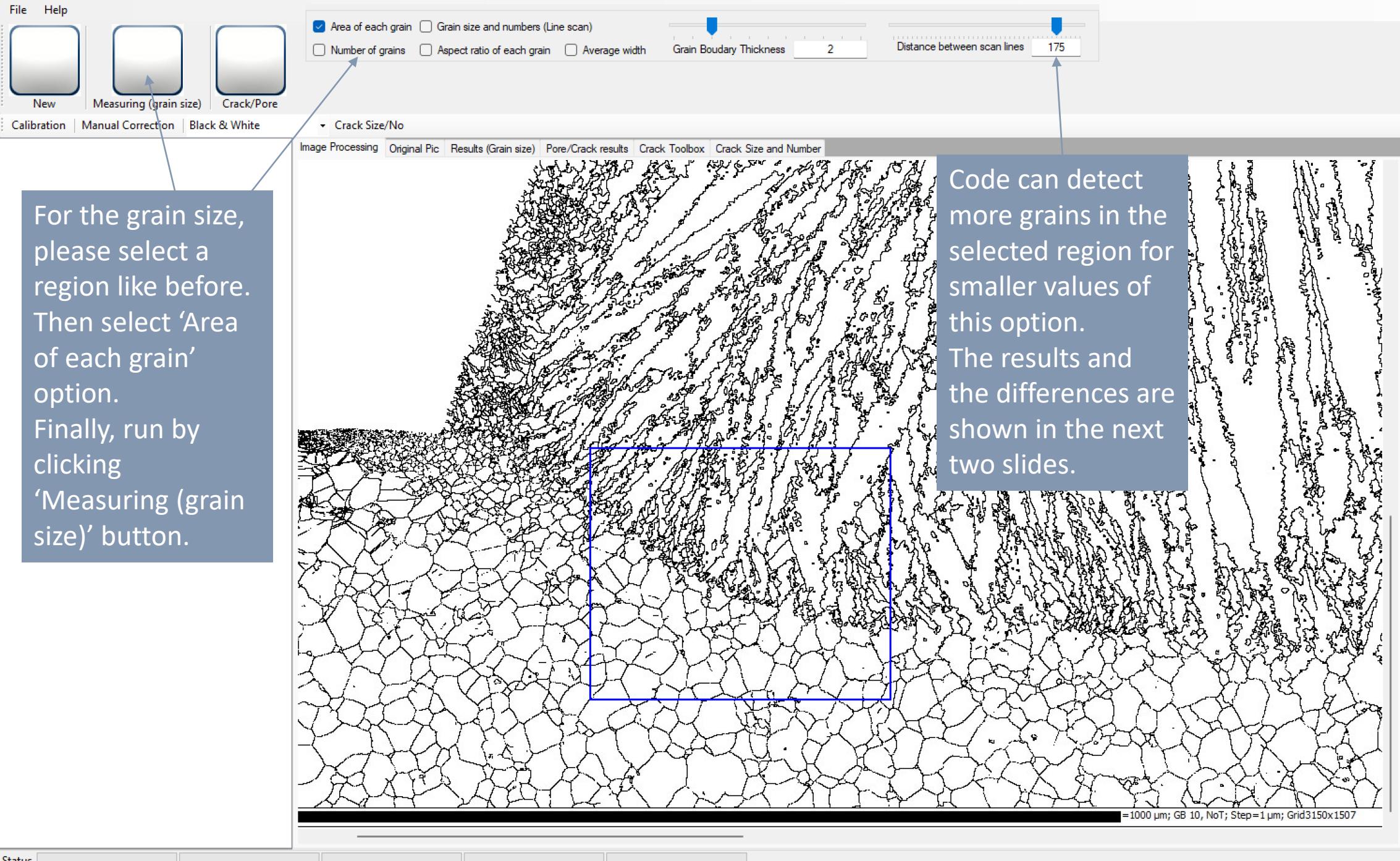


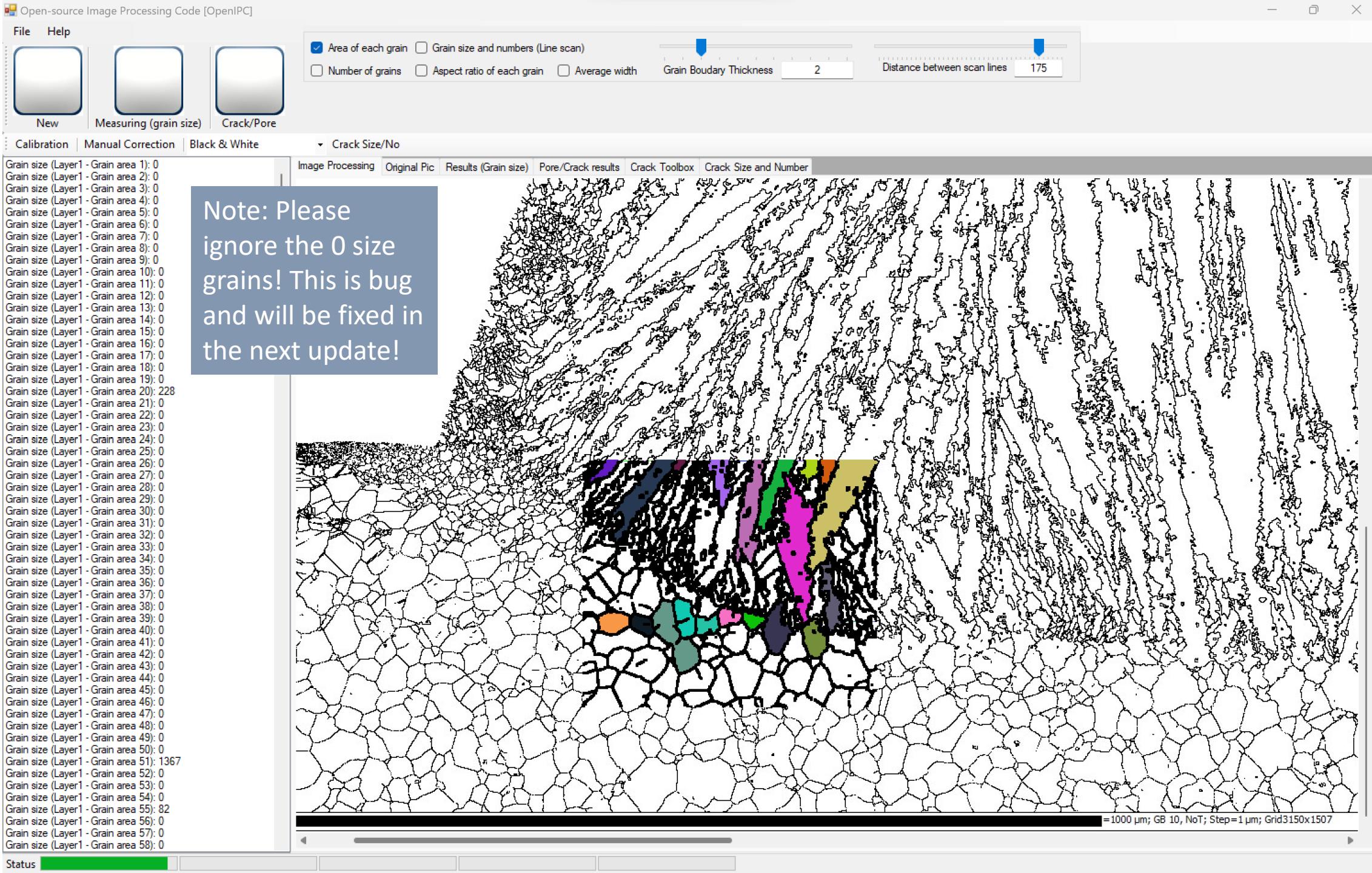
Crack Size/No

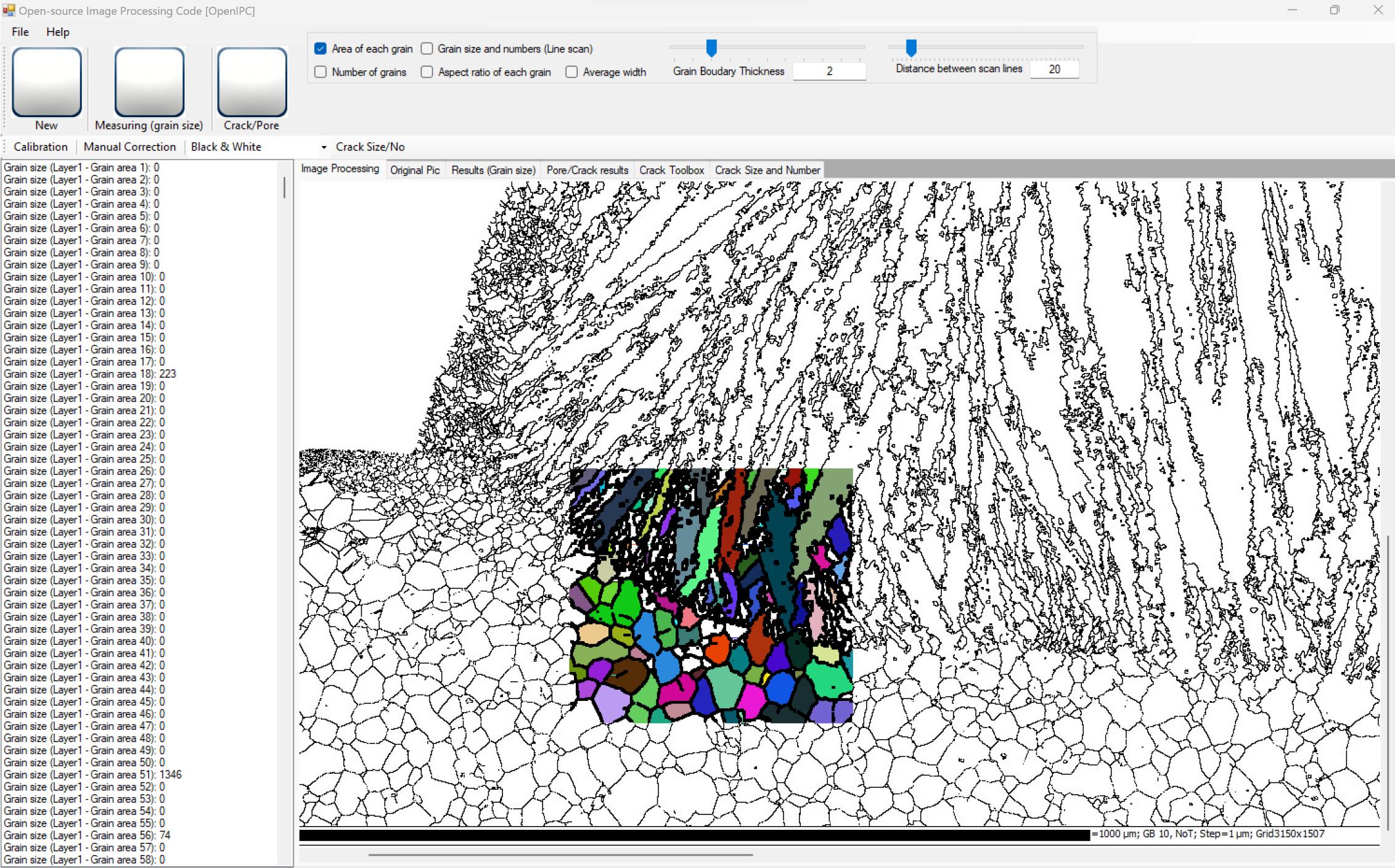
Processing | Original Pic | Results (Grain size) | Pore/Crack results | Crack Toolbox | Crack Size and Number

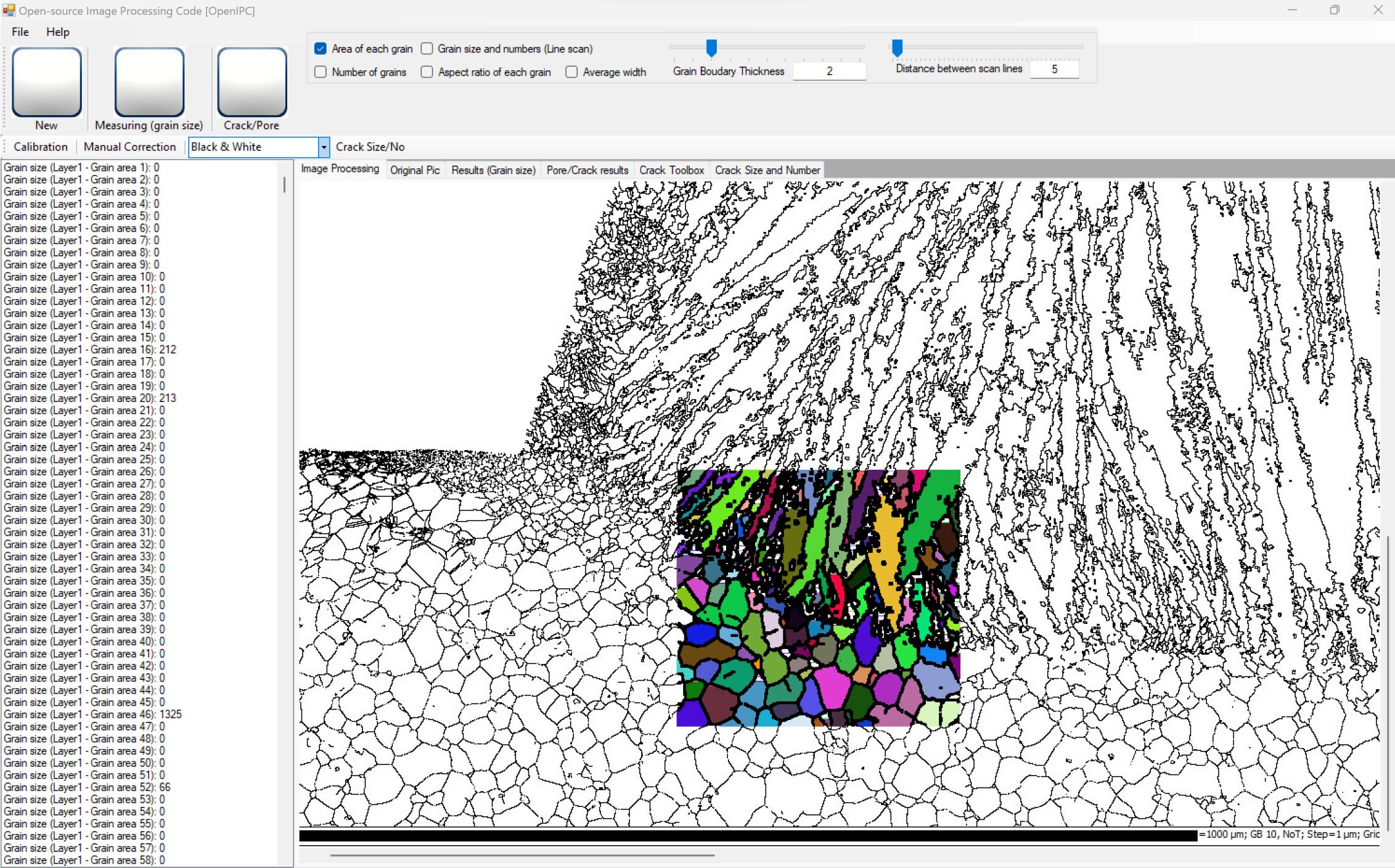


Section 4: Grains Area









Section 5: Grains Aspect ratio

