FIB Serial Section of Particles in Nickel-Base Superalloy

**Details of the recipe steps:**

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| **Step** | **Name** | **Purpose** | **Sensitive to spatial resolution** |
| 1 | Reference | Reference image |  |
| 2 | CLAHE | This step calculates a Contrast Limited Adaptive Histogram Equalization to increase the contrast of particles while not saturating the brightest ones |  |
| 3 | Median Filter | This step calculates a Median Filter to remove noise | Yes |
| 4 | Hysteresis Thresholding | This step allows to threshold particles. The hysteresis thresholding allows to propagate the threshold to pixels above the lower threshold if they are connected to pixels selected by the highest threshold. This procedure allows to threshold full particles while avoiding noise |  |
| 5 | Reference Change | Change reference to Median Filter from step 3 |  |
| 6 | Top-Hat | This step allows to extract joints between particles |  |
| 7 | Reference Change | Change reference to Hysteresis from step 4 |  |
| 8 | AND NOT Image | This step allows to subtract particle joints from the original particle thresholding |  |
| 9 | Separate Objects | Use the previous binary image to calculate the watershed lines between grains | Yes |
| 10 | Reference change | Change reference to Hysteresis from step 4 |  |
| 11 | AND NOT Image | Subtract watershed lines from the original grain thresholding |  |
| 12 | Labeling | This step allows to get an image with one label per connected set of pixels |  |
| 13 | Expand Labels | This step allows to equally propagate the labels to fill the entire image |  |
| 14 | Mask | This step mask the previous result with the thresholding of step 4, it thus allows to fill grain boundaries |  |