Filter Spectra Viewer (FSV) – Java App description.

Reason for creating the program was a goal to visualize spectra of the interferometric filters being in possession of Warsaw University of Technology Faculty of Physics. The app displays measured signal spectra as function of power vs wavelength.

The program loads .csv (Comma Separated Values) files containing transmission spectrum of a filter saved from ThorLabs FTS software.

Spectra of **5 groups** of filters containing **59 elements** were measured with use of ThorLabs FTS and added into the FSV app. FSV program is extendable, adding spectra of a new measured filters groups will result in their proper visualization within the App.

The rules that have to be followed in order to add a new filter group properly:

All spectra .csv files must be named as: *GroupName_FilterNumber.csv*

eg. CarlZeiss_a700nm.csv

Also corresponding source characteristics used for measuring the filters group must be named as: *NoFilter_X*

e.g. NoFilter 2

The process of visualizing the spectrum from a file is the following:

1) Program reads all the files from the "AppData" folder and dynamically creates panels for all filter groups and assigns spectra to it.
2) Data i.e. corresponding X,Y values are read by program into buffer 2 dimensional array ready for later scaling processes.
3) Scaling process taking into account the variation of integration times used for data acquisition.:

Integration time for each spectrum is acquired from the file header as shown on the picture below:

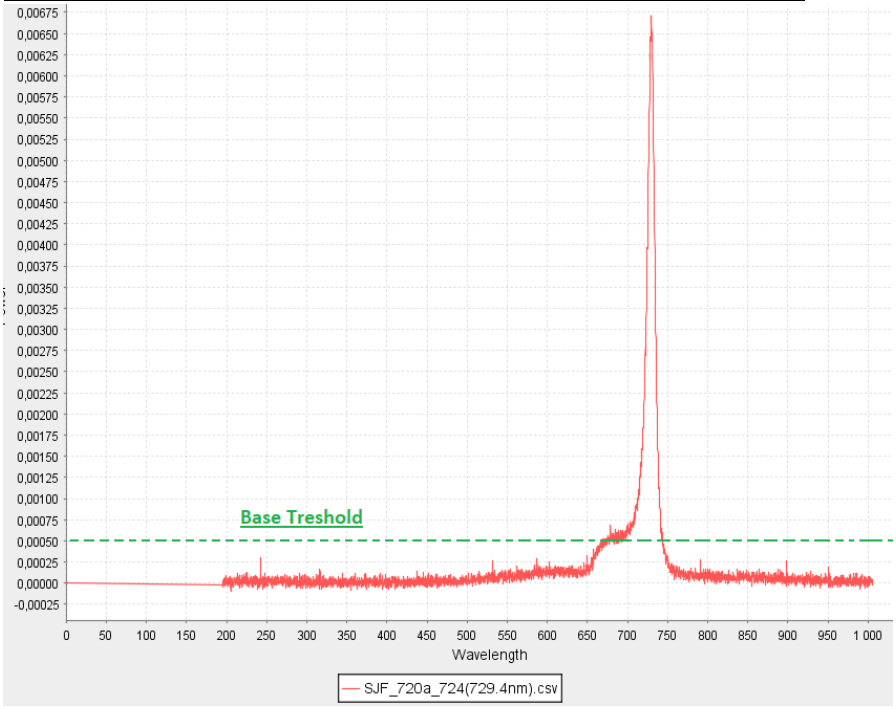
SK_Mg38J_383 — Notatnik

Plik Edycja Format Widok Pomoc

```
#Thorlabs FTS
[SpectrumHeader]
#Date;20181009
#Time;13504220
#GMTTime;11504220
#XAxisUnit;nm_air
#YAxisUnit;intensity
#Average;1
#RollingAverage;0
#SpectrumSmooth;0
#SSmoothParam1;0
#SSmoothParam2;0
#SSmoothParam3;0
#SSmoothParam4;0
#IntegrationTime;0.160000
#TriggerMode;0
#InterferometerSerial;M00467604
```

4) For the “Transmittance” operation mode each spectra is first selectively cut out for a noise reduction and then divided by corresponding light source characteristics (NoFilter file).

Visualization of a spectrum data threshold used for cutting out noisy base:



TRYBUS Rafał Jan

FIDERKIEWICZ Szymon