**Partycool**

Partycool is a small tool for identifying and analyzing all types of nanoparticles in SEM, \*\*\*, images.

**User description:**

* All University of Washington Molecular Analysis Facility (MAF) Scanning Electron Microscopy (SEM) users
* All TFS Apreo-S with Lovac SEM users in the rest world can use this package.

**Partycool can be used for:**

* Separating scale bar section from the SEM images.
* Identifying each nanoparticle in the images.
* Analyzing all nanoparticles in terms of their area, their aspect ratio, their orientation and their location.
* Also, separate each particle classes by their clusters. It will identify them as a monomer, dimer or polymers.

**Partycool needs:**

* Some package installation like NumPy, Pandas etc. (check requirement.txt in the main page)
* 2D images for analysis in a form of .png, .jpeg. or .tiff

**Partycool does:**

* Upload images from selected files in a both grayscale and colorful format.
* Detect and Cut scale bar section from 2D images without defining anything parameter.
* Correlate scale of the images from pixel to nanometer scale using scale bar section.
* Identify each nanoparticle by applying some functions including Gaussian filter from SciPy and reconstruction from Skimage.
* Calculate each nanoparticle’s area, center of mass, orientation and cluster (monomer, dimer or polymer)

**Partycool gives as an output:**

* the results of all analysis as an Excel format
* labelled 2D images