# Instruction for Background Drift Detrending
Pumidech (Max) Puthongkham
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Make sure that your MATLAB also has the "Signal Processing Toolbox," which can be added when you installed MATLAB. The software can be downloaded from https://github.com/maxchem6/deTrend. Please download the whole folder, then extract it to have every file in the same folder.

1. Open HDCV Analysis, then open .hdcv data file. Uncheck "Background subtracted," then click "Export."
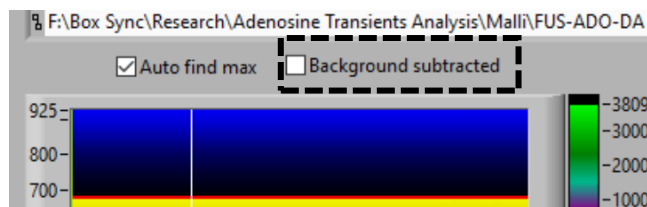
2. Open MATLAB. Click "Browse for folder" icon, and choose the program folder.
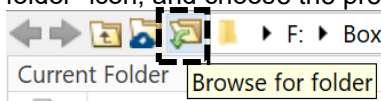
3. First, we will load the data to MATLAB. Double-click "loadSinglePlot.m" in the left tab and run.

4. Choose the FSCV .hdcv Color files that you exported. Click "Open." The data will be saved in the variable "cpdata."

5. Now, we will detrend our data. Double-click "deDrift2.m" and click "Run." The program will produce the color plot from the filtered data, saved as "filtPlot."

6. You can copy and paste the color plot by Edit > Copy Figures. You can also save it by File > Save As and choose the appropriate format.

Possible modification of half-power frequency: By default, the program sets it as 0.03 Hz. You can change this number in line 11 of deDrift2.m. Higher frequency will filter more drift but may lose all details, and lower frequency will save more detail but might not effectively detrend the drift.

```
6 -     [r,c]=size(cpdata);
7
8       %filter the signal by Butterworth Filter (Analyst 2017 142 4317-4321)
9       %You can try changing cutoff frequency from 0.03 to something else to
10      %better detrend your data.
11 -    d=designfilt('highpassiir', 'FilterOrder', 2, 'HalfPowerFrequency', 0.03, 'SampleRate', 10, 'DesignMethod
12
13 -    filtPlot=zeros(r,c);
14 -    for i=1:r
15 -        filtPlot(i,:)=filtfilt(d,cpdata(i,:));
16 -    end
```

Example original vs filtered color plot.