

Step by step NanoFinder instruction

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Installation:

1. In order to download, please go to the link below and download the contents of Setup folder

Link: <https://github.com/ethz-tema>

The screenshot shows a web browser window displaying the GitHub repository page for the 'Trace Element and Micro Analysis Group, ETH Zurich'. The browser's address bar shows the URL 'github.com/ethz-tema'. The repository page features a header with the group's name and a link to 'https://guenther.ethz.ch/'. Below the header, there are tabs for 'Repositories', 'Packages', 'People', 'Teams', and 'Projects'. The 'Repositories' tab is selected, showing a list of repositories. The first repository listed is 'TEMAsingleparticle', which is highlighted in yellow. It is a MATLAB repository using the GPL-3.0 license, with 0 stars, 0 issues, and 0 pull requests. It was updated 15 minutes ago. The second repository listed is 'TEMAimaging', which is a Python repository using the GPL-3.0 license, with 0 stars, 0 issues, and 0 pull requests. It was updated on Jul 9, 2020. On the right side of the repository list, there are two sidebars. The first sidebar, titled 'Top languages', shows 'Python' and 'MATLAB' as the top languages. The second sidebar, titled 'People', shows two user avatars and a count of '2'.

ethz-tema/TEMAsingleparticle

github.com/ethz-tema/TEMAsingleparticle

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master

Go to file

Add file

Code

About

kammk

Add files via upload

14 minutes ago

99

NanoFinder

Add files via upload

14 minutes ago

.gitattributes

Initial commit

29 days ago

.gitignore

Initial commit

29 days ago

README.md

Update README.md

2 days ago

Step by step NanoFind...

NanoFinder Instruction added

yesterday

authors

Add files via upload

10 days ago

license

License

10 days ago

No description, website, or topics provided.

Readme

GPL-3.0 License

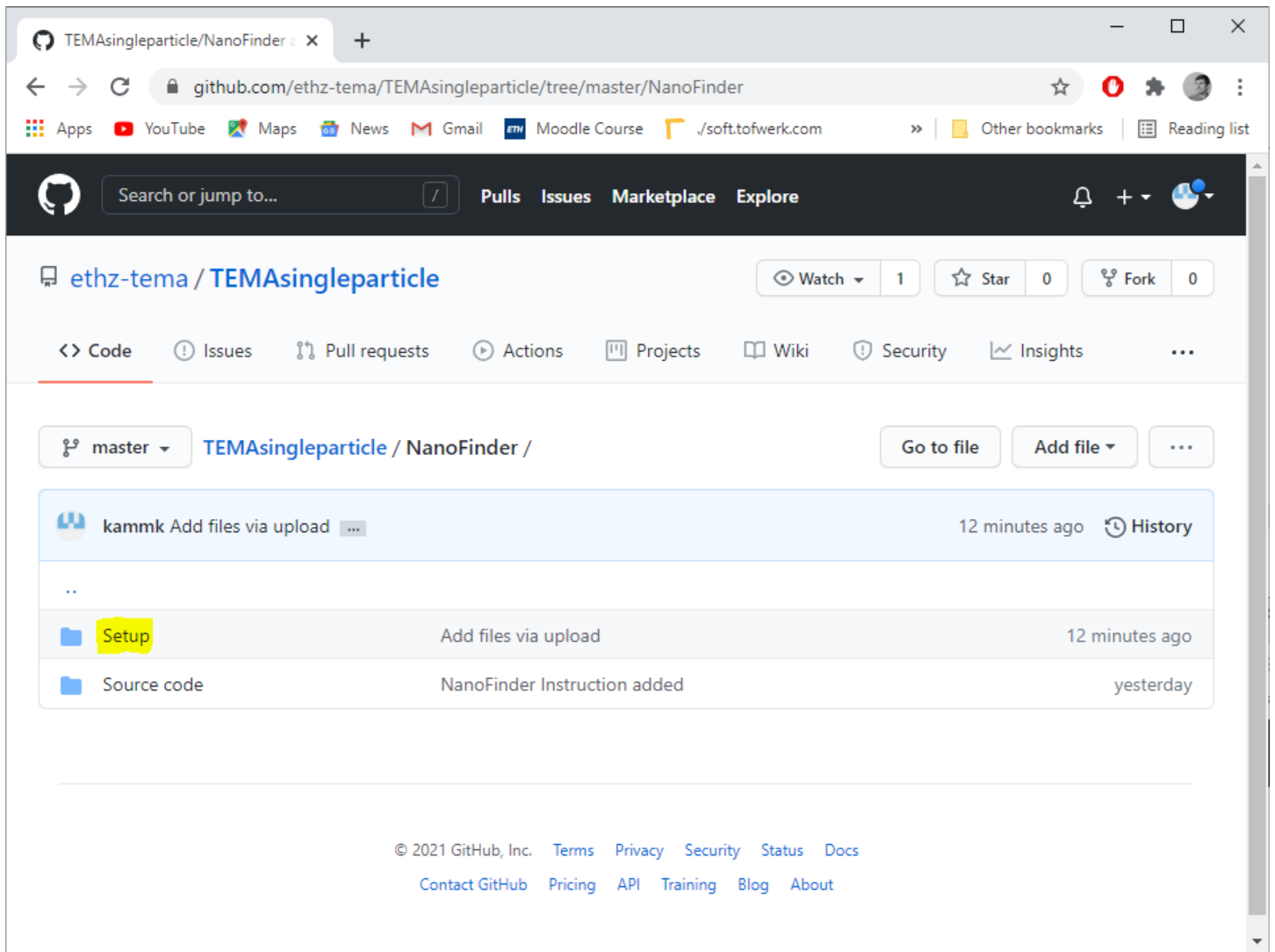
Releases

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Create a new release

Packages

No packages published



2. Download the **Setp.exe** and **NanoFinder User guide.pdf** from Setup directory as shown in the following screenshots.

TEMAsingleparticle/NanoFinder/ x

TEMAsingleparticle/NanoFinder/ x

+

github.com/ethz-tema/TEMAsingleparticle/tree/master/NanoFinder/Setup

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🔑 master

TEMAsingleparticle / NanoFinder / Setup /

Go to file

Add file

⋮

👤 kammk

Add files via upload

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26 minutes ago

🕒 History

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📄 NanoFinder 5.5 User Guide.pdf

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26 minutes ago

📄 NanoFinder examples for nanoparticl...

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26 minutes ago

📄 Setup.exe

Add files via upload

27 minutes ago

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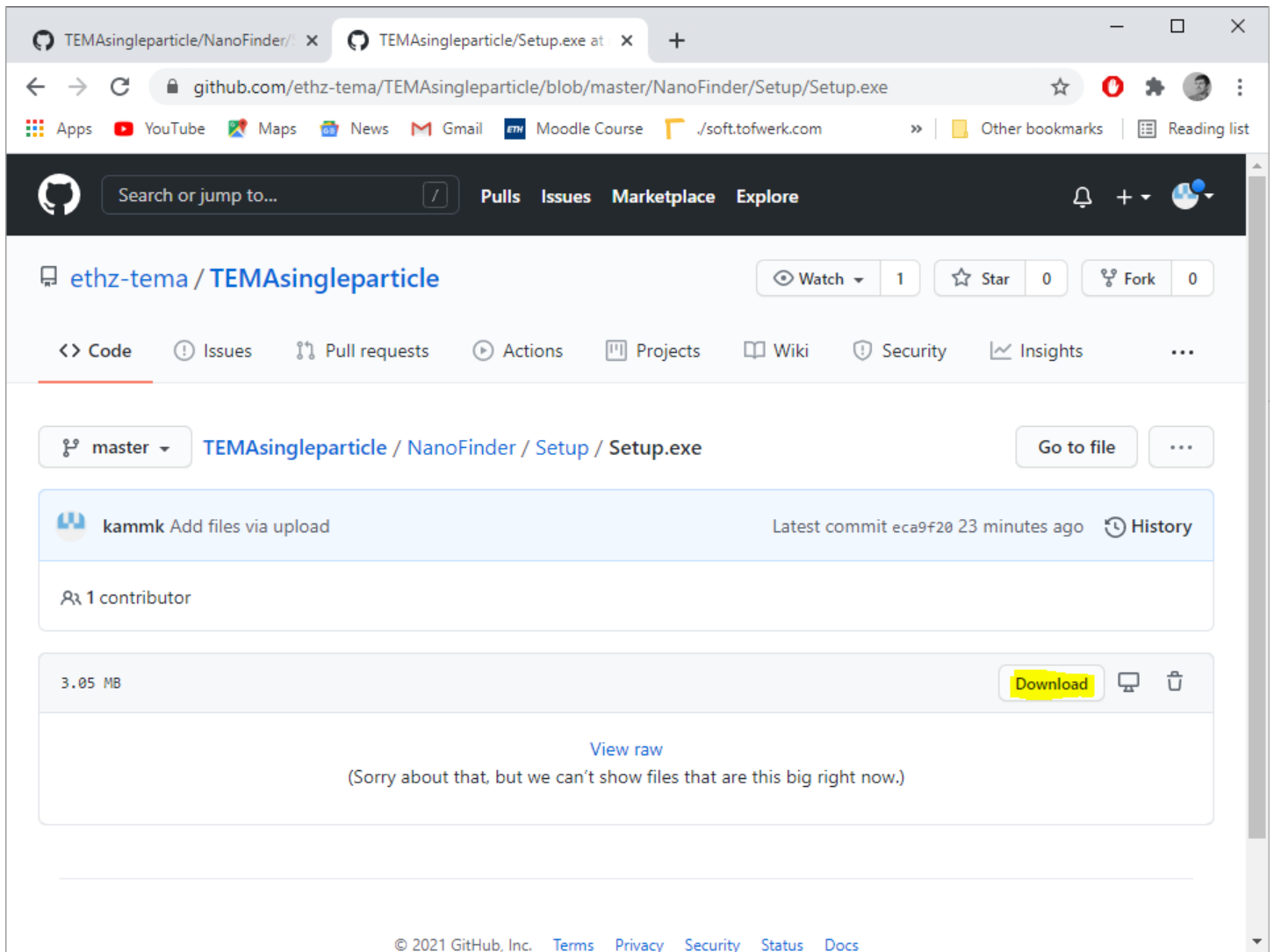
Pricing

API

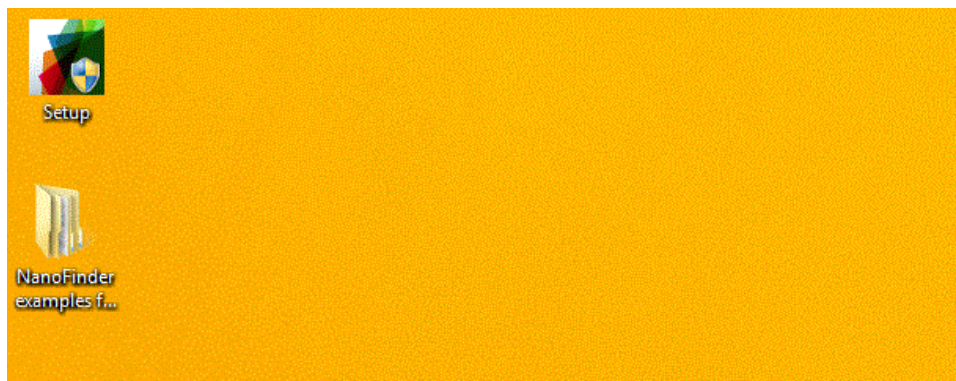
Training

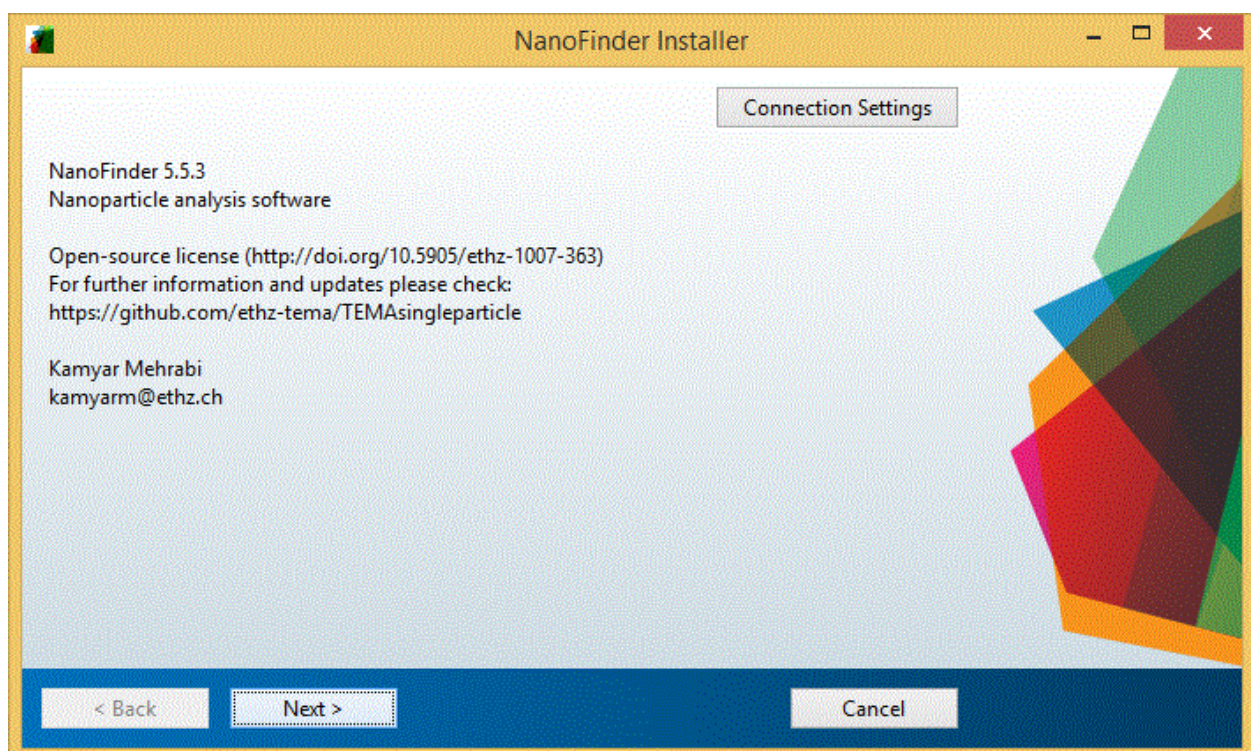
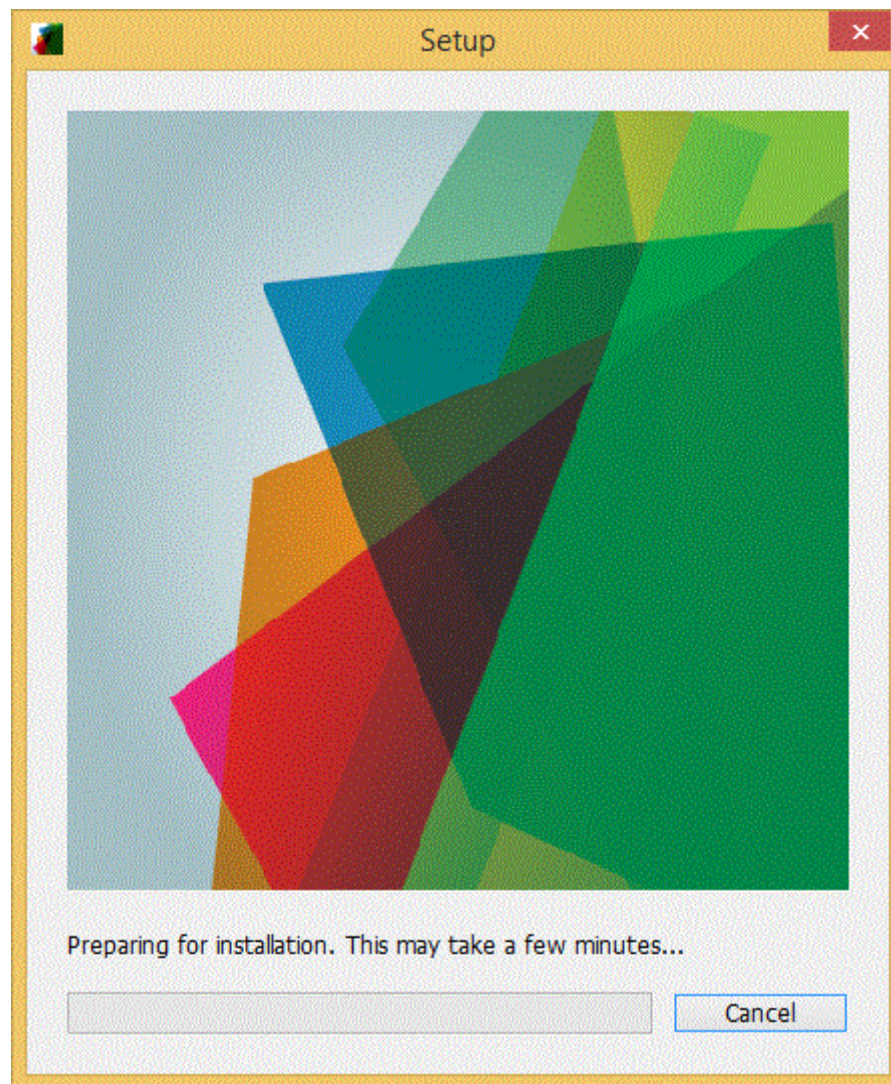
Blog

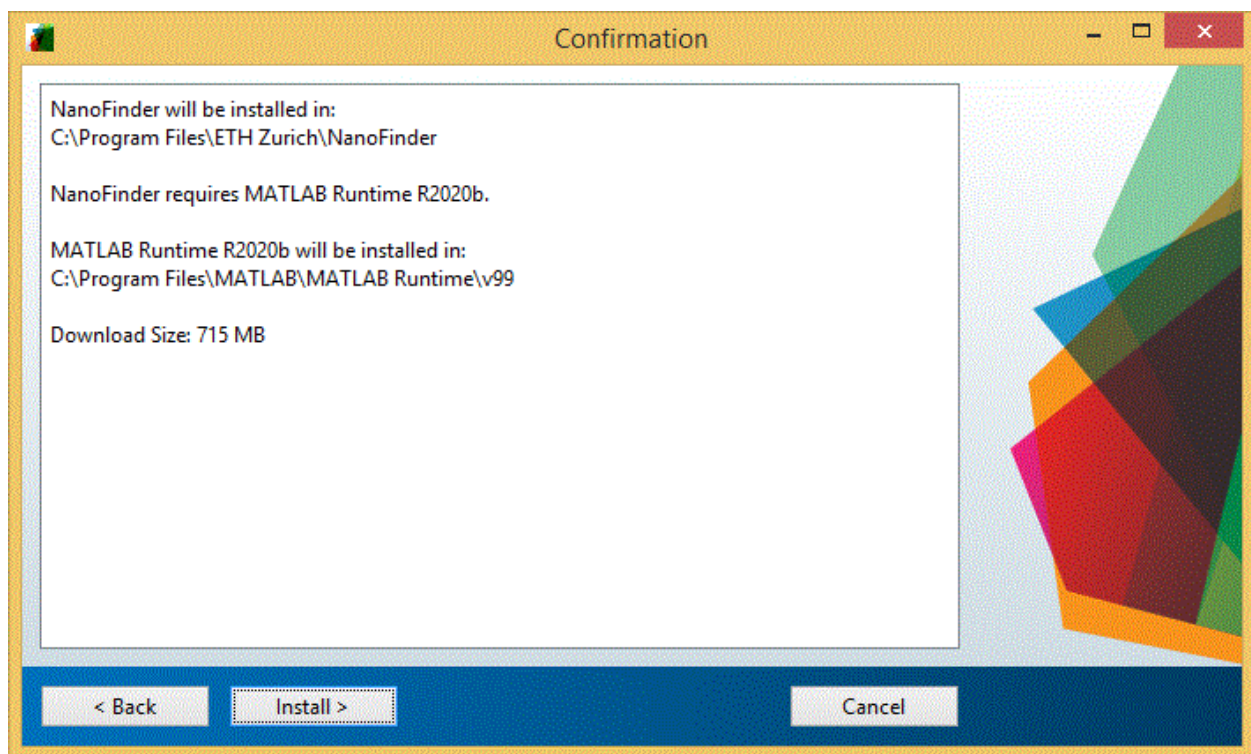
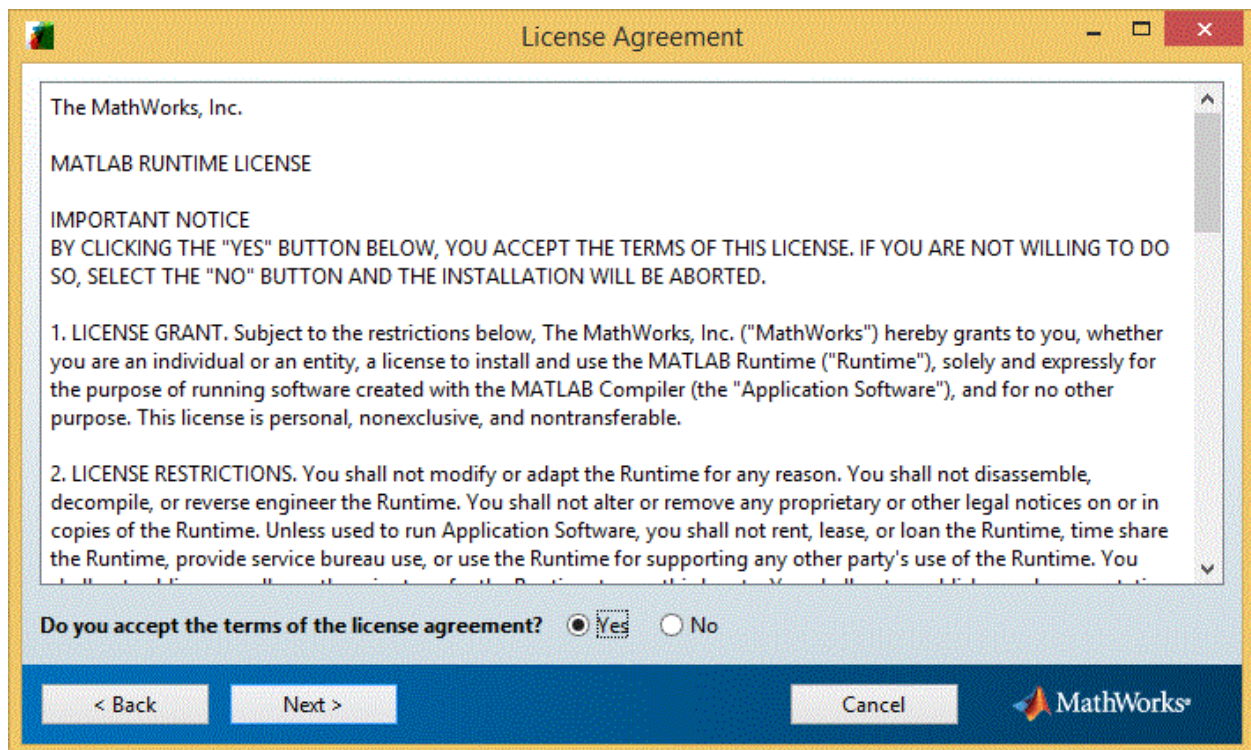
About

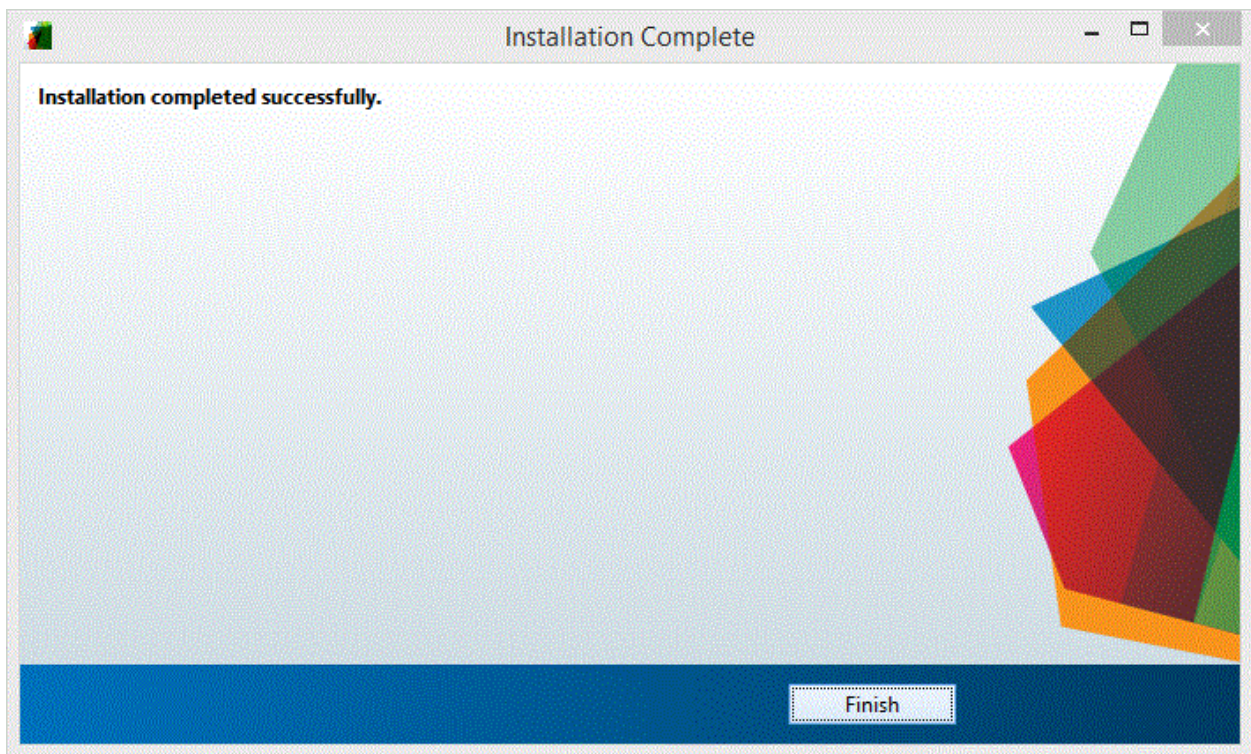
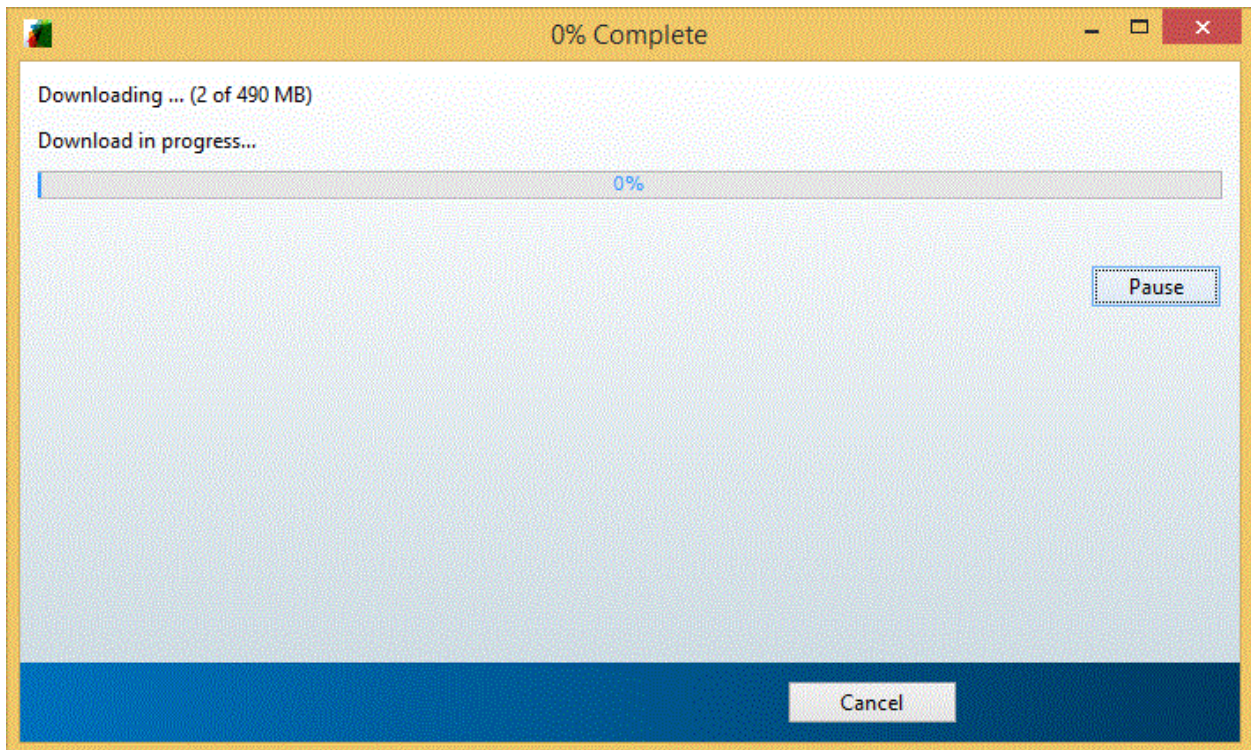


3. Run the **Setup.exe** and follow the steps as being shown in the pictures below.

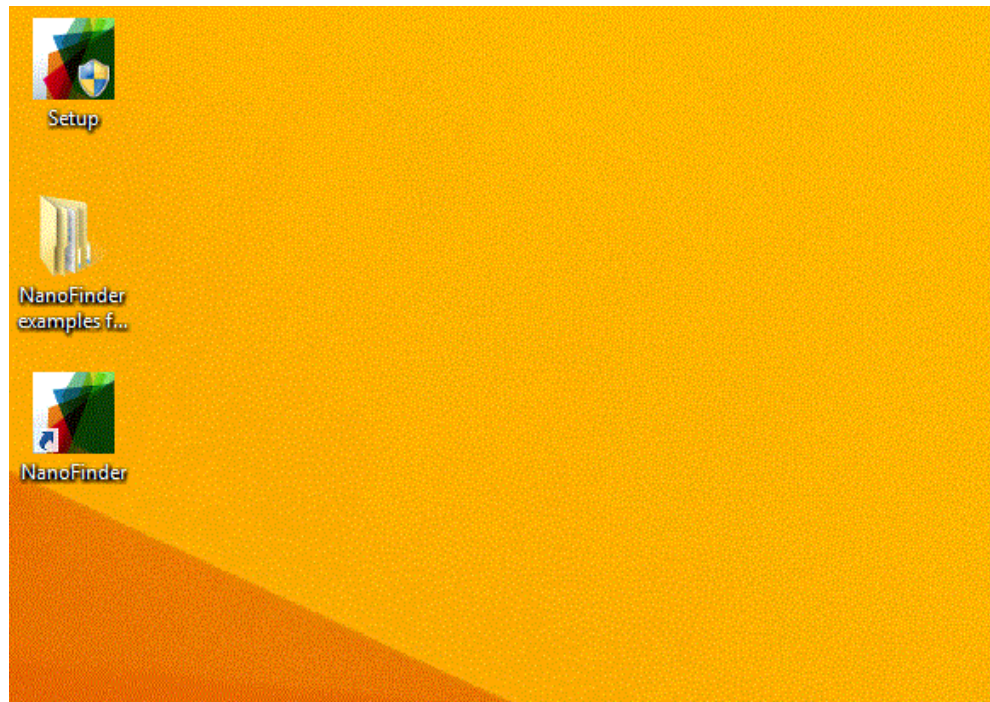








4. After installation is finished, you could find the NaFinder program in your programs directory. Search for NanoFinder in your programs directory and copy a shortcut of it in Desktop or location of your choice.

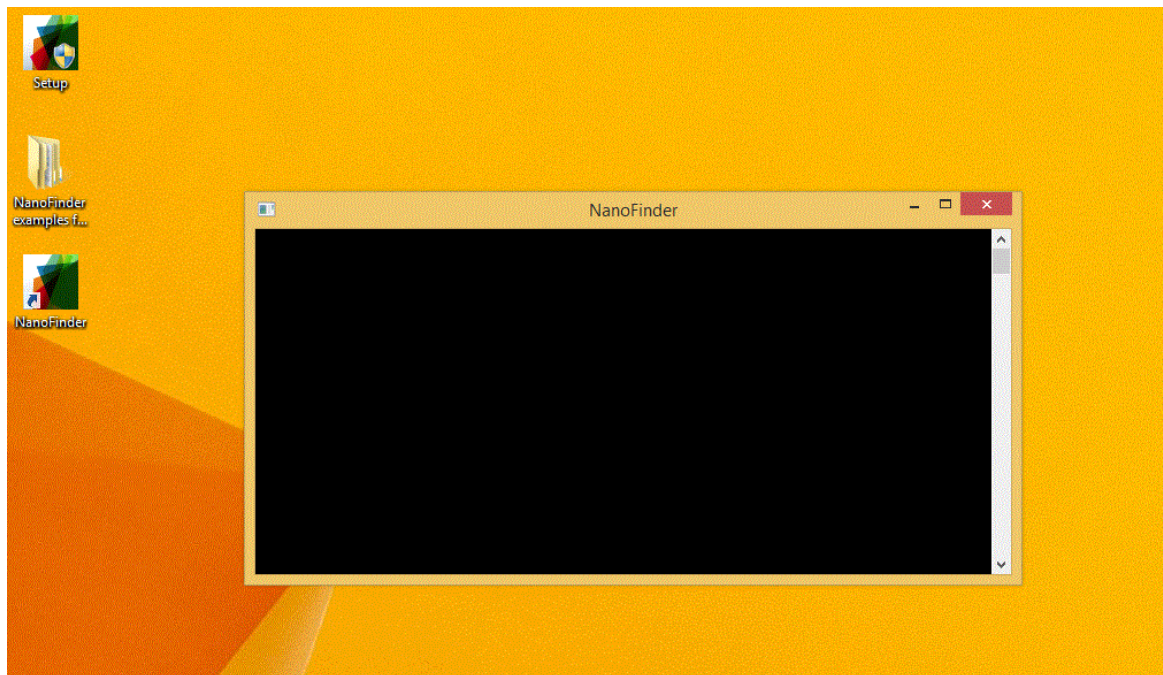


Processing the test sample:

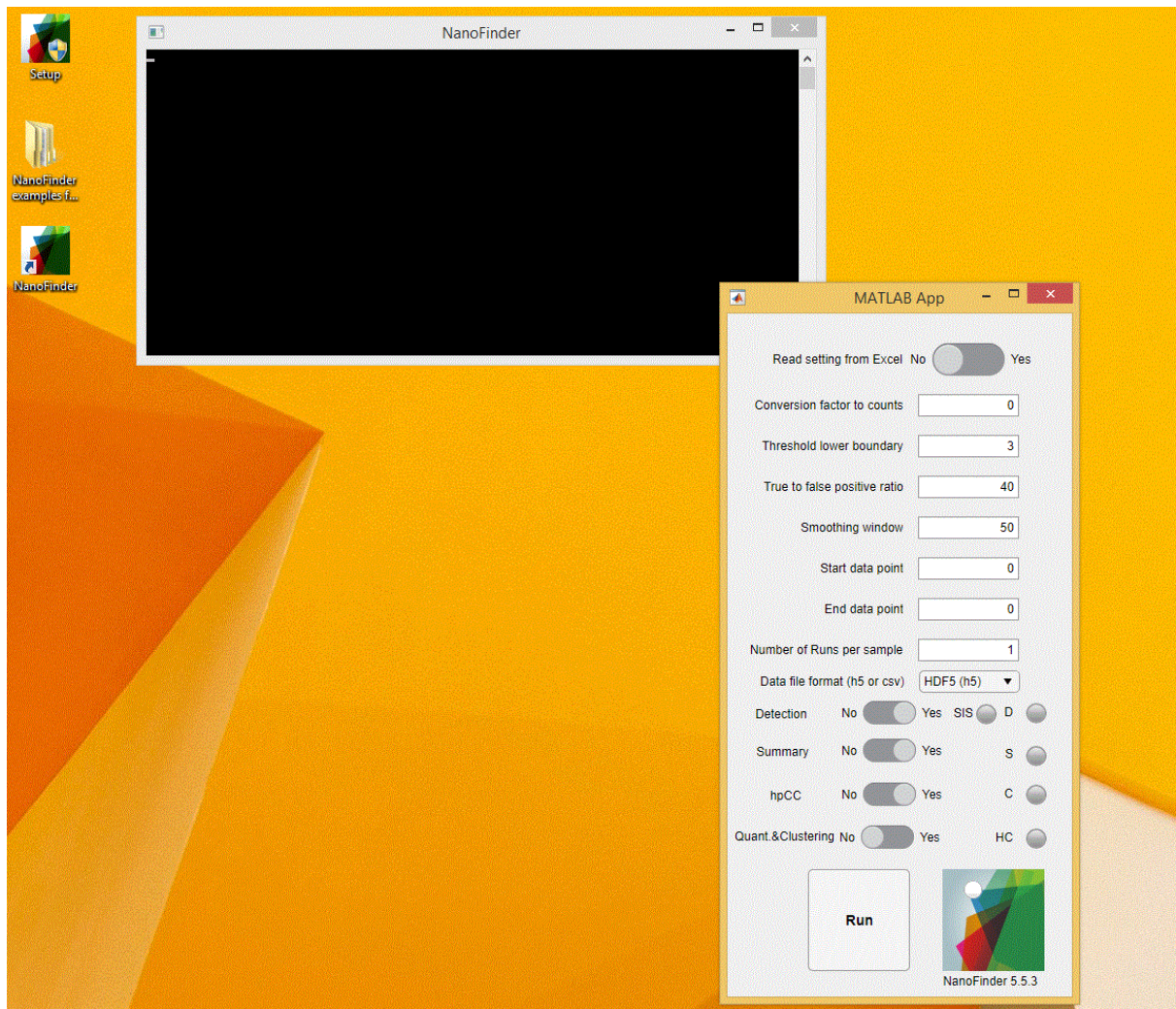
Complete example data files could be obtained from link below. After download please unzip the folder.

<https://polybox.ethz.ch/index.php/s/5GeuULpyiBwBIDT>

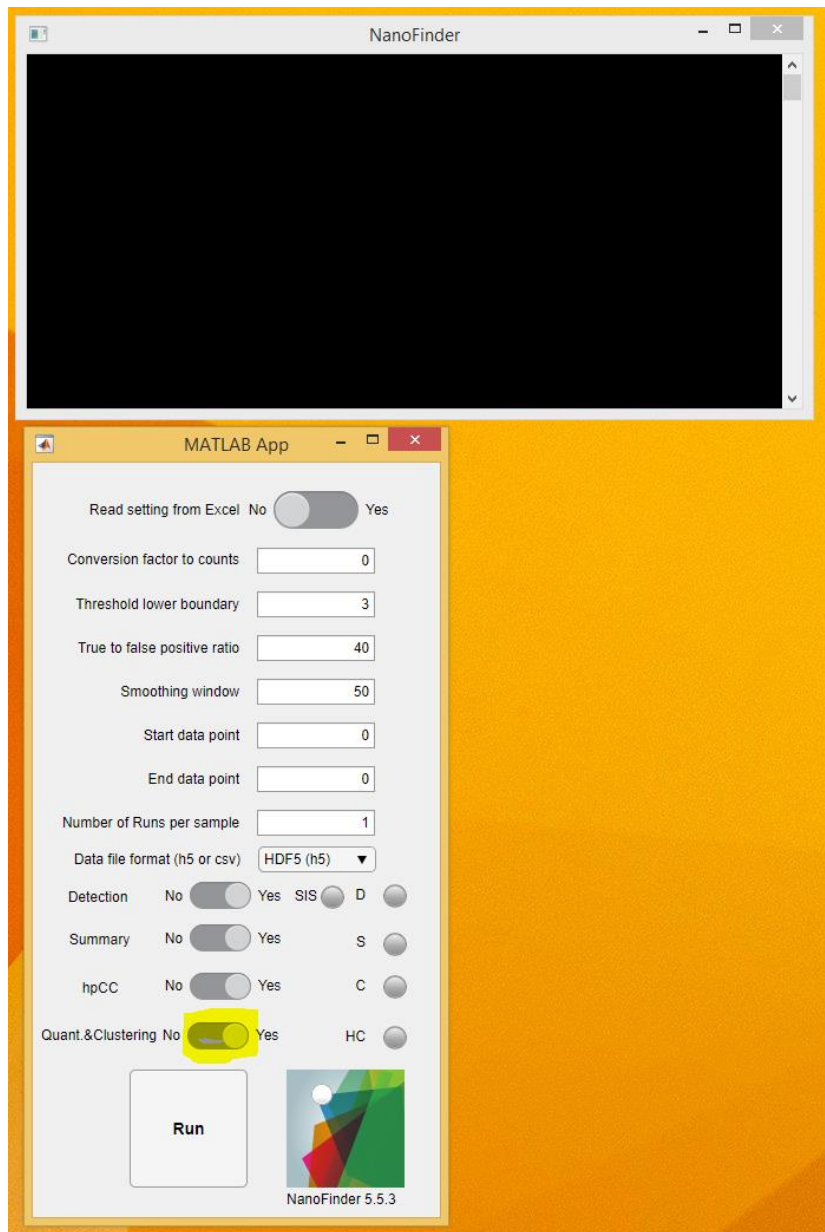
1. Open the NanoFinder program
2. A terminal window will show up shortly after



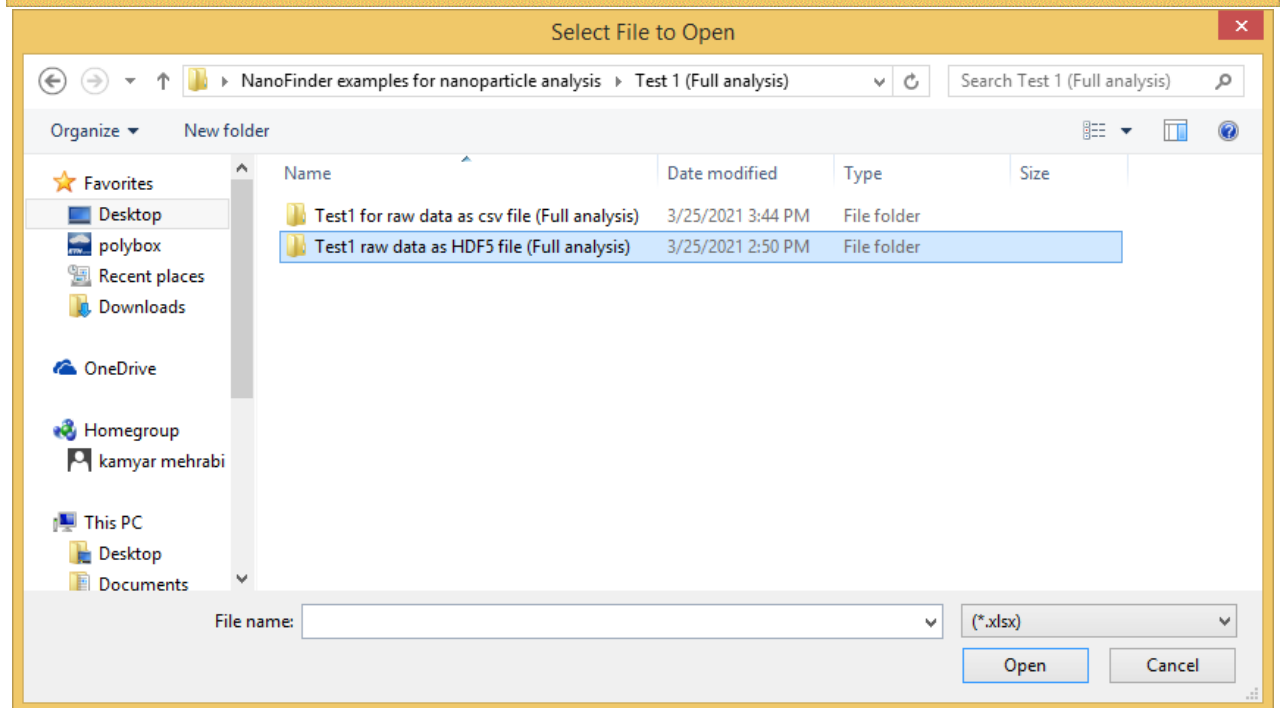
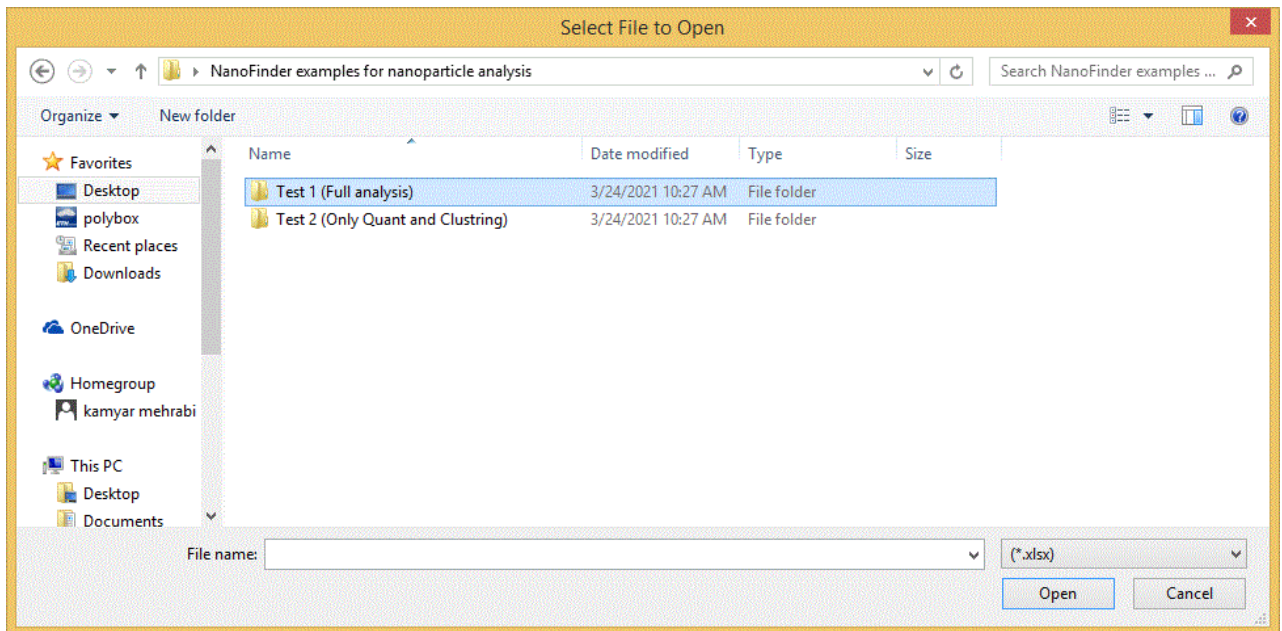
3. Wait until the program graphical user interface (GUI) open. It will take a few seconds to minutes depending on the processing power of your computer.



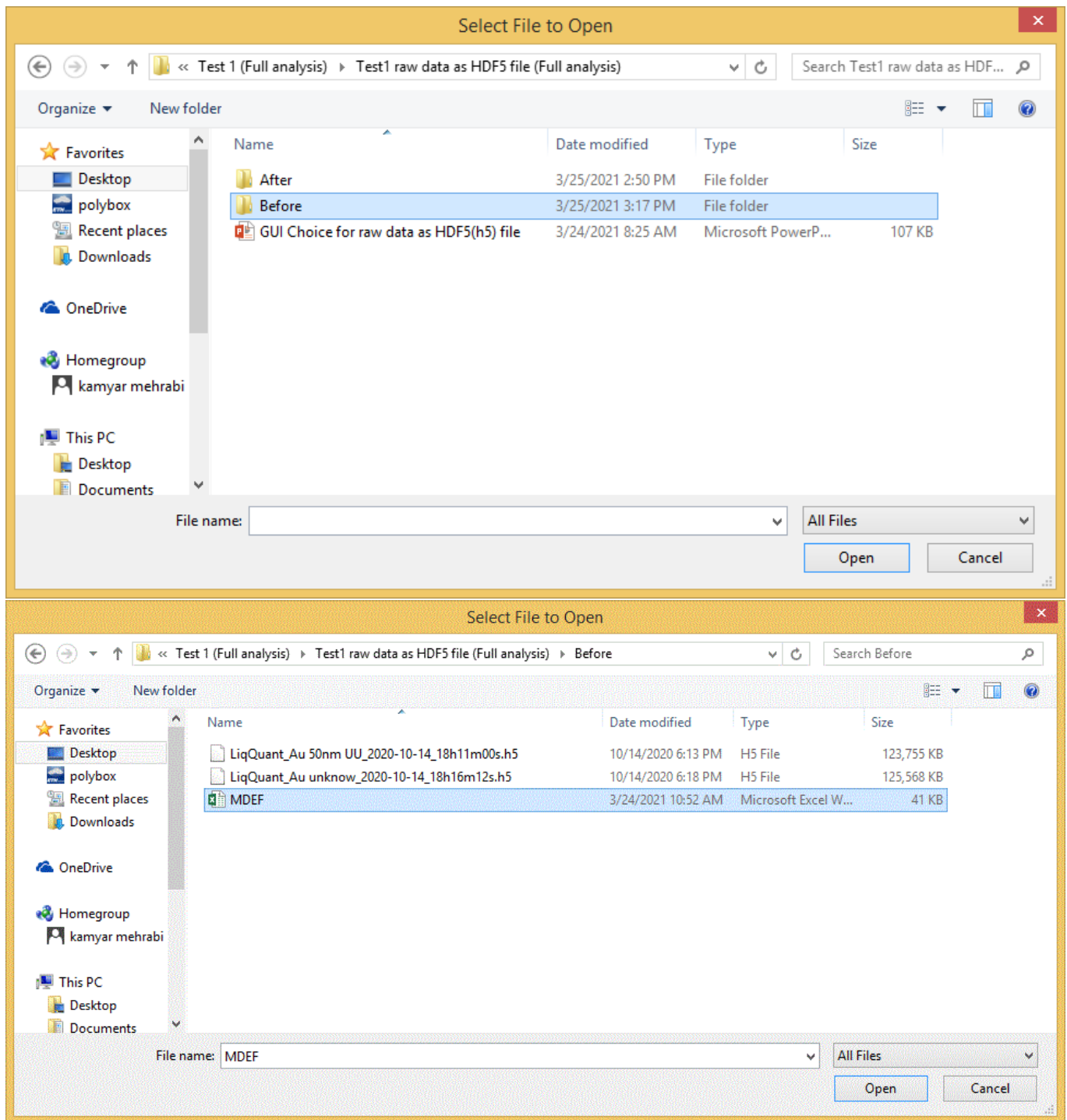
4. Fill in the GUI as being shown below (also in the NanoFinder test folder PowerPoint file). Here we processed the **Test 1 HDF5 file and read setting from GUI**, so the GUI will look like the following after we fill it correctly



5. After you fill the GUI, press Run. Then a file browser will popup. direct the file browser to the location of your raw data directory, where you also copied the MDEF.xlsx.



6. Here we want to process the **Test1 raw data as HDF5 file**. In that folder go to the **Before** file and **open MDEF.xlsx**

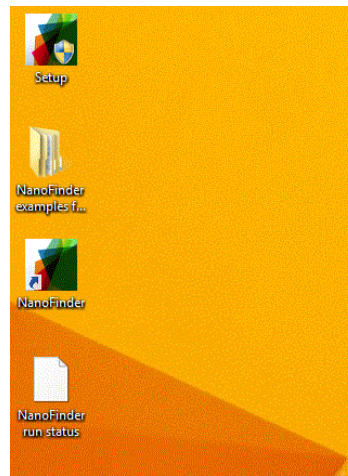


7. Program start processing as following screenshots is showing.

The terminal window, indicator lights in GUI, and popup progress charts will inform you about the latest analysis that is being done.

*While the program is running, it is highly recommended to prevent using Excel, since the program is using it.

In case any error happens, see the terminal window and read about the error there carefully. In case the error is not solved, an Email may be sent with **Nanofinder run status** file attached to it. The Naofinder run status is generated as soon as you open the Nanofinder program and it is saved at the location of your running Nanofinder program shortcut. It contains the same data as shown in the terminal window.



```
NanoFinder

ans =

'NanoFinder 5.5.3'

size_tx =

    4    2

Message =

'Single ion signal processing'
```

MATLAB App

Read setting from Excel No ☐ Yes ☒

Conversion factor to counts

Threshold lower boundary

True to false positive ratio

Smoothing window

Start data point

End data point

Number of Runs per sample

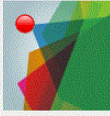
Data file format (h5 or csv)

Detection No ☐ Yes ☒ SIS ☒ D ☒

Summary No ☐ Yes ☐ S ☐

hpCC No ☐ Yes ☐ C ☐

Quant.&Clustering No ☐ Yes ☐ HC ☐


NanoFinder 5.5.3


```
NanoFinder

ans =

    'NanoFinder 5.5.3'

size_tx =

     4     2

Message =

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```

MATLAB App

Read setting from Excel ☐ No ☒ Yes

Conversion factor to counts

Threshold lower boundary

True to false positive ratio

Smoothing window

Start data point

End data point

Number of Runs per sample

Data file format (h5 or csv)

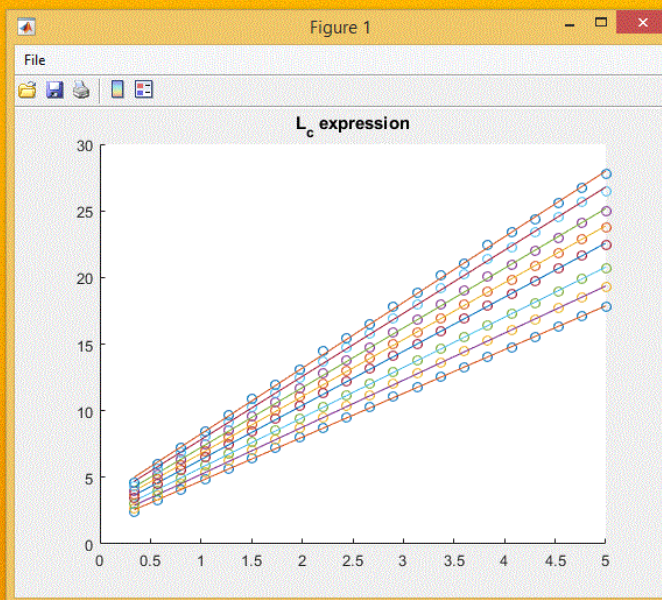
Detection ☐ No ☒ Yes SIS ☒ D ☐

Summary ☐ No ☒ Yes S ☐

hpCC ☐ No ☒ Yes C ☐

Quant & Clustering ☐ No ☒ Yes HC ☐

NanoFinder 5.5.3



```
NanoFinder

strn =
'LiQuant_Au unknow_2020-10-14_18h16m12s'

Y =
100 100

f1 =
Bar with properties:
    BarLayout: 'grouped'
    BarWidth: 0.8000
    FaceColor: [0 0.4470 0.7410]
    EdgeColor: [0 0 0]
    BaseValue: 0
    XData: [S1 Au 50UU S2 Au-Ag]
    YData: [100 100]

Use GET to show all properties
```

MATLAB App

Read setting from Excel: No ☐ Yes ☒

Conversion factor to counts:

Threshold lower boundary:

True to false positive ratio:

Smoothing window:

Start data point:

End data point:

Number of Runs per sample:

Data file format (h5 or csv):

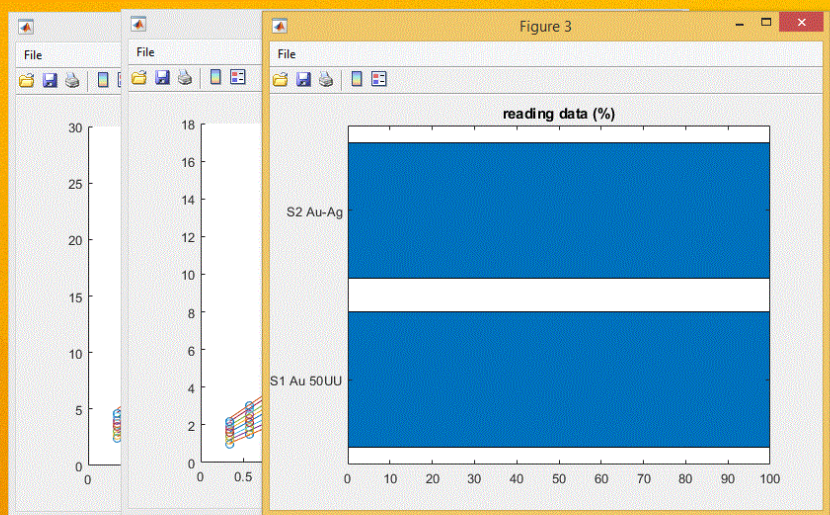
Detection: No ☐ Yes ☒ SIS ☒ D ☐

Summary: No ☐ Yes ☐ S ☐

hpCC: No ☐ Yes ☐ C ☐

Quant.&Clustering: No ☐ Yes ☐ HC ☐

NanoFinder 5.5.3




```
NanoFinder

VData: 5
Use GET to show all properties

file =
    'S2 Au-Ag.xlsx'

f3 =
    Bar with properties:
        BarLayout: 'grouped'
        BarWidth: 0.8000
        FaceColor: [0 0.4470 0.7410]
        EdgeColor: [0 0 0]
        BaseValue: 0
        XData: Summary
        YData: 10
Use GET to show all properties
Warning: Added specified worksheet.
```

MATLAB App

Read setting from Excel ☐ No ☒ Yes

Conversion factor to counts

Threshold lower boundary

True to false positive ratio

Smoothing window

Start data point

End data point

Number of Runs per sample

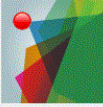
Data file format (h5 or csv)

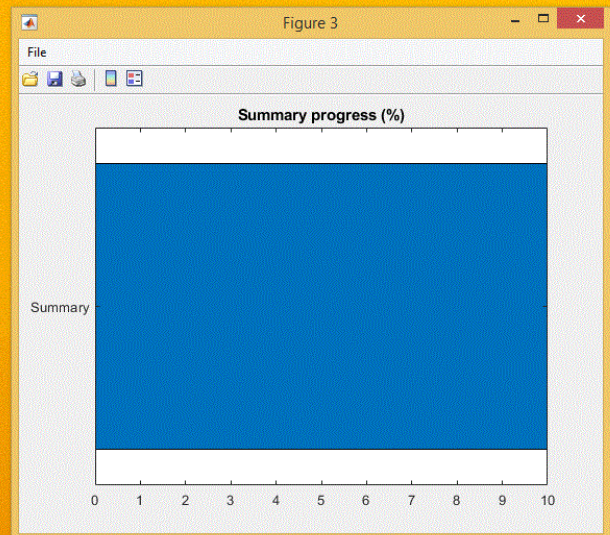
Detection ☐ No ☒ Yes SIS ☒ D ☒

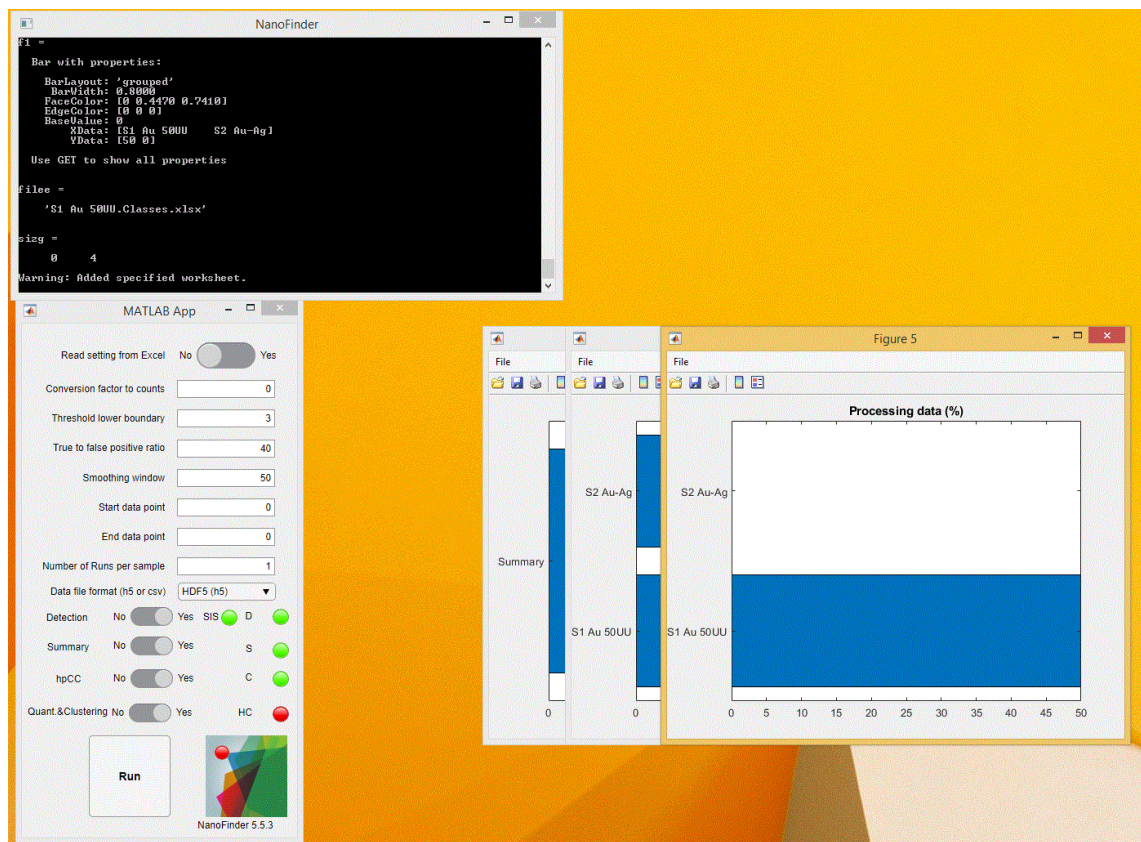
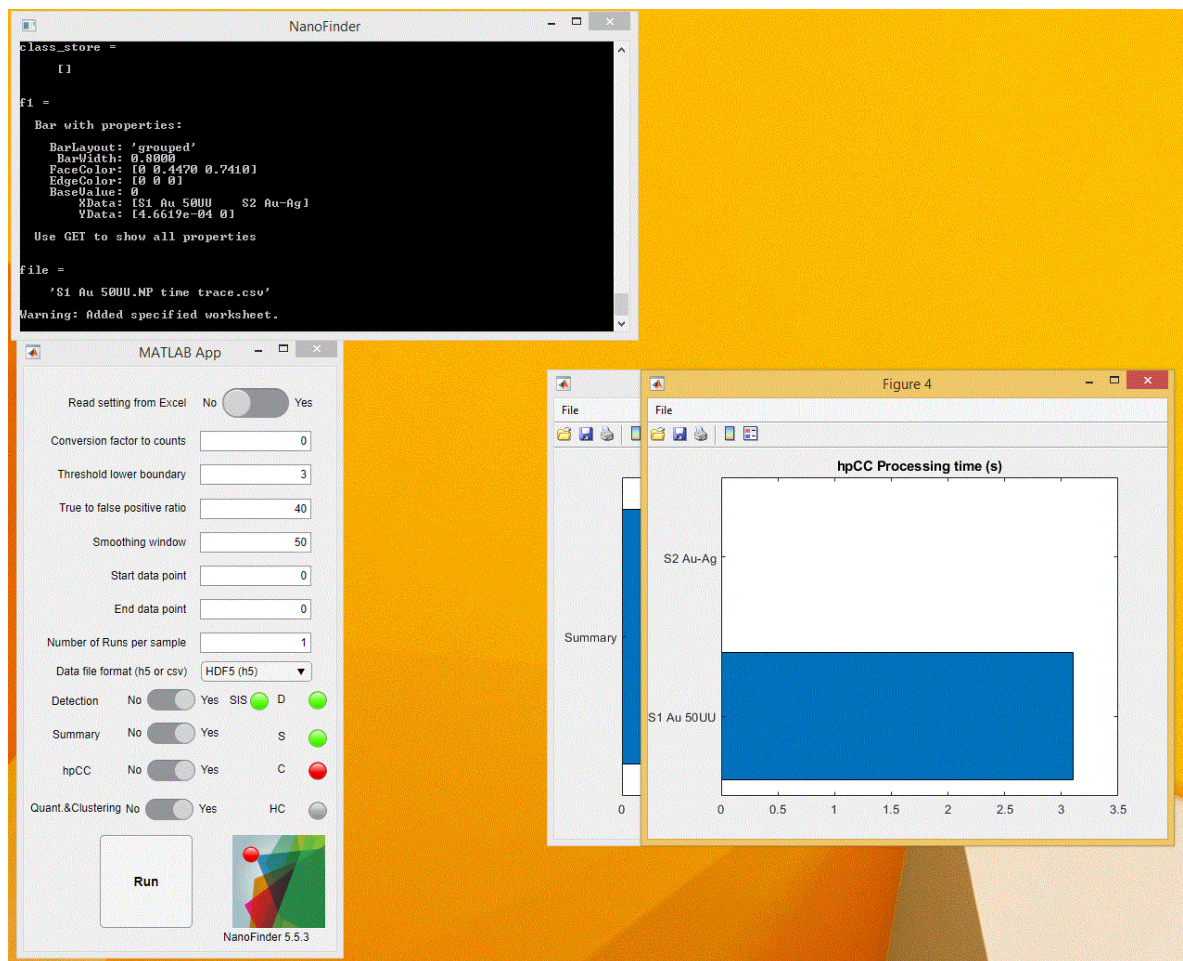
Summary ☐ No ☒ Yes S ☒

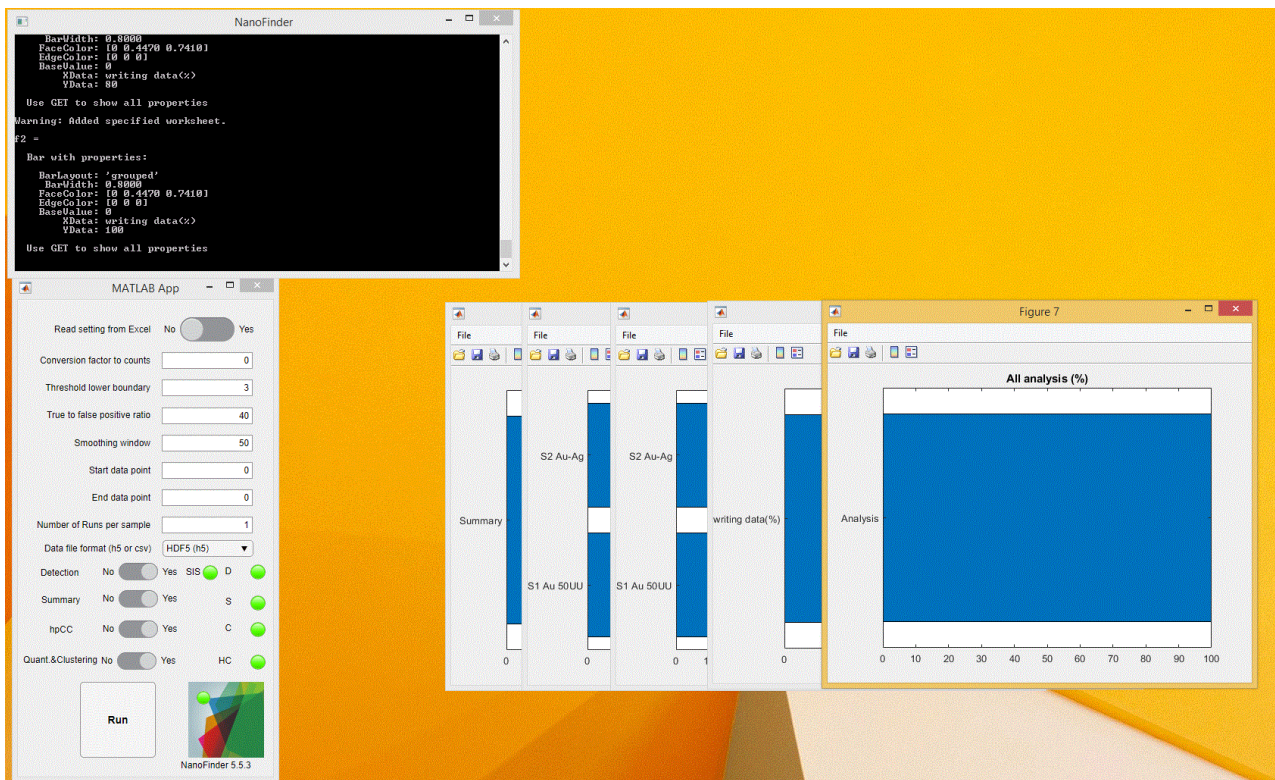
hpCC ☐ No ☒ Yes C ☐

Quant.&Clustering ☐ No ☒ Yes HC ☐

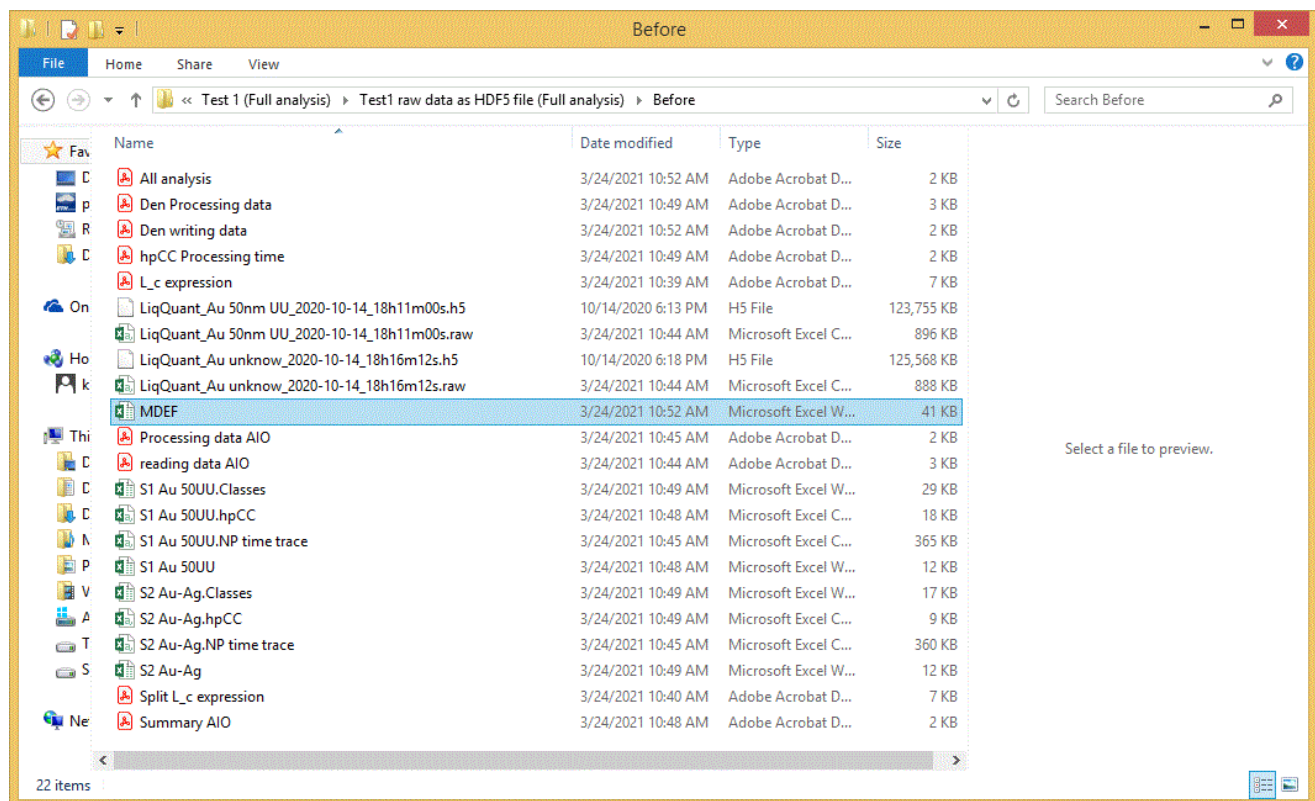

NanoFinder 5.5.3







8. After all processing is done, you could access the processed data in the same directory as your raw data input.



9. For more information and a guide on how to set up your analysis please go to the GitHub folder and find the **Nanofinder user guide.pdf** in the same directory as **Setup.exe**.

References:

1. K. Mehrabi, R. Kaegi, D. Gunther and A. Gundlach-Graham, Emerging investigator series: Automated Single-Nanoparticle Quantification and Classification: A Holistic Study of Particles into and out of Wastewater Treatment Plants in Switzerland, *Environ. Sci.: Nano*, 2021, DOI: 10.1039/D0EN01066A.
2. A. Gundlach-Graham, L. Hendriks, K. Mehrabi and D. Gunther, Monte Carlo Simulation of Low-Count Signals in Time-of-Flight Mass Spectrometry and Its Application to Single-Particle Detection, *Anal. Chem.*, 2018, **90**, 11847-11855.
3. A. Gundlach-Graham and K. Mehrabi, Monodisperse microdroplets: a tool that advances single-particle ICP-MS measurements, *J. Anal. At. Spectrom.*, 2020, **35**, 1727-1739.
4. K. Mehrabi, D. Gunther and A. Gundlach-Graham, Single-particle ICP-TOFMS with online microdroplet calibration for the simultaneous quantification of diverse nanoparticles in complex matrices, *Environmental Science-Nano*, 2019, **6**, 3349-3358.