

## **Workflow idea 4**

Fiber analysis

**Goal:** Perform analysis of fibers on Scanning Electron Microscope (SEM) images.

Advanced materials such as insulators, absorbent material, filters, etc. have unique properties due to their fibrous structure. These properties depend on the characteristics of each individual fiber, such as size or distribution. In order to improve the design of these materials, an analysis of fibers is essential. However, segmentation of fibers is very challenging at the moment. An automated workflow would allow the researcher to perform a quick analysis instead of a very laborious manual measurement.

**Recommended workflow:**

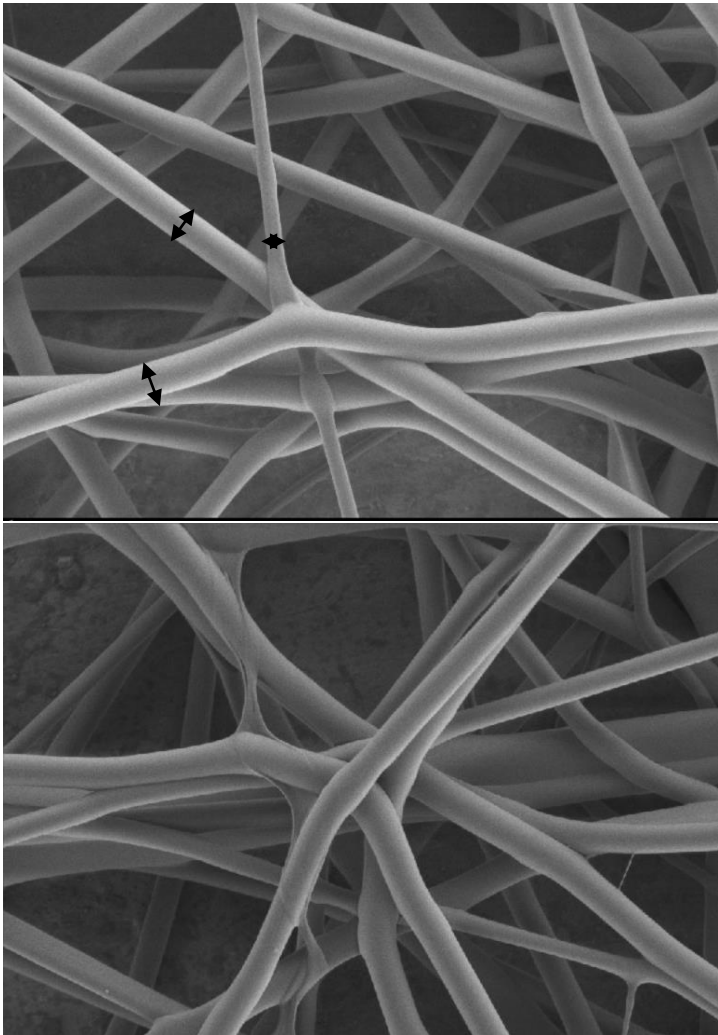
- Develop automated segmentation and fiber separation algorithms to report parameters such as length of individual fibers, size, diameter, distribution histogram, min, max and average fiber size, standard deviation and fiber orientation.

**Expected difficulty level:** ??

**Expected challenge(s):** Detection of individual fibers.

PS: Two images provided.

# Workflow Idea 4: Fiber analysis



### Dataset / image information:

File name(s): WF04\_Fiber-117.tif and WF04\_Fiber-118.tif

File Information	
Name	WF04_Fiber-117
File Type	Tagged Image Files (*.tif)
File Path	E:\APEER_contest_datasets\from_Alisa_Stratulat\WF04_Fiber-117.tif
File Size	3.09 MB
Created	3/12/2019 2:39:43 AM
Modified	3/12/2019 2:39:43 AM
User	SERVICE
Compression Method	
Compression Quality	100

Image Dimensions	
Scaling (per Pixel)	0.006 $\mu\text{m}$ x 0.006 $\mu\text{m}$
Image Size (Pixels)	2048 x 1536
Image Size (Scaled)	11.43 $\mu\text{m}$ x 8.57 $\mu\text{m}$
Bit Depth	24 Bit