The recipe detects pores in a porous silicon.

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| **Step** | **Name** | **Purpose** | **Sensitive to spatial resolution** |
| 1 | Reference | Reference image. |  |
| 2 | Non-Local Means Filter | Allows to remove the noise while preserving the structures of interest. | Yes |
| 3 | Convert Image Type | Convert to 16 bits for the next step |  |
| 4 | Image Gradient | The gradient transformation allows to get the contours of the pores. | Yes |
| 5 | Convert Image Type | Convert back to 8 bits for the next step |  |
| 6 | H-Minima | This step allows to generate markers on pores by calculating local minima from the gradient image. | Yes |
| 7 | Filter by Measure | Allows to extract the set of connected pixels that corresponds to the background. Indeed, in this case the background corresponds to the largest set of connected pixels generated from the H-Minima calculation. |  |
| 8 | Reference Change | H-Minima |  |
| 9 | AND NOT Image | Subtract the background from the H-Minima detection to get markers in pores only. |  |
| 10 | Closing | Allows to merge markers belonging to the same pore. To avoid multiple markers in pores. | Yes |
| 11 | Labeling | Allows to label each set of connected pixels that corresponds to a pore marker. |  |
| 12 | Reference Change | Filter by Measure |  |
| 13 | Opening | To avoid overlapping between the background marker and the pore markers. This image will be used as a marker for the background. | Yes |
| 14 | Add to label | Add the background label to the pore labels |  |
| 15 | Reference Change | Image Gradient |  |
| 16 | Marker-Based Watershed | Use of the marker based watershed algorithm to find the contours of the pores. As markers we used the markers image generated as step 12. As a landscape ï¿½we use the image gradient generated at step 3. |  |
| 17 | NOT | To get the non-labeled basins. |  |
| 18 | Filter by measure | To extract the background. |  |
| 19 | NOT | To get the pores. |  |
| 20 | Binary Smoothing | To smooth pore boundaries. |  |
| 21 | Labeling | To get one label per pore |  |