This folder contains three Matlab algorithms and subroutines for processing microscope images to extract size and shape information.

1. Analyze\_Images\_08182022.m
   1. This code takes inputs from the user on the number of images to be processed, the file base-name and extension, a contrasting threshold, pixel size, particle size bin, and output file names.
   2. The file path needs to include the images to be processed.
   3. The code exports reports (in the form of images that contain multiple figures and statistics) on each analyzed image and a final image that contains population based and volumetric probability density and cumulative density plots.
   4. The algorithm also exports two files
      1. The first output file “outputFname” contains particle size distribution information.
      2. The second output file “outputFname2” contains size, sphericity, and aspect ratio of every particle that has been extracted by the algorithm. The size and the sphericity columns of this file can be extracted as inputs for cfd simulations. The data can be multiplied several times for sufficient input into cfd simulations. E.g., if you have analyzed 1000 particles, a matlab code can be used to copy and paste 1000 rows 10 times for having 10000 particles to inject into a cfd simulation.
2. AverageSphericityCheck\_08232022\_v2
   1. This file takes the output file 2 from the first algorithm and generates detailed plots of size and sphericity distributions.