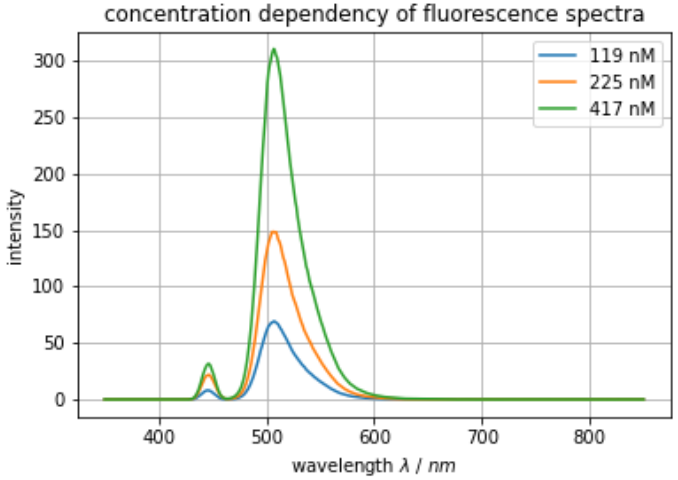
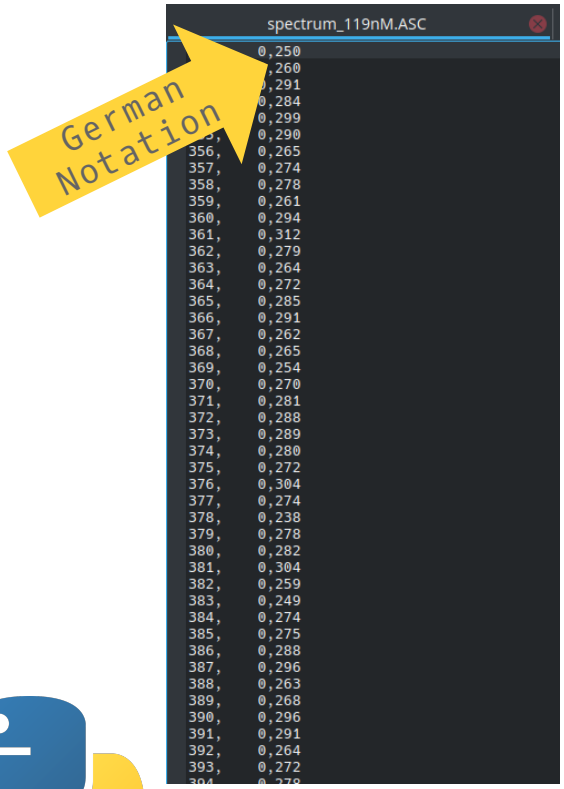
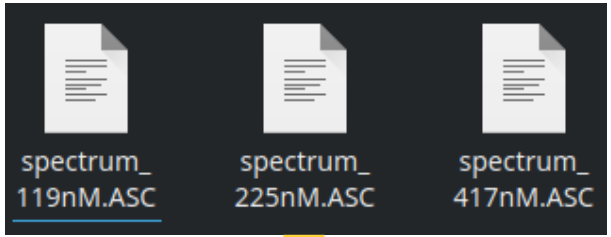
Complex Exercises

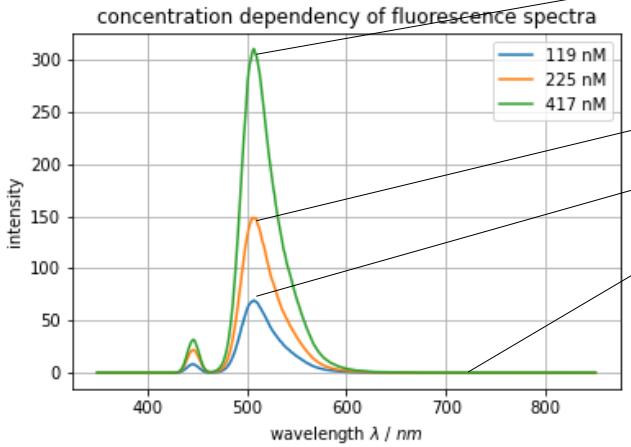
Complex Exercise 1: Fluorescence

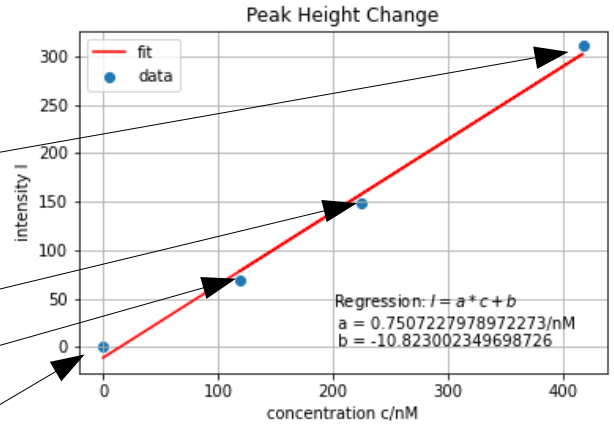


Complex Exercise 1: Fluorescence

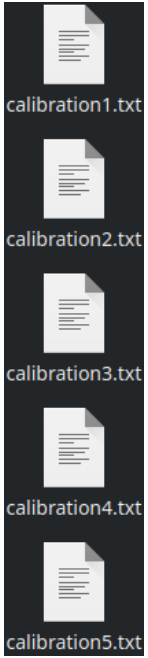


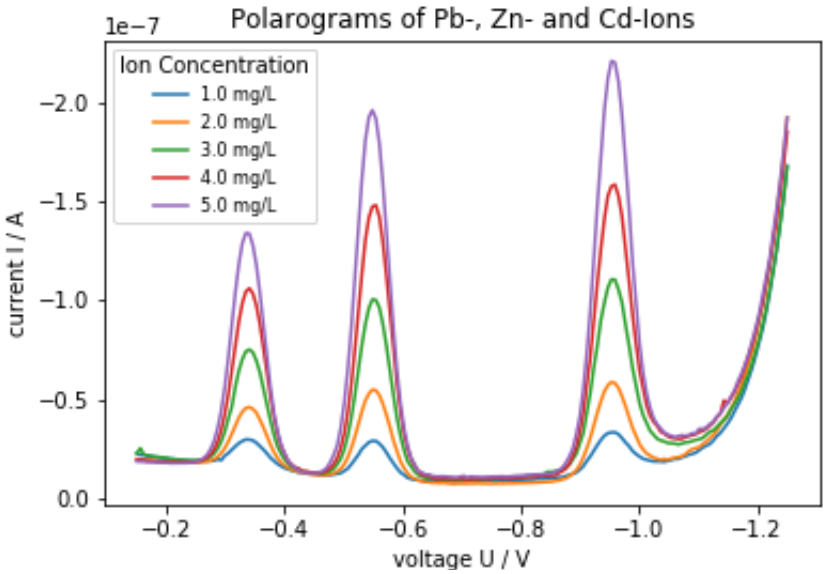


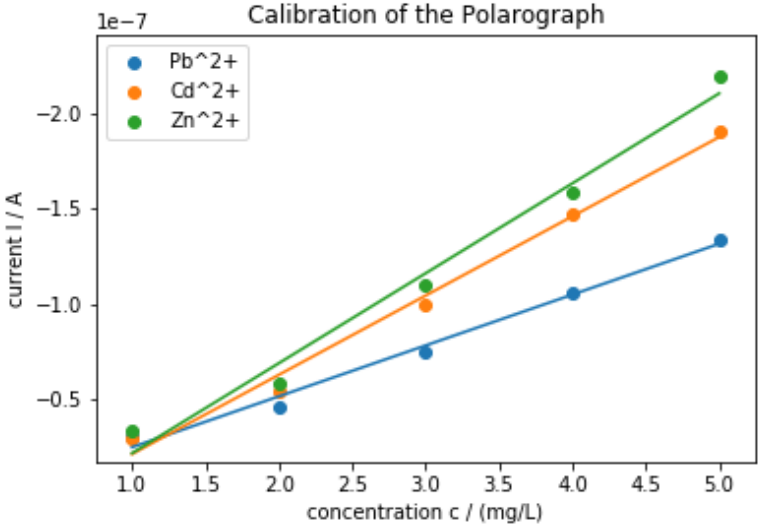




Complex Exercise 2: DPP







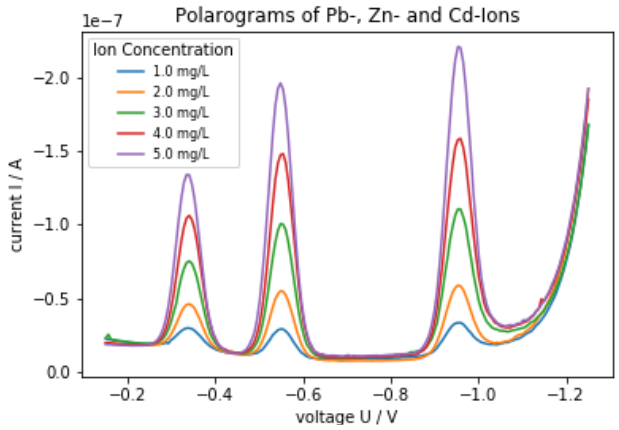
Complex Exercise 2: DPP

calibration1.txt

```
[Measurement parameters begin]

DP - Differential Pulse

Initial purge time (s)            :      300

Sweep
Equilibration time (s)            :   10.000
Start potential (V)               :   -0.150
End potential (V)                 :   -1.250
Voltage step (V)                  :    0.006
Voltage step time (s)             :    0.400
Sweep rate (V/s)                  :    0.015
Pulse amplitude (V)               :    0.050
Pulse time (s)                    :    0.040

Cell off after measurement        :      Yes
[Measurement parameters end]

VR = 2-1
186
-0.14999  »      -2.2788e-008
-0.15594  »      -2.2046e-008
-0.1619   »      -2.1964e-008
-0.16785  »      -2.1466e-008
-0.1738   »      -2.128e-008
-0.17975  »      -2.1115e-008
-0.1857   »      -2.0719e-008
-0.19165  »      -2.0566e-008
-0.1976   »      -2.0533e-008
-0.20355  »      -2.0191e-008
-0.2095   »      -1.9925e-008
-0.21545  »      -1.9846e-008
-0.22141  »      -1.955e-008
-0.22736  »      -1.9367e-008
-0.23331  »      -1.9181e-008
-0.23926  »      -1.9098e-008
-0.24521  »      -1.9037e-008
-0.25116  »      -1.9129e-008
-0.25711  »      -1.8927e-008
-0.26306  »      -1.912e-008
```

calibration2.txt

```
-0.26306  »      -1.8415e-008
-0.26901  »      -1.8747e-008
-0.27496  »      -1.9144e-008
-0.28091  »      -1.9937e-008
-0.28687  »      -2.1164e-008
-0.29282  »      -2.3035e-008
-0.29877  »      -2.5412e-008
-0.30472  »      -2.8766e-008
-0.31067  »      -3.2609e-008
-0.31662  »      -3.6783e-008
-0.32257  »      -4.0803e-008
-0.32852  »      -4.3824e-008
-0.33447  »      -4.5664e-008
-0.34042  »      -4.6131e-008
-0.34637  »      -4.5206e-008
-0.35233  »      -4.3308e-008
-0.35828  »      -3.9799e-008
-0.36423  »      -3.5996e-008
-0.37018  »      -3.1699e-008
-0.37613  »      -2.721e-008
-0.38208  »      -2.3432e-008
-0.38803  »      -2.0423e-008
-0.39398  »      -1.8296e-008
-0.39993  »      -1.673e-008
-0.40588  »      -1.5537e-008
-0.41183  »      -1.4697e-008
-0.41779  »      -1.4008e-008
-0.42374  »      -1.3492e-008
-0.42969  »      -1.2943e-008
-0.43564  »      -1.2729e-008
-0.44159  »      -1.2479e-008
-0.44754  »      -1.2177e-008
-0.45349  »      -1.1899e-008
-0.45944  »      -1.1966e-008
-0.46539  »      -1.1786e-008
-0.47134  »      -1.2027e-008
-0.47729  »      -1.2253e-008
-0.48325  »      -1.2741e-008
-0.4892   »      -1.3767e-008
-0.49515  »      -1.4951e-008
-0.5011   »      -1.7383e-008
-0.50705  »      -2.0871e-008
```

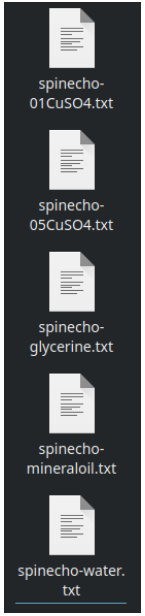


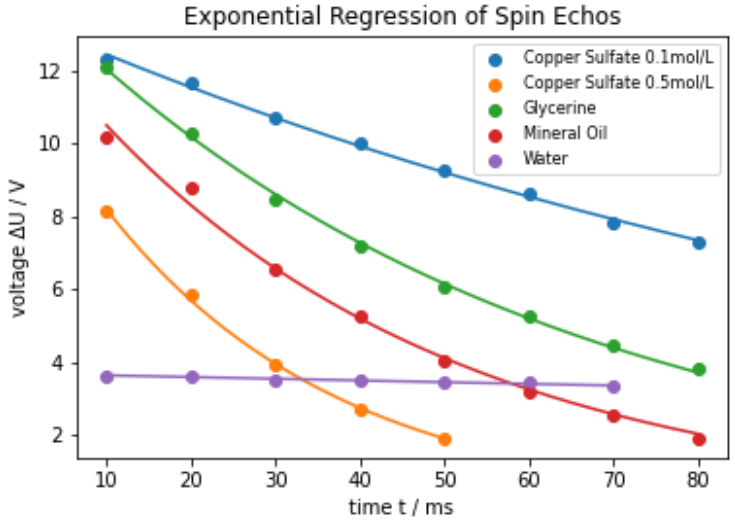
Sample	Maximum
Lead (Pb^{2+})	- 0.340 V
Cadmium (Cd^{2+})	- 0.555 V
Zinc (Zn^{2+})	- 0.959 V

Complex Exercise 3: NMR

spinecho-01CuSO4.txt

```
Copper Sulfate 0,1mol/L
f = 15,35877 MHz
t / ms» ΔU / V
10»     12,3
20»     11,7
30»     10,7
40»     10
50»     9,27
60»     8,64
70»     7,84
80»     7,28
```





results.txt

```
Exponential Regression:
 ΔU = A * exp(-b * time)
Sample                    A / V     b / (1/ms)    half-life time t / ms
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Copper Sulfate 0.1mol/L   13.4286    0.00751752                92.2042
Copper Sulfate 0.5mol/L   11.7997    0.0363303                 19.0791
Glycerine                 14.2535    0.0167573                 41.3639
Mineral Oil               13.2788    0.0233726                 29.6564
Water                      3.69929   0.00132182               524.388
```