Workflow idea 6

Battery material – segmentation & distribution

Workflow Idea 6:
Battery material – segmentation & distribution

Materials

Goal: Segment round ‘blobs’ in down-sampled images obtained on the world’s fastest scanning electron microscope (MultiSEM).

Segment the blobs (shows on the next page) as separate individual blobs and report spatial distribution parameters such as density of blobs, size distribution, and position of each blob.

Recommended workflow:

- Segment individual blobs against the background.
- Separate overlapping and touching regions.
- Perform measurements.
- Report.
- Segment both images supplied.

Expected difficulty level: ??

Expected challenge(s):??

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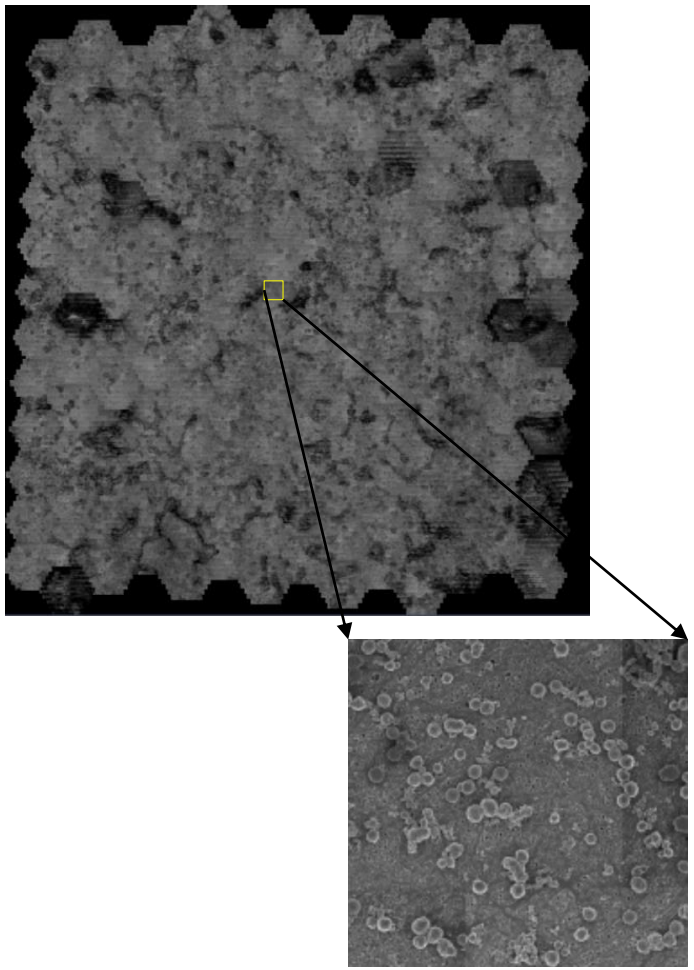
Zoomed out image (1.18 mm x 1.23 mm)



Dataset / image information:

File name(s): WF06_S5_002_Region2.czi and WF06_C3_002_Region2.czi

File Information	
Name	WF06_C3_002_Region2
File Type	Carl Zeiss Image (*.czi)
File Path	E:\APEER_contest_datasets\from Anna_Lena\Hackathon_India\battery\OriginalData\WF06_C3_002_Region2.czi
File Size	318.37 MB
Created	3/13/2019 11:10:18 AM
Modified	11/22/2017 5:45:38 PM
User	
Compression Method	JpgXr
Compression Quality	100
Image Dimensions	
Scaling (per Pixel)	0.07 µm x 0.07 µm
Image Size (Pixels)	18084 x 18727
Image Size (Scaled)	1.18 mm x 1.23 mm
Bit Depth	8 Bit

Note: The image is in .czi format. Please read the last page of this document for instructions on how to read czi files.

Addendum: How to read CZI files?

- The CZI file format has been developed by ZEISS to specifically meet the requirements of imaging in microscopy.
- ZEN imaging software saves multidimensional images such as time lapse, Z-stacks, multi-position experiments and virtual slides in this format.
- CZI combines imaging data with all relevant meta information into one compact file.

In order to read / convert CZI files, you have many options.

- Use the OME-TIFF converter module on APEER which converts czi to tiff along with an xml containing metadata. More info here.
- Use ZEN lite from ZEISS to read, select specific channels, export as OME-TIFF and for other tasks. You can download ZEN lite for free here.
- Use imageJ (Fiji) to read and convert czi to various formats. You can download it for free here.
- Use python-bioformats to directly read the files. More info here.
- Use libCZI cross-platform C++ library to directly read czi files. More info here.
- Use python wrapper for libCZI. More info here.
- Use czifile python library. More info here.