Table of Contents

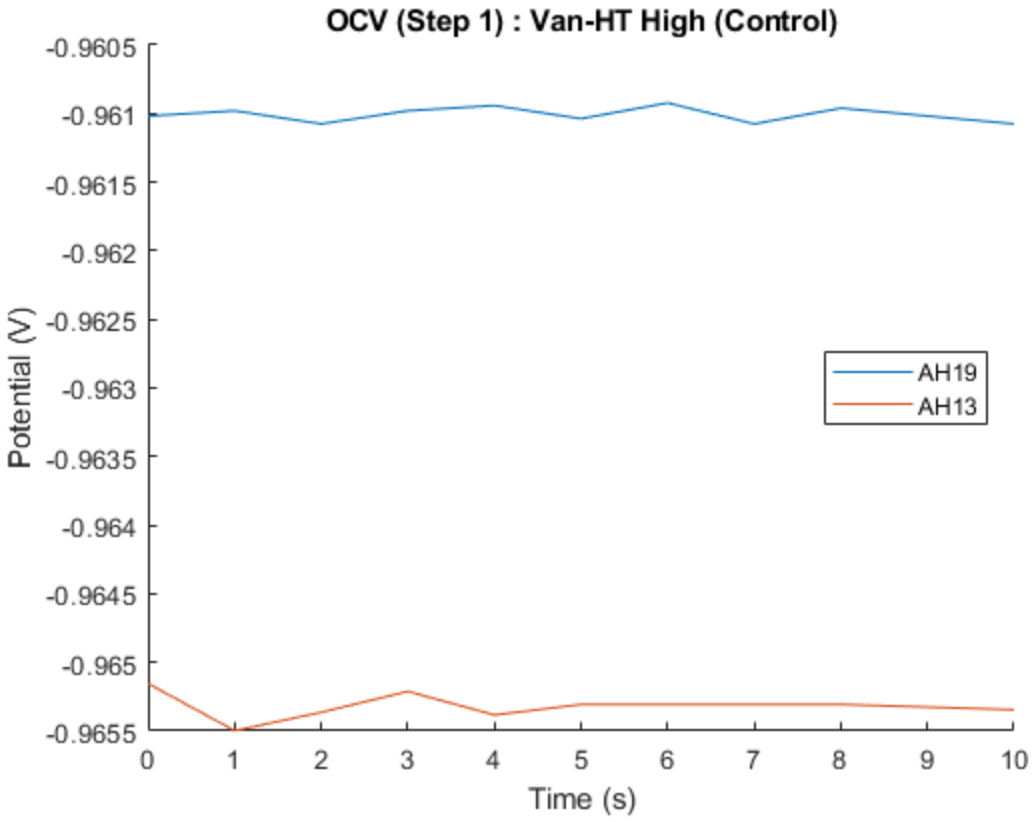
EIS Detailed Summary

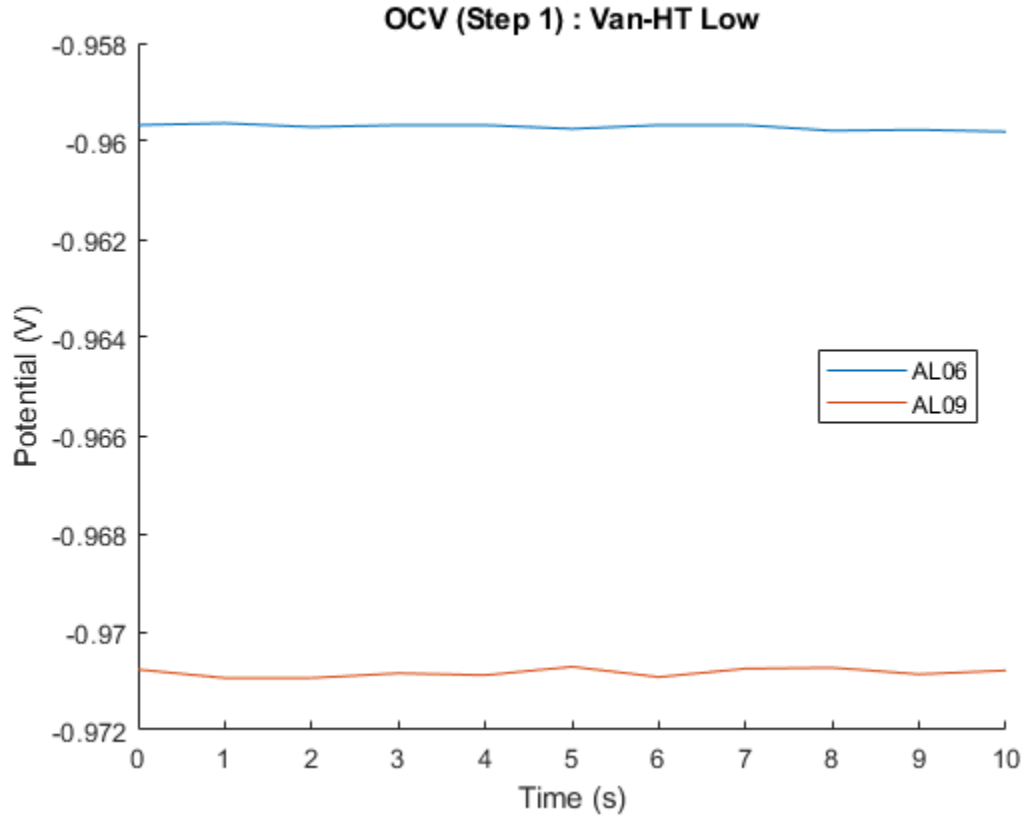
This document contains the Carbon-Lignen Phase 2 summary graphs and data analysis.

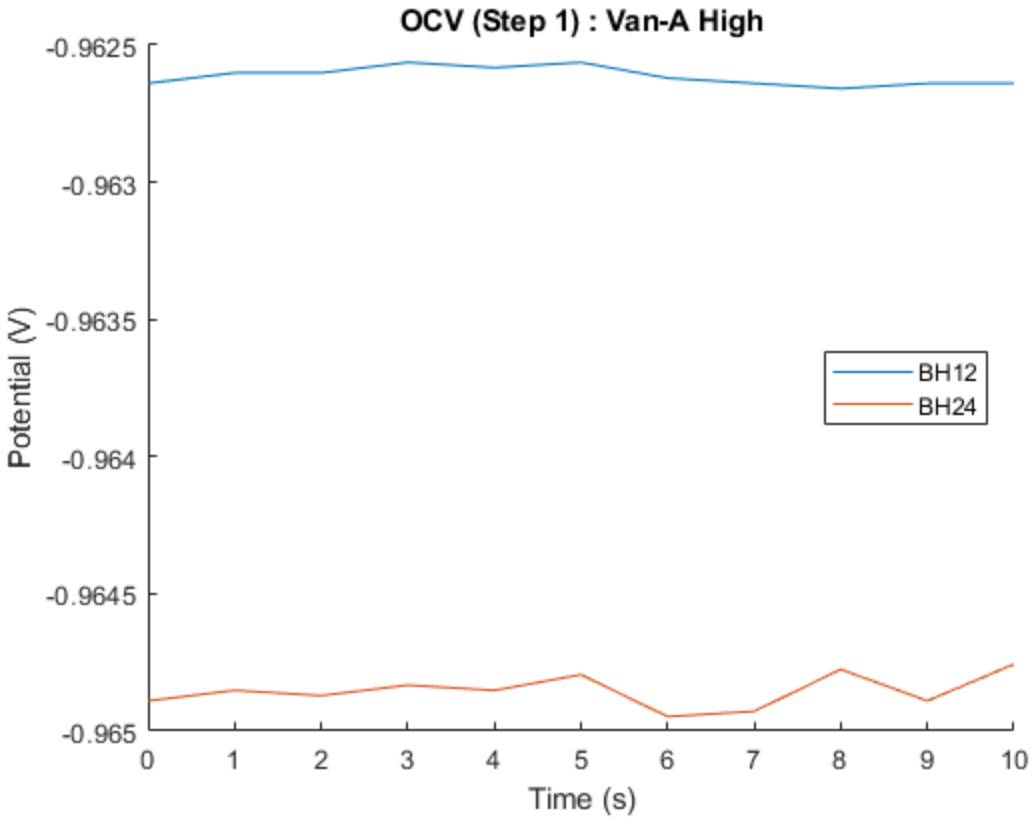
RUN OCV PROCEDURE

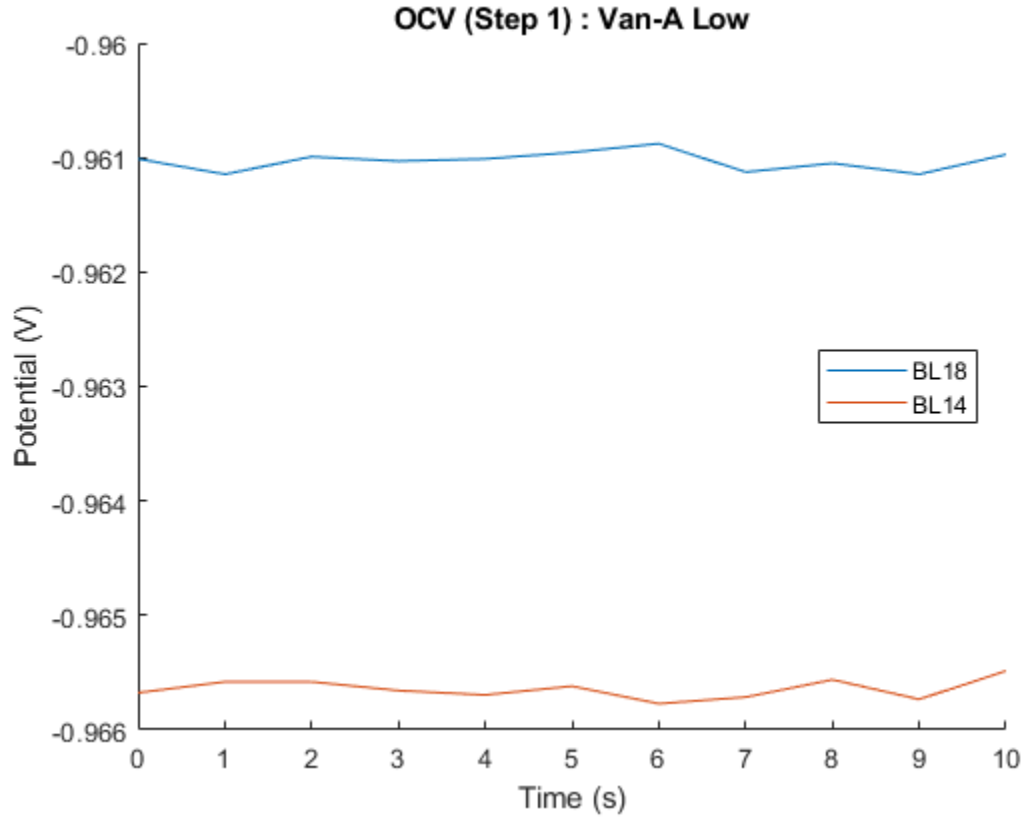
1. OCV

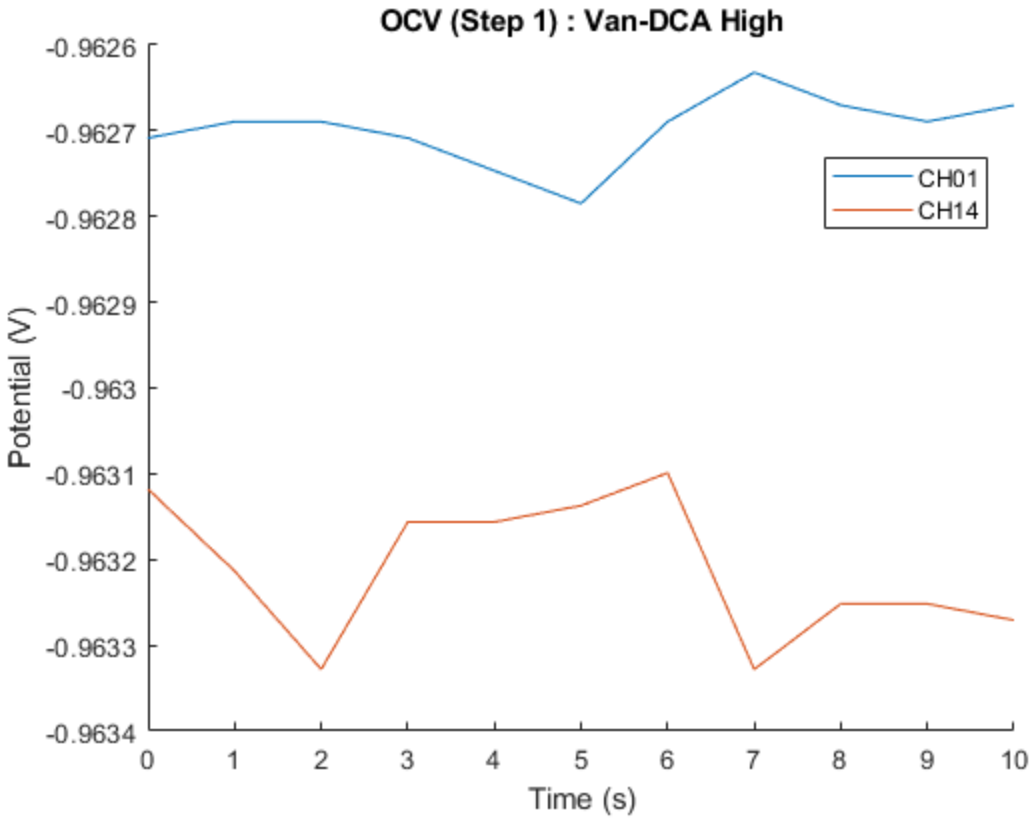
Define nProcess

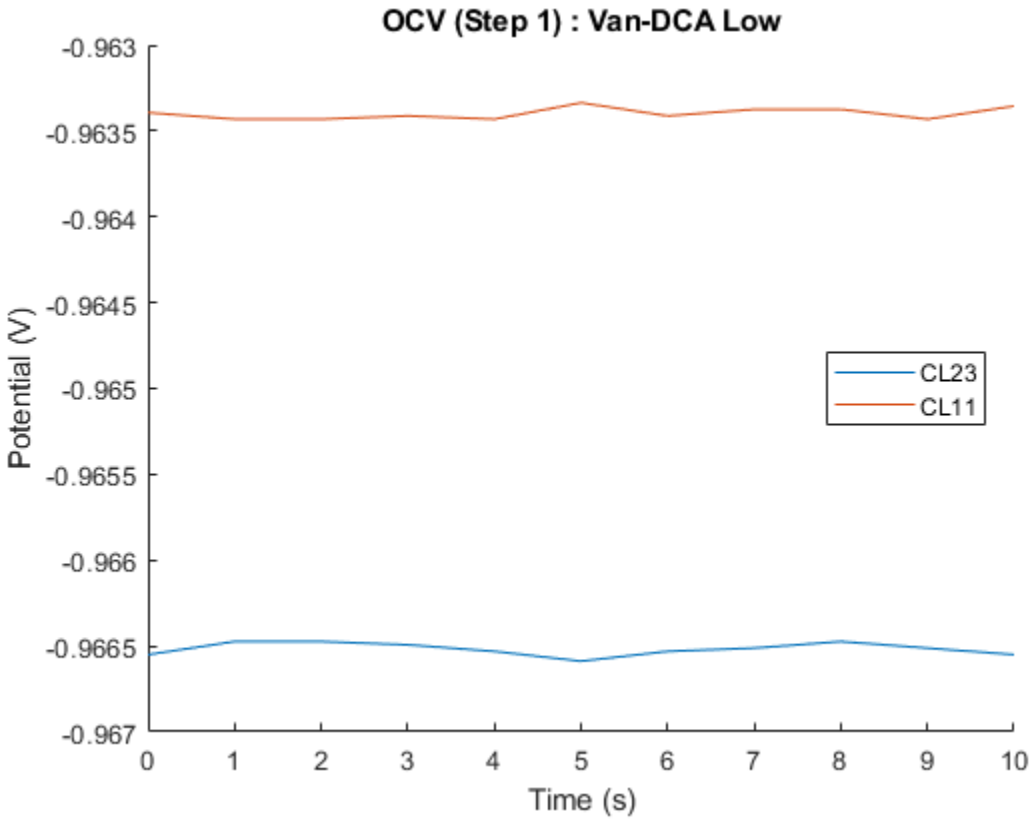

OCV (Step 1) : Van-HT High (Control)
-0.9605
-0.961
-0.9615
-0.962
-0.9625
-0.963
-0.9635
-0.964
-0.9645
-0.965
-0.9655
Potential (V)
0
1
2
3
4
5
6
7
8
9
10
Time (s)
AH19
AH13

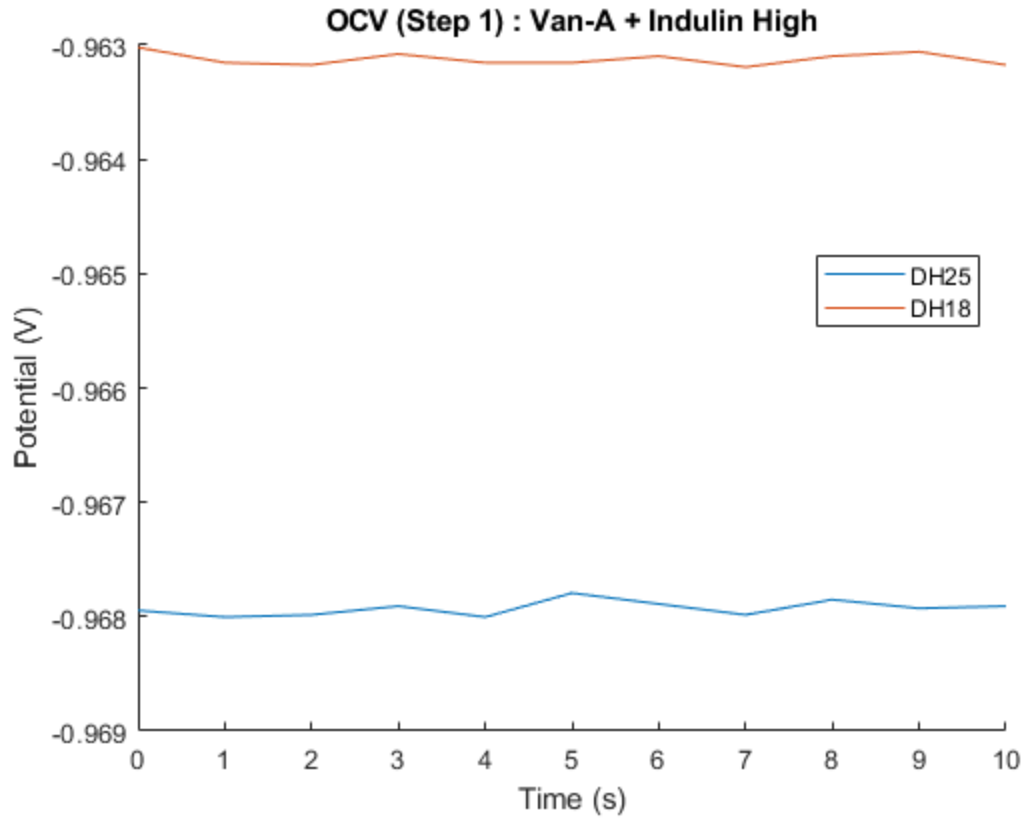

OCV (Step 1) : Van-HT Low
-0.958
-0.96
-0.962
-0.964
-0.966
-0.968
-0.97
-0.972
Potential (V)
0
1
2
3
4
5
6
7
8
9
10
Time (s)
AL06
AL09

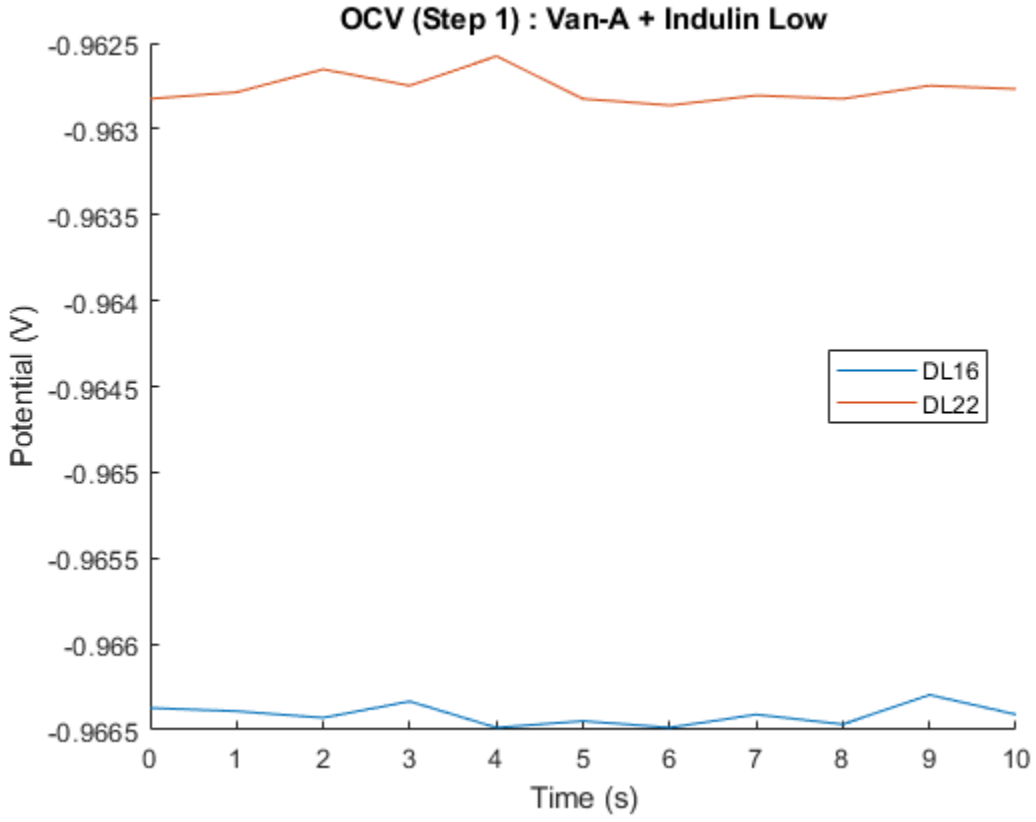

OCV (Step 1) : Van-A High
-0.9625
-0.963
-0.9635
-0.964
-0.9645
-0.965
Potential (V)
0
1
2
3
4
5
6
7
8
9
10
Time (s)
BH12
BH24

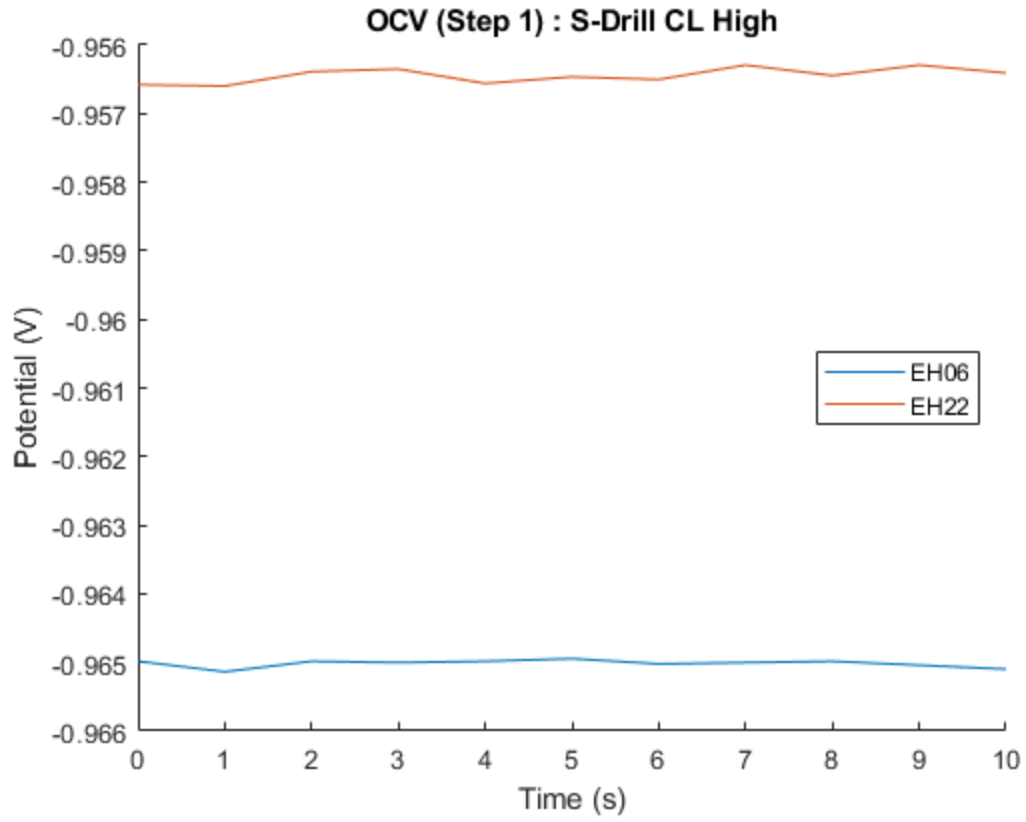

OCV (Step 1) : Van-A Low
-0.96
-0.961
-0.962
-0.963
-0.964
-0.965
-0.966
Potential (V)
0
1
2
3
4
5
6
7
8
9
10
Time (s)
BL18
BL14

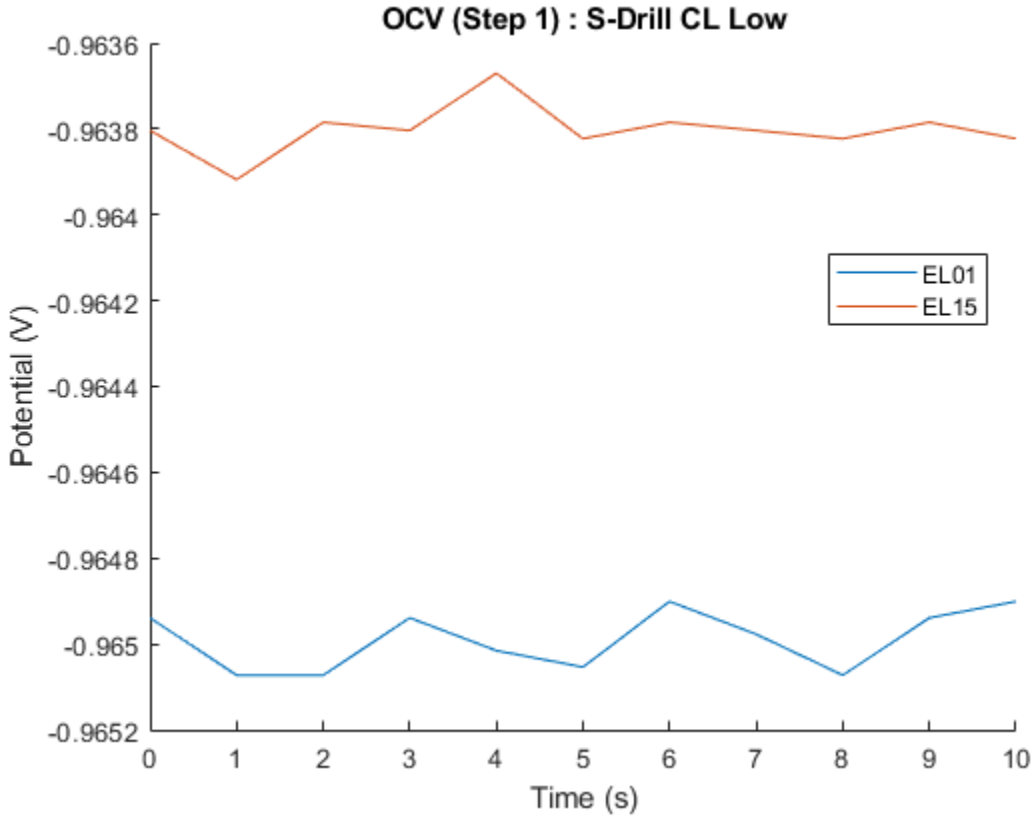

OCV (Step 1) : Van-DCA High
-0.9626
-0.9627
-0.9628
-0.9629
-0.963
-0.9631
-0.9632
-0.9633
-0.9634
Potential (V)
0
1
2
3
4
5
6
7
8
9
10
Time (s)
CH01
CH14

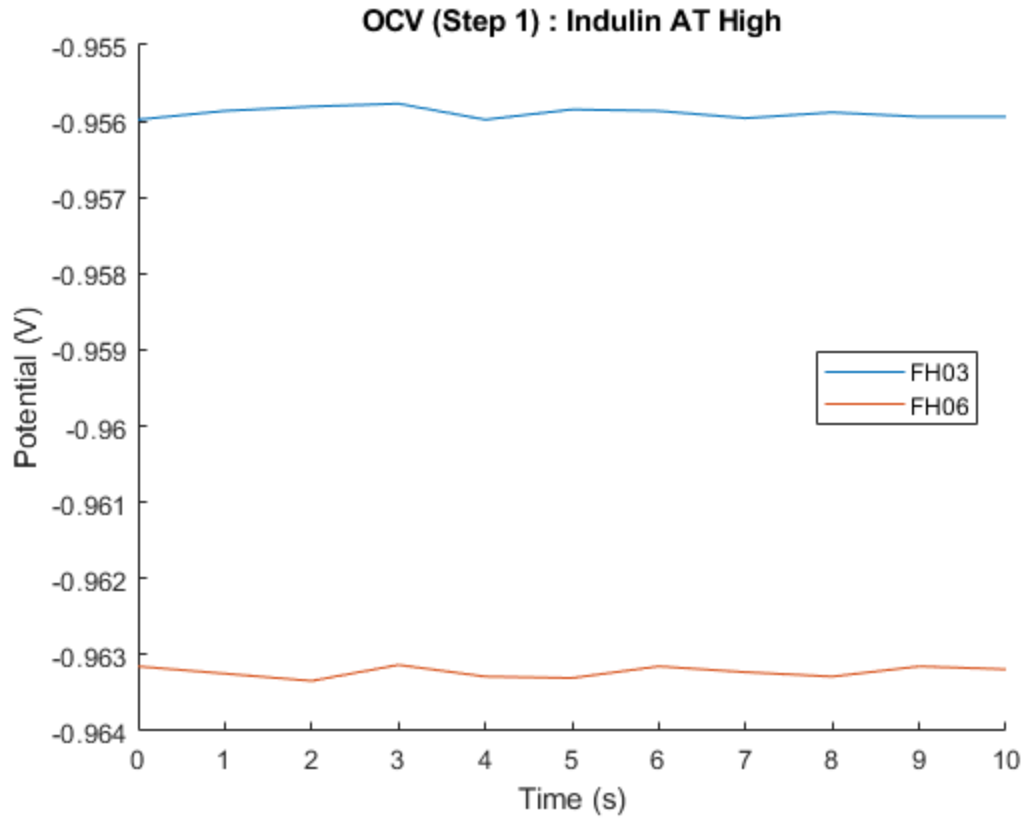

OCV (Step 1) : Van-DCA Low
-0.963
-0.9635
-0.964
-0.9645
-0.965
-0.9655
-0.966
-0.9665
-0.967
Potential (V)
0
1
2
3
4
5
6
7
8
9
10
Time (s)
CL23
CL11

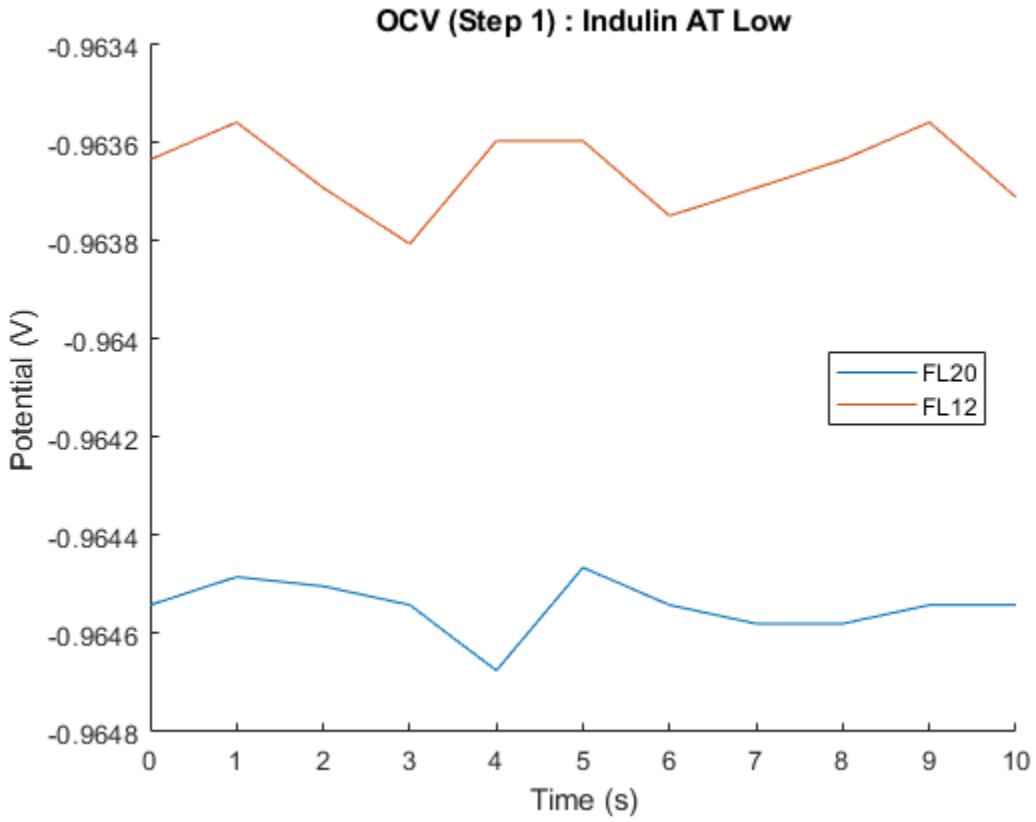

OCV (Step 1) : Van-A + Indulin High
-0.963
-0.964
-0.965
-0.966
-0.967
-0.968
-0.969
Potential (V)
0
1
2
3
4
5
6
7
8
9
10
Time (s)
DH25
DH18


OCV (Step 1) : Van-A + Indulin Low
-0.9625
-0.963
-0.9635
-0.964
-0.9645
-0.965
-0.9655
-0.966
-0.9665
Potential (V)
0
1
2
3
4
5
6
7
8
9
10
Time (s)
DL16
DL22

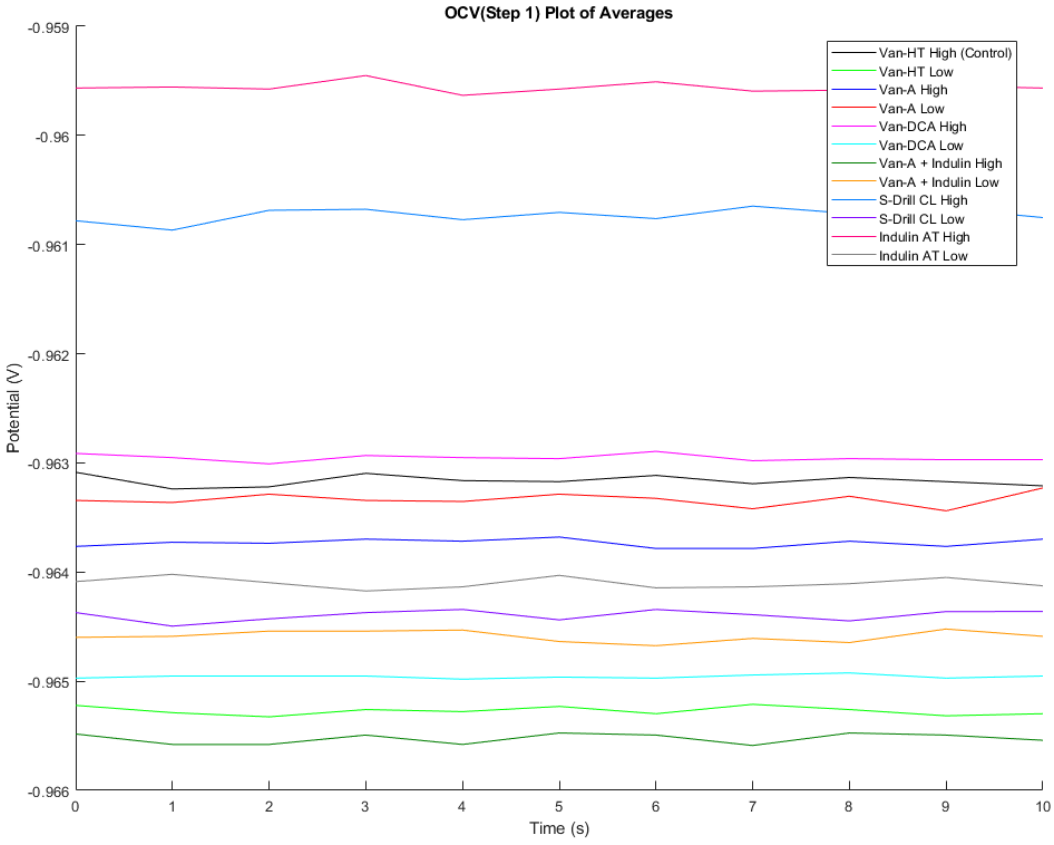

OCV (Step 1) : S-Drill CL High
Potential (V)
Time (s)
EH06
EH22


OCV (Step 1) : S-Drill CL Low
Potential (V)
Time (s)
EL01
EL15


OCV (Step 1) : Indulin AT High
-0.955
-0.956
-0.957
-0.958
-0.959
-0.96
-0.961
-0.962
-0.963
-0.964
Potential (V)
0
1
2
3
4
5
6
7
8
9
10
Time (s)
FH03
FH06

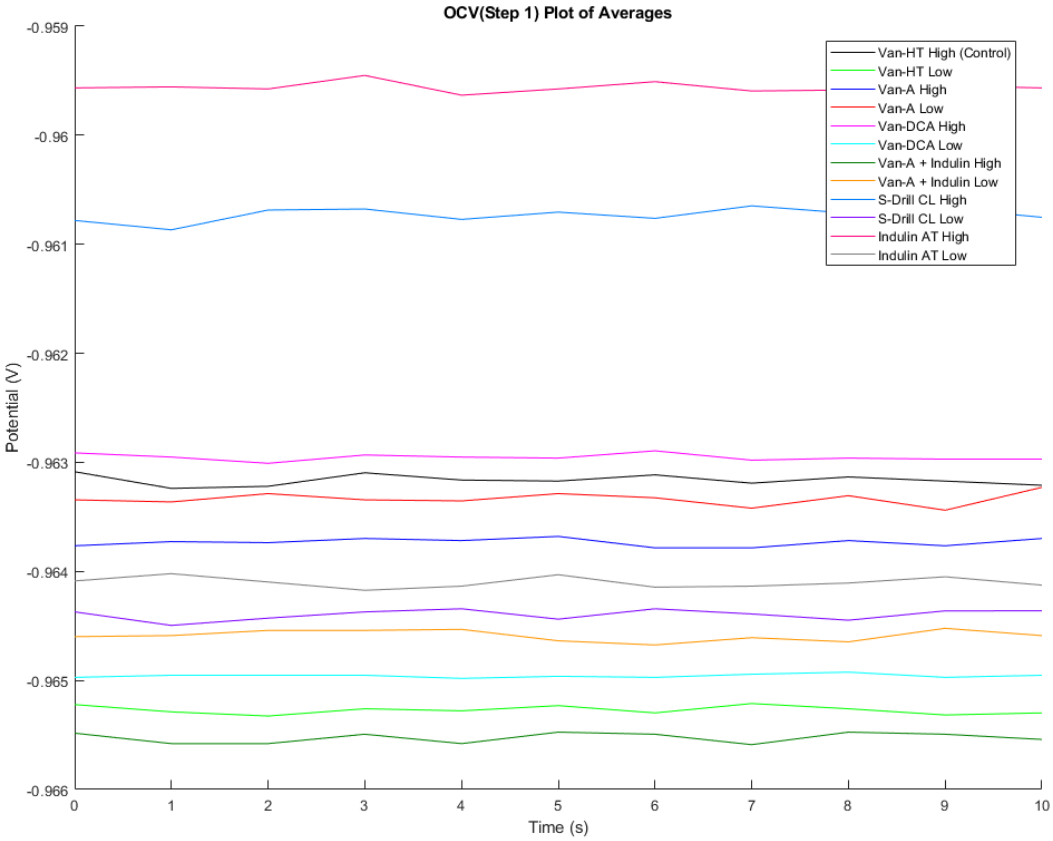

OCV (Step 1) : Indulin AT Low
-0.9634
-0.9636
-0.9638
-0.964
-0.9642
-0.9644
-0.9646
-0.9648
Potential (V)
0
1
2
3
4
5
6
7
8
9
10
Time (s)
FL20
FL12

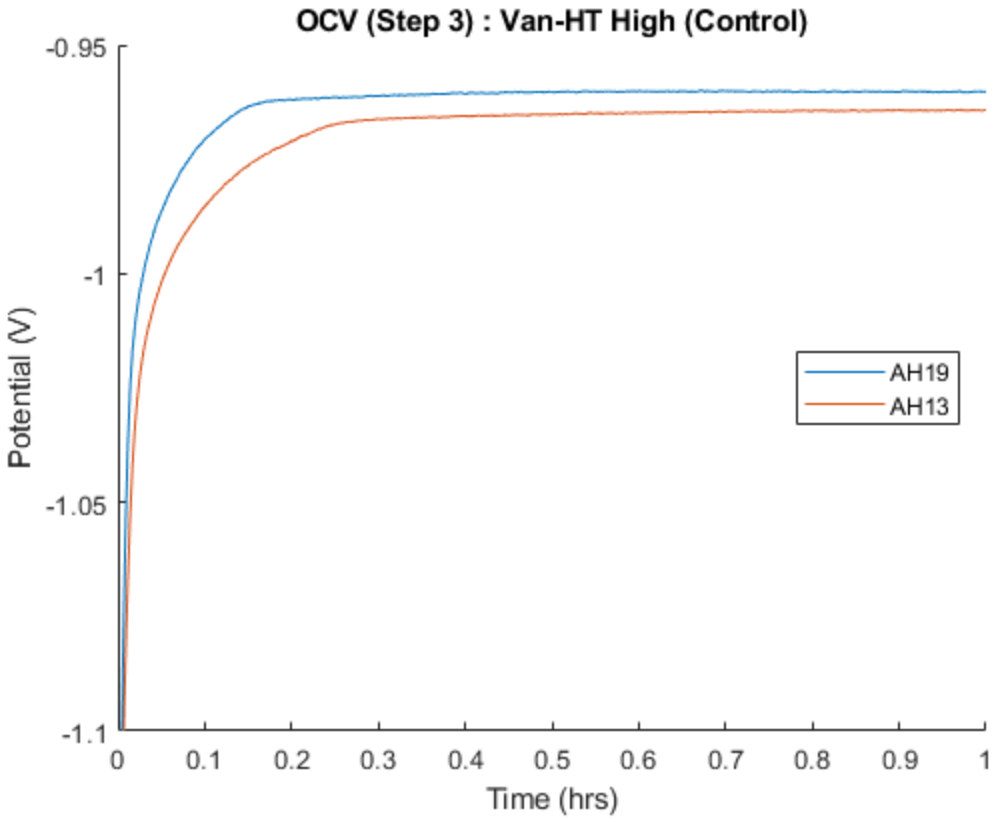
1. OCV Averages

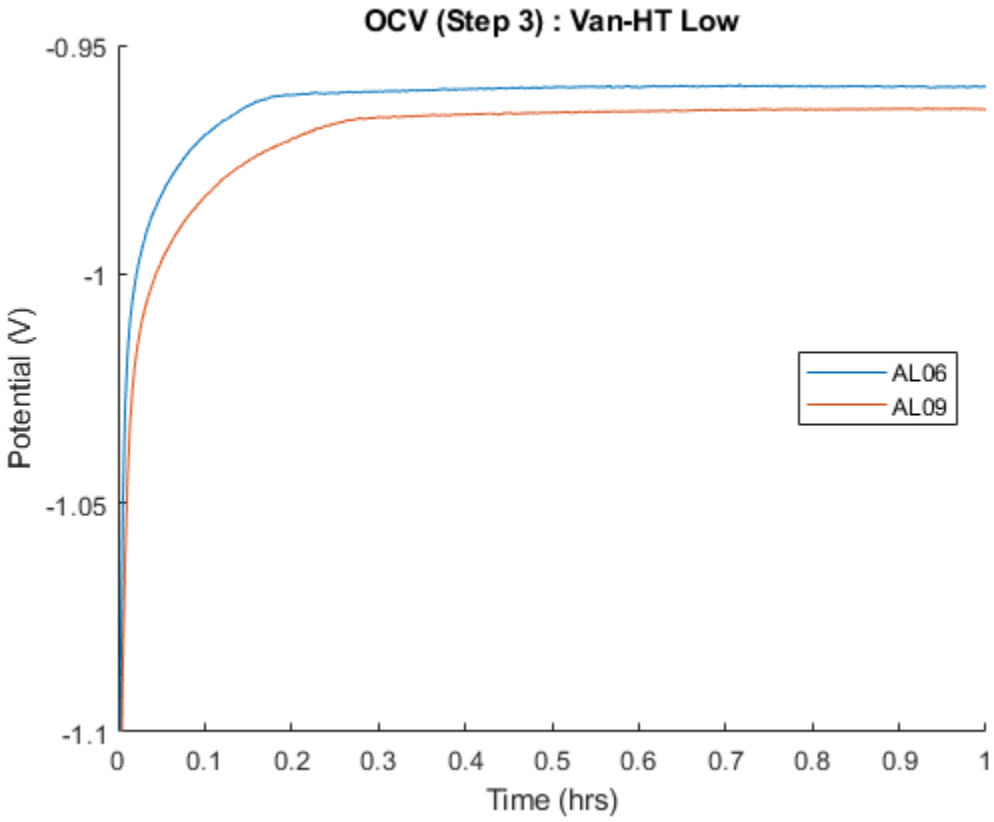


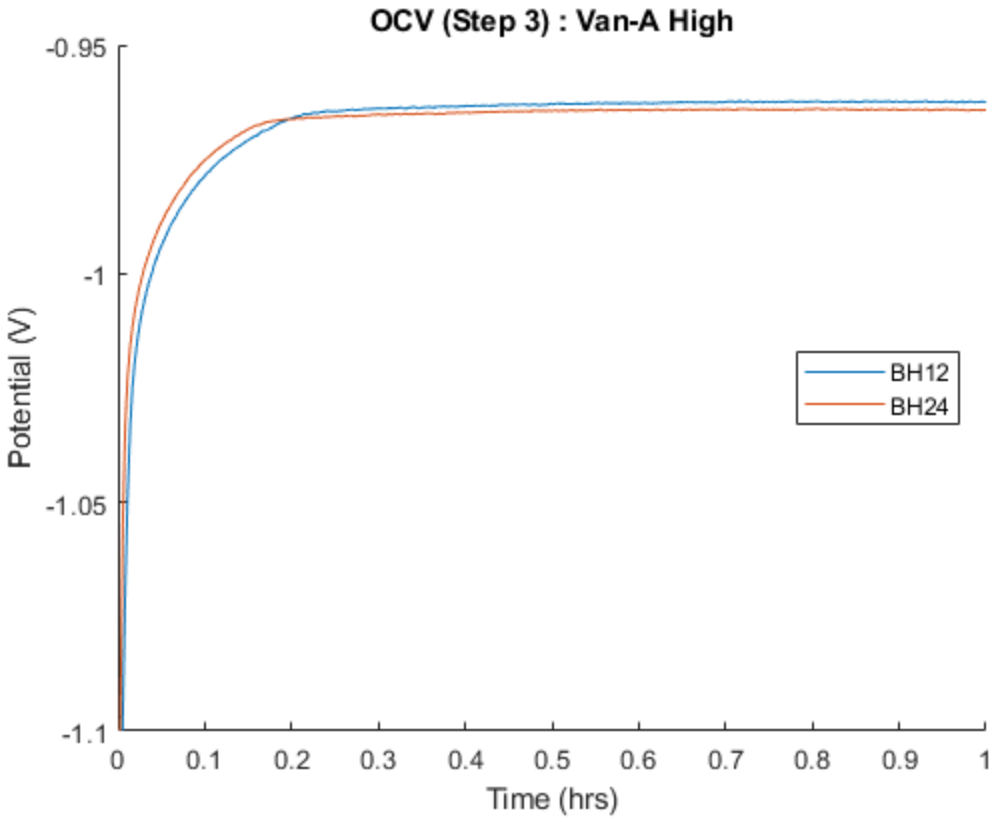
3. OCV

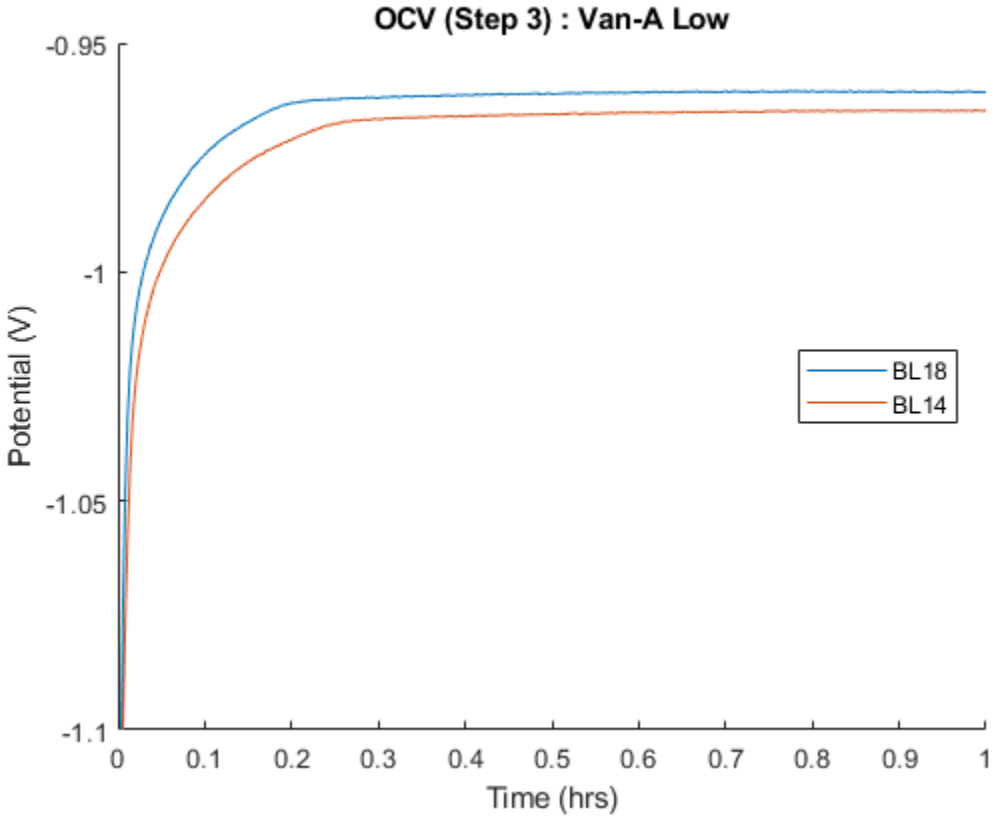
Define nProcess

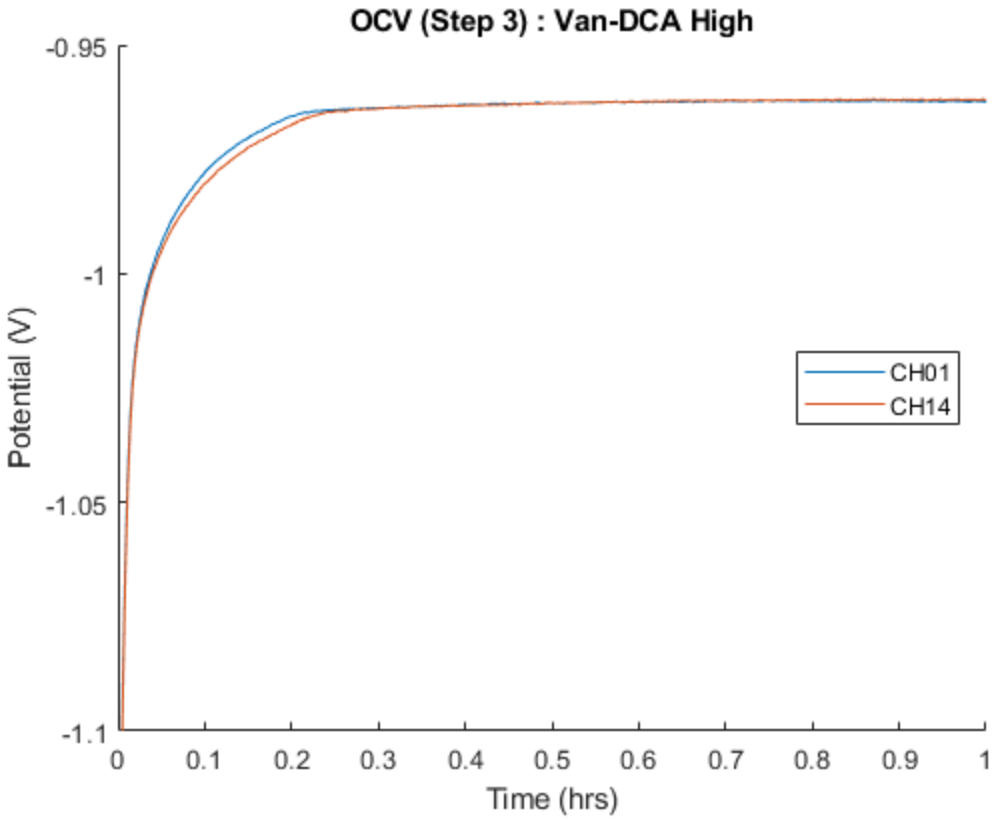

OCV(Step 1) Plot of Averages
Potential (V)
Time (s)
-0.959
-0.96
-0.961
-0.962
-0.963
-0.964
-0.965
-0.966
0
1
2
3
4
5
6
7
8
9
10
Van-HT High (Control)
Van-HT Low
Van-A High
Van-A Low
Van-DCA High
Van-DCA Low
Van-A + Indulin High
Van-A + Indulin Low
S-Drill CL High
S-Drill CL Low
Indulin AT High
Indulin AT Low

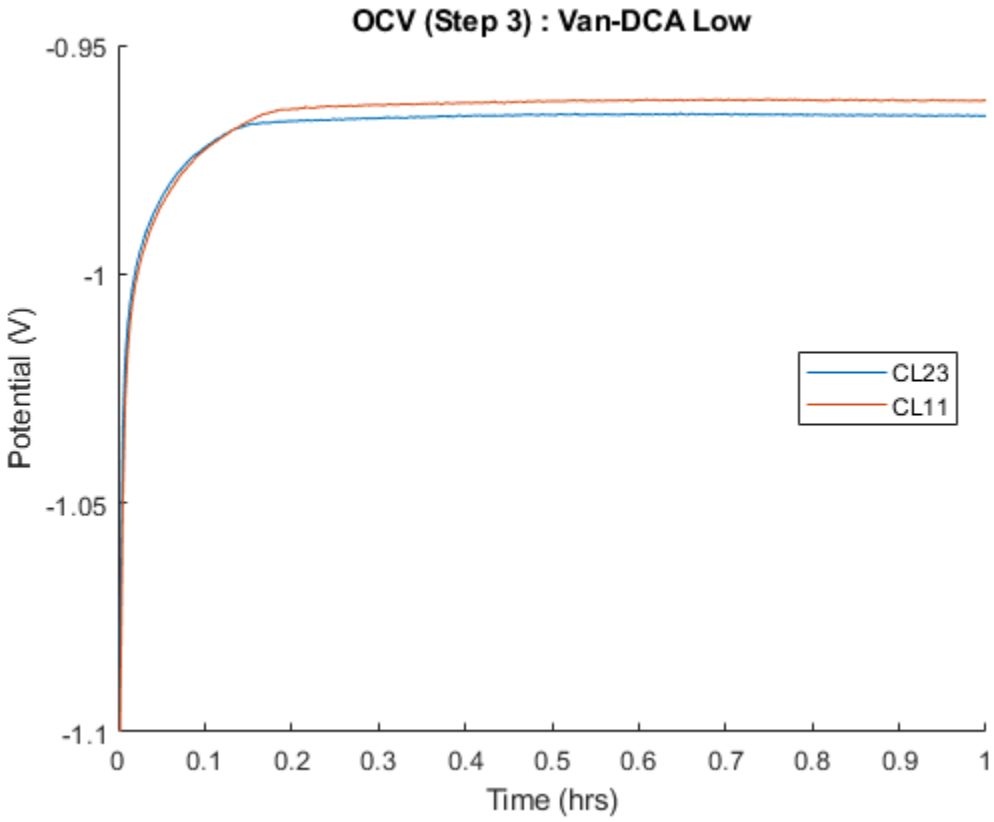

OCV (Step 3) : Van-HT High (Control)
-0.95
-1
-1.05
-1.1
Potential (V)
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Time (hrs)
AH19
AH13

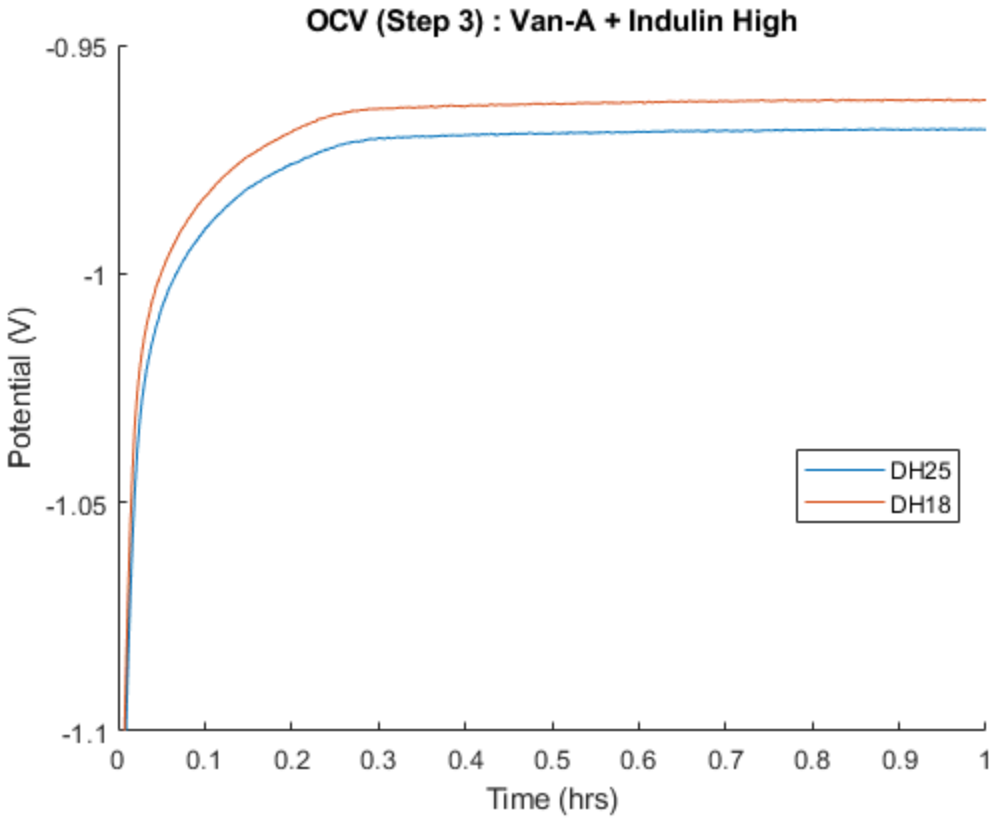

OCV (Step 3) : Van-HT Low
-0.95
-1
-1.05
-1.1
Potential (V)
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Time (hrs)
AL06
AL09

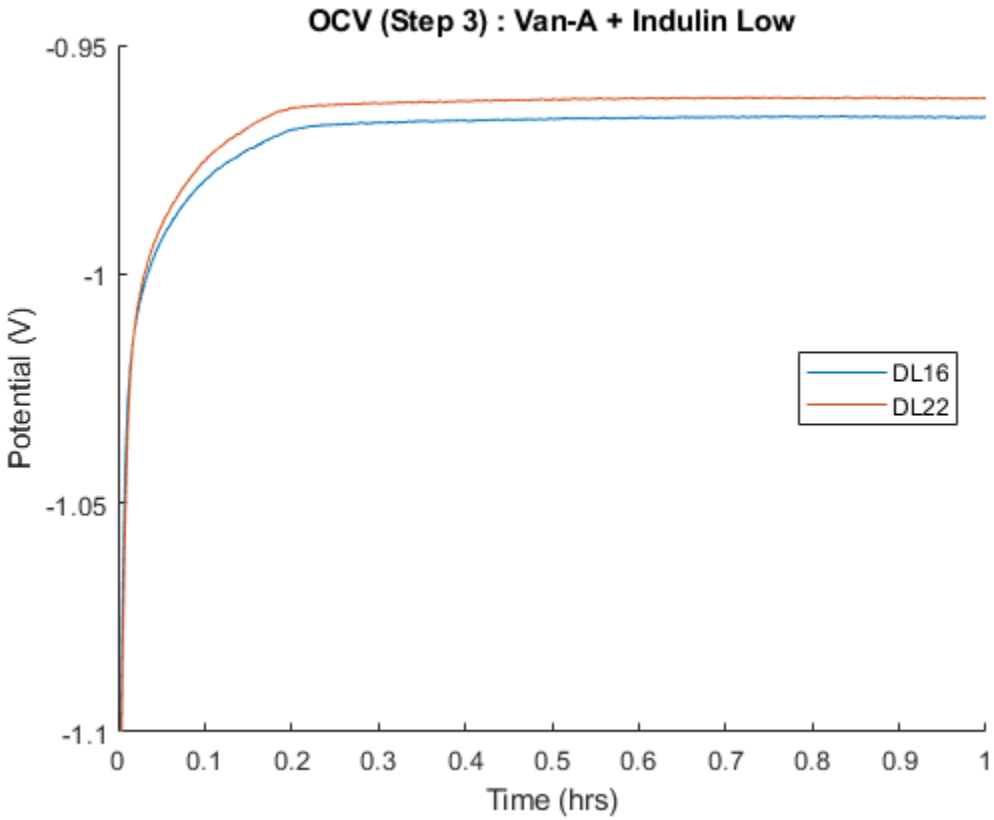

OCV (Step 3) : Van-A High
-0.95
-1
-1.05
-1.1
Potential (V)
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Time (hrs)
BH12
BH24

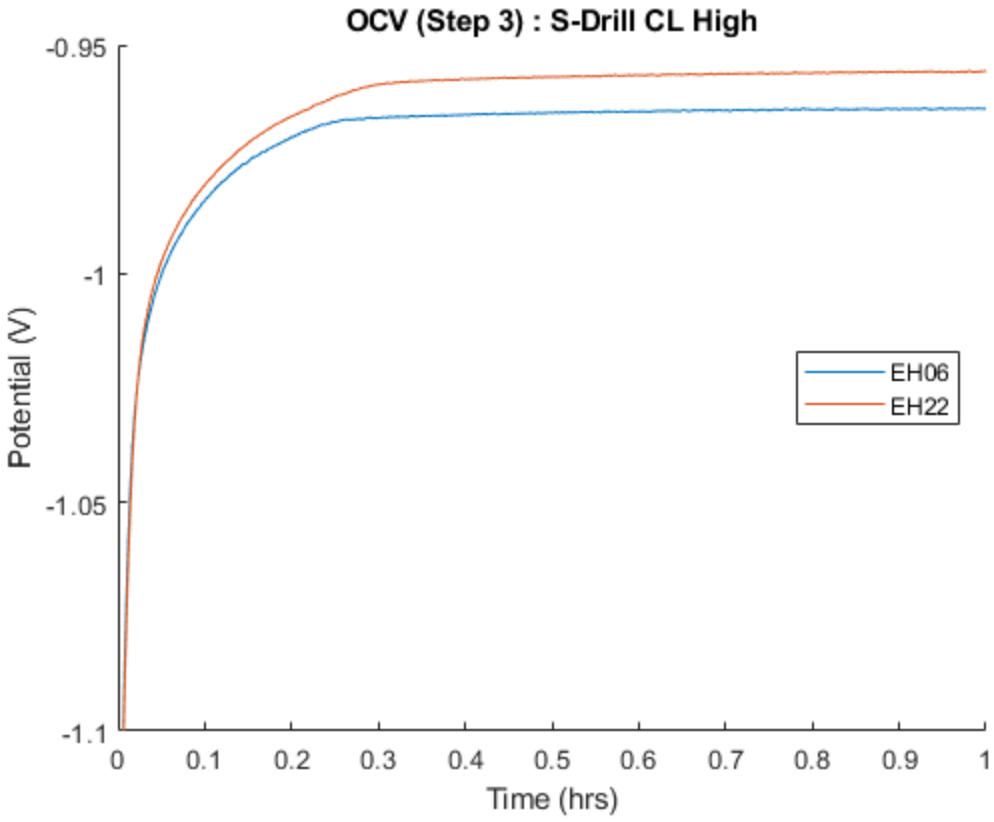

OCV (Step 3) : Van-A Low
-0.95
-1
-1.05
-1.1
Potential (V)
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Time (hrs)
BL18
BL14

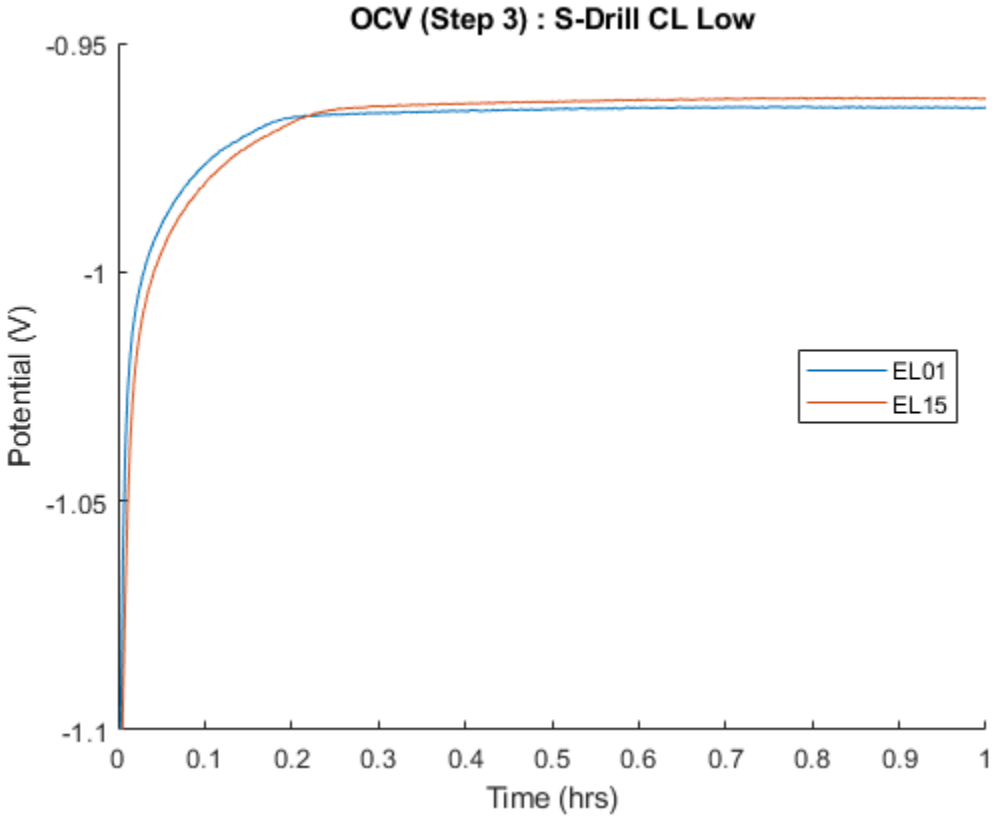

OCV (Step 3) : Van-DCA High
-0.95
-1
-1.05
-1.1
Potential (V)
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Time (hrs)
CH01
CH14

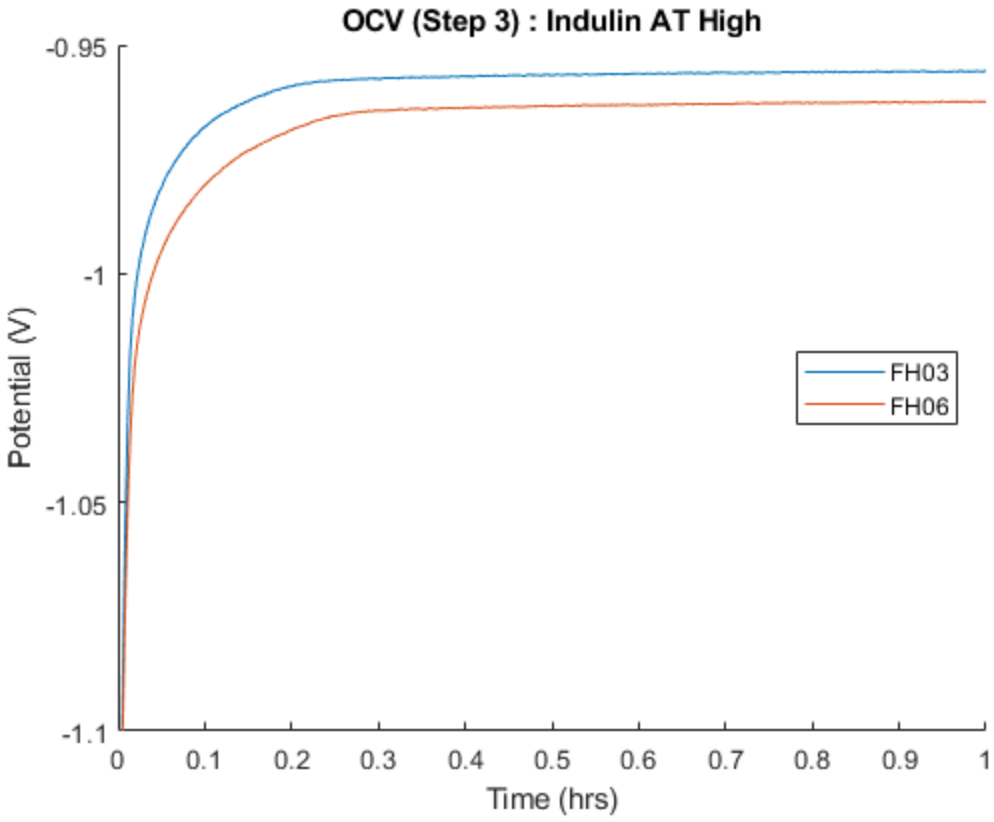

OCV (Step 3) : Van-DCA Low
-0.95
-1
-1.05
-1.1
Potential (V)
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Time (hrs)
CL23
CL11

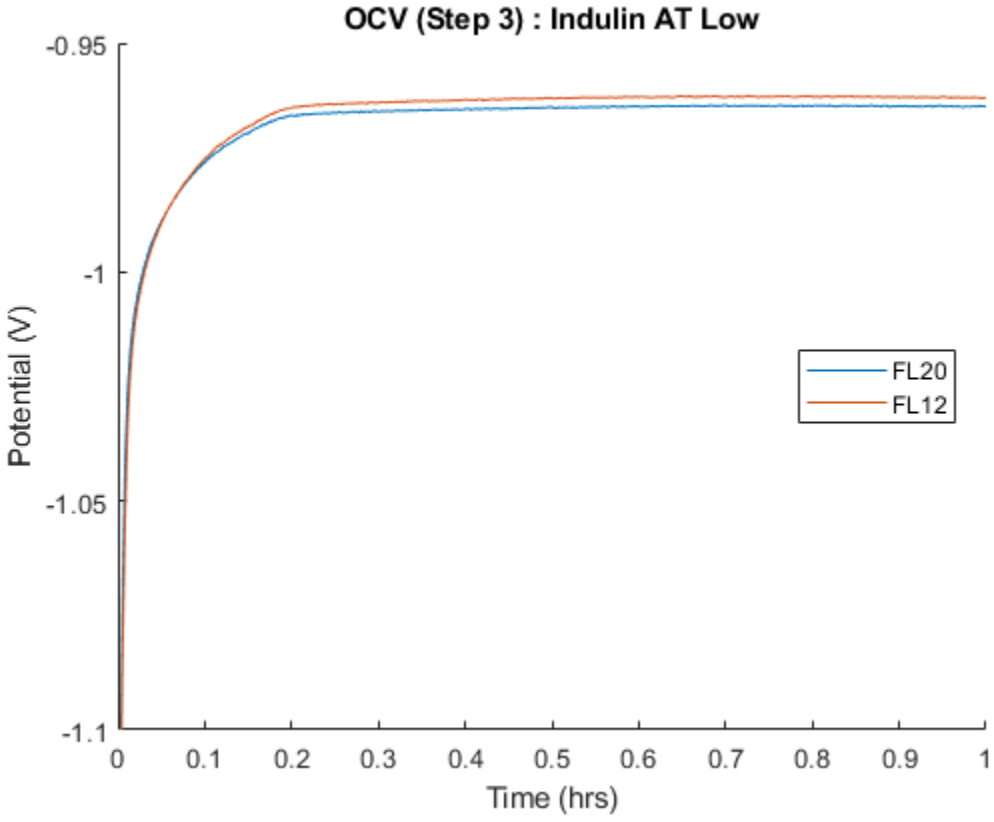

OCV (Step 3) : Van-A + Indulin High
-0.95
-1
-1.05
-1.1
Potential (V)
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Time (hrs)
DH25
DH18


OCV (Step 3) : Van-A + Indulin Low
-0.95
-1
-1.05
-1.1
Potential (V)
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Time (hrs)
DL16
DL22

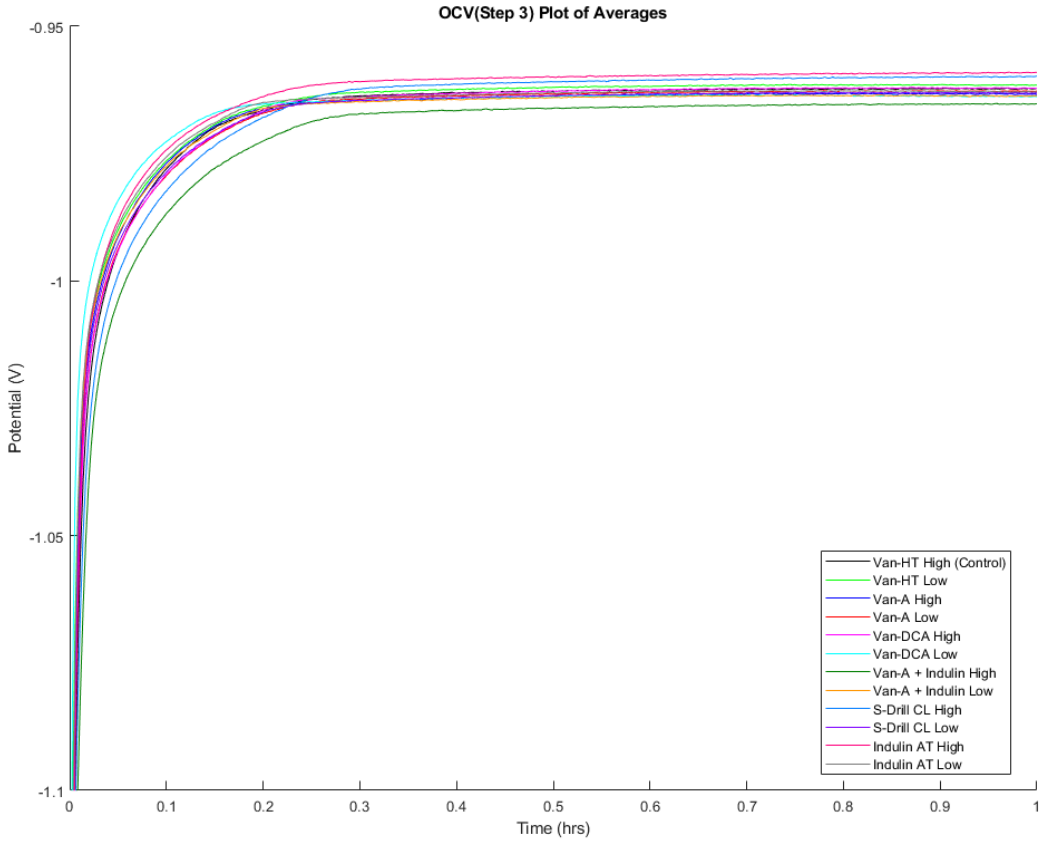

OCV (Step 3) : S-Drill CL High
Potential (V)
-0.95
-1
-1.05
-1.1
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Time (hrs)
EH06
EH22


OCV (Step 3) : S-Drill CL Low
Potential (V)
-0.95
-1
-1.05
-1.1
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Time (hrs)
EL01
EL15


OCV (Step 3) : Indulin AT High
-0.95
-1
-1.05
-1.1
Potential (V)
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Time (hrs)
FH03
FH06

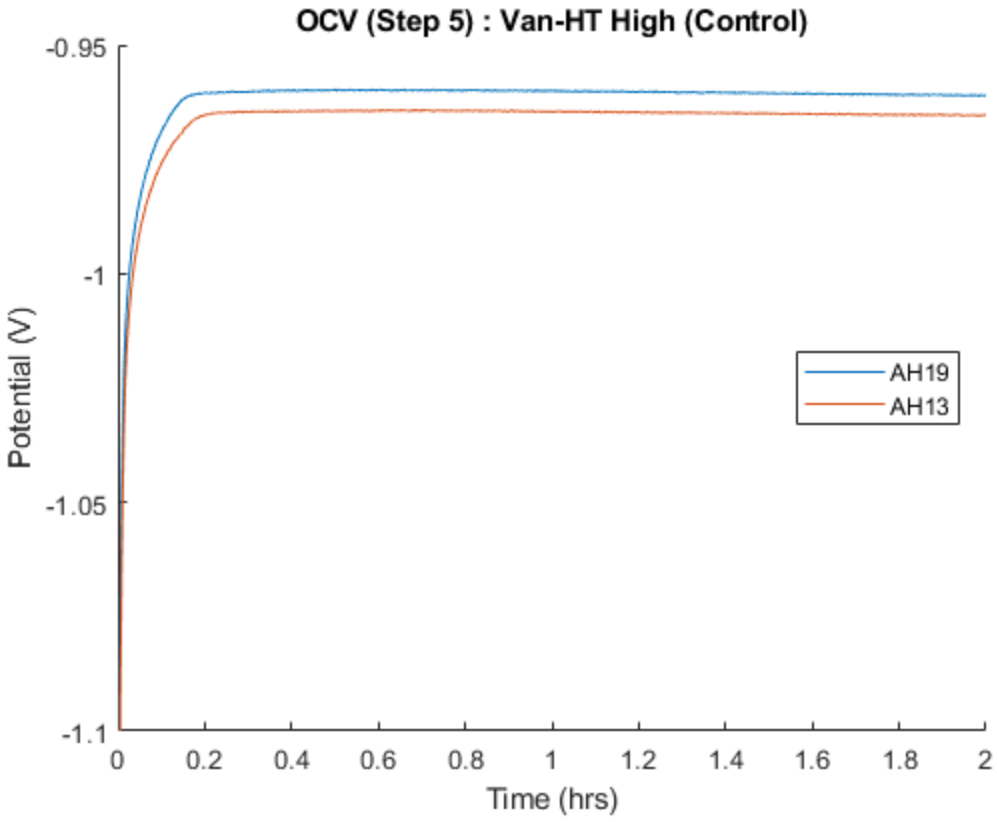

OCV (Step 3) : Indulin AT Low
-0.95
-1
-1.05
-1.1
Potential (V)
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Time (hrs)
FL20
FL12

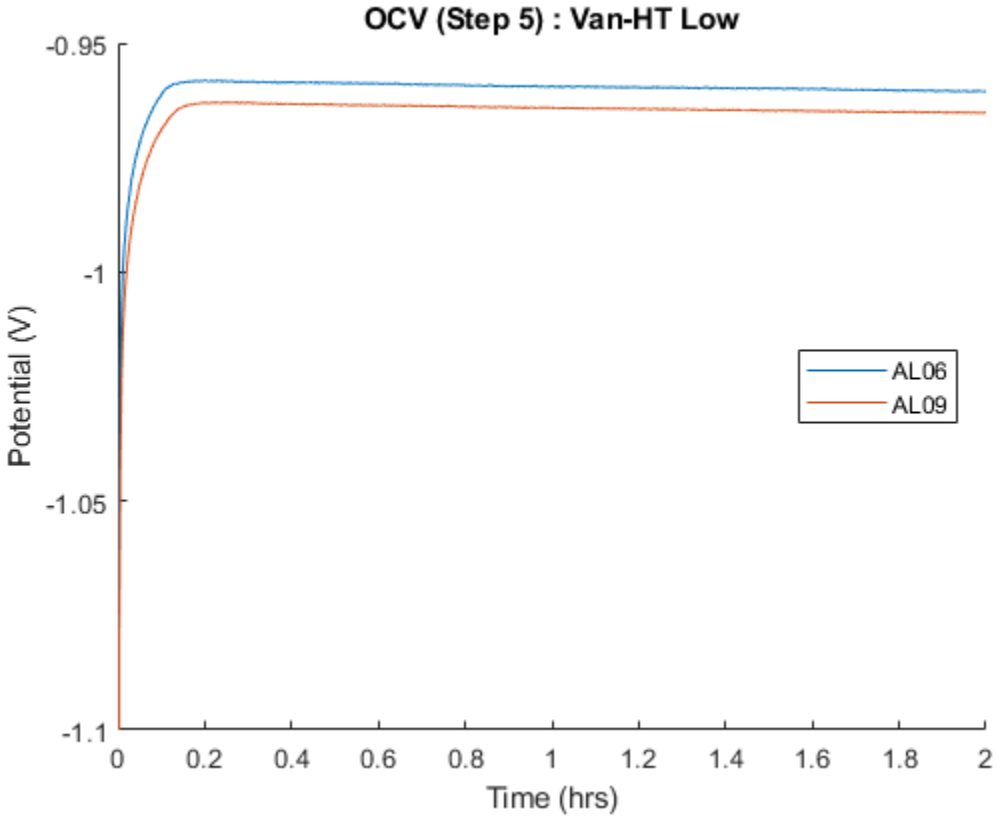
3. OCV Averages

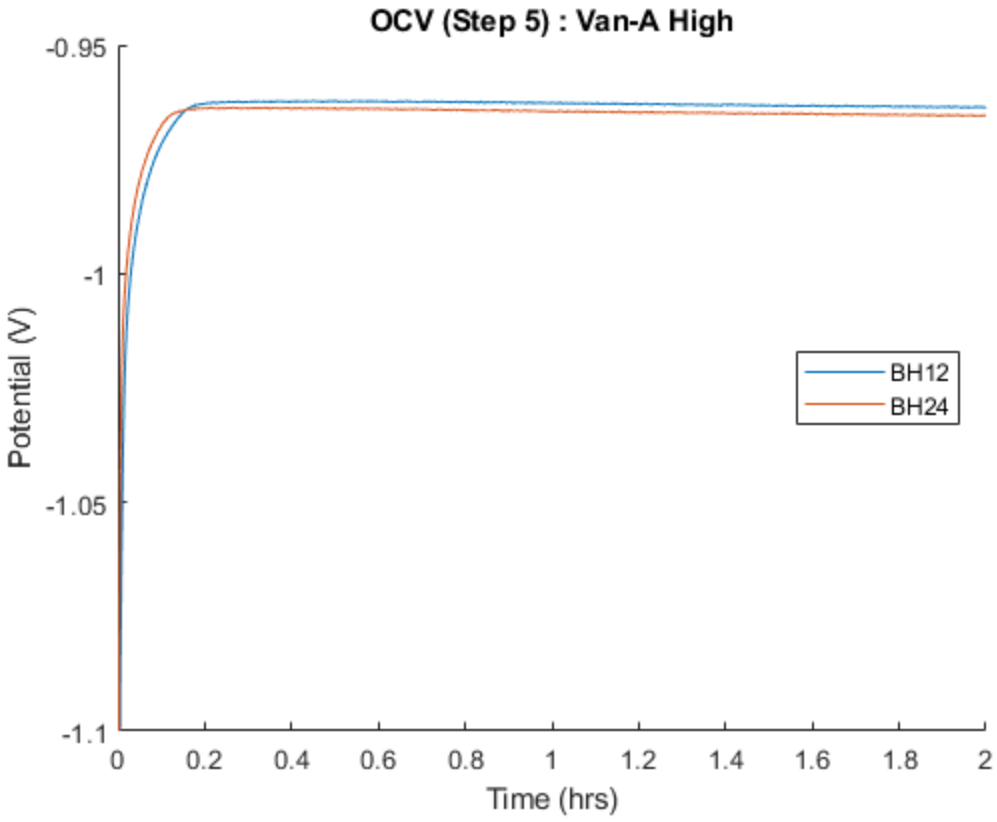


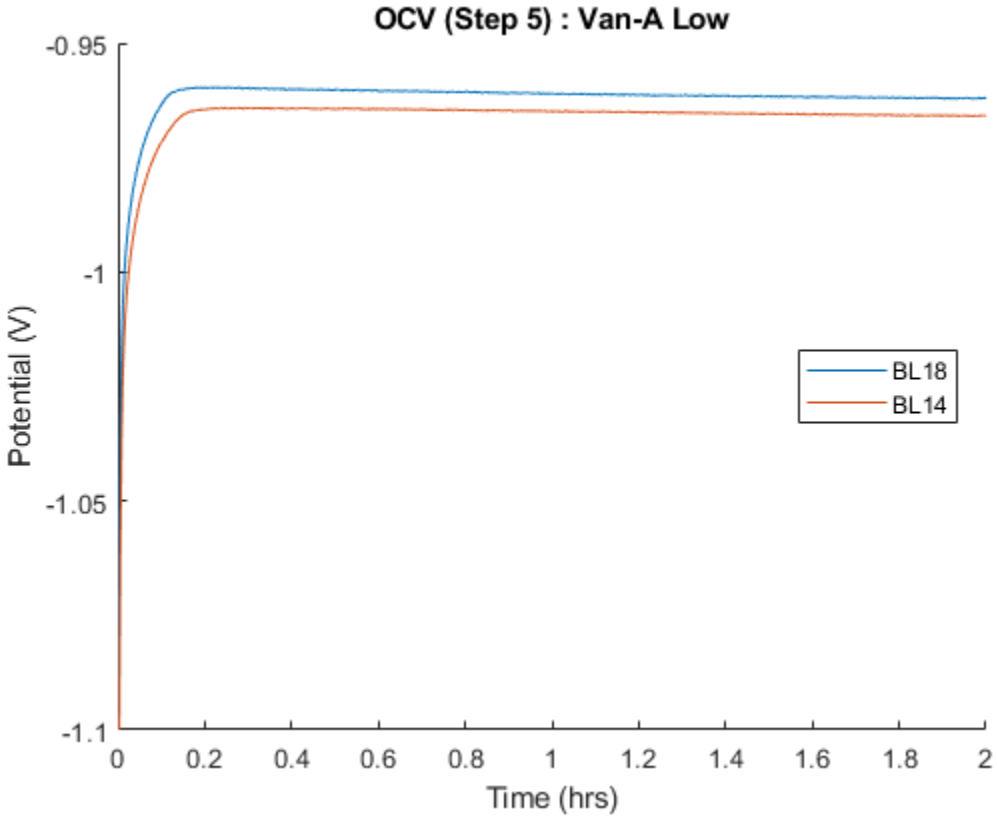
5. OCV

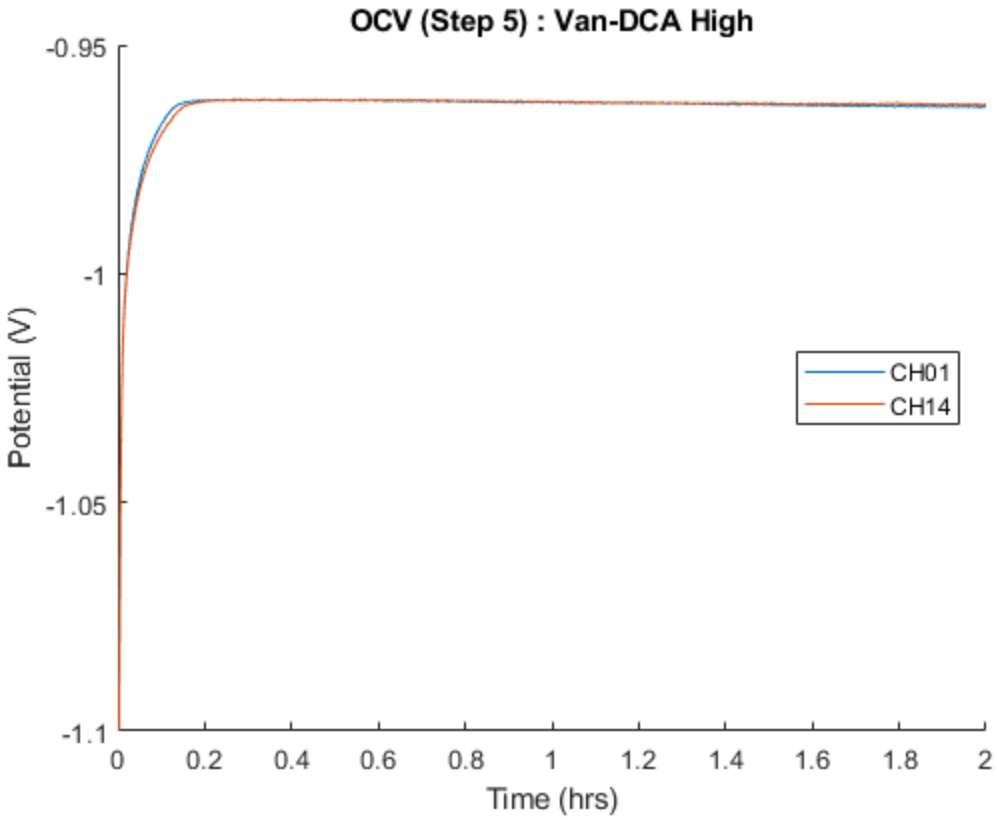
Define nProcess

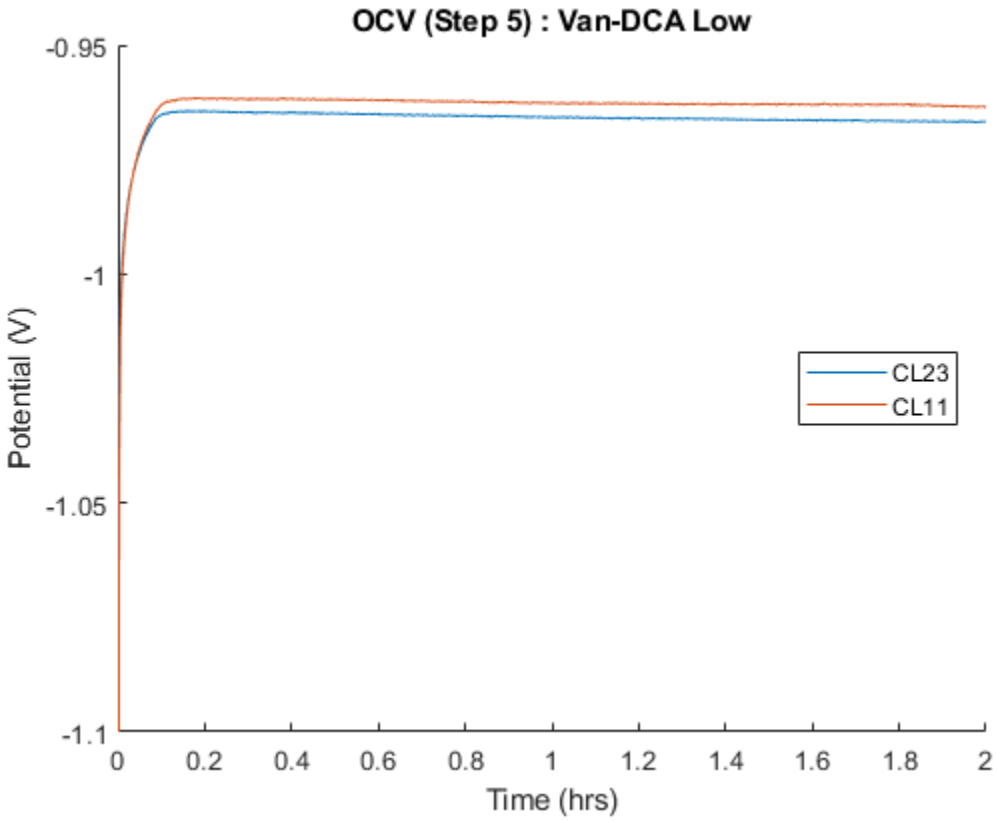

OCV (Step 5) : Van-HT High (Control)
-0.95
-1
-1.05
-1.1
Potential (V)
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Time (hrs)
AH19
AH13

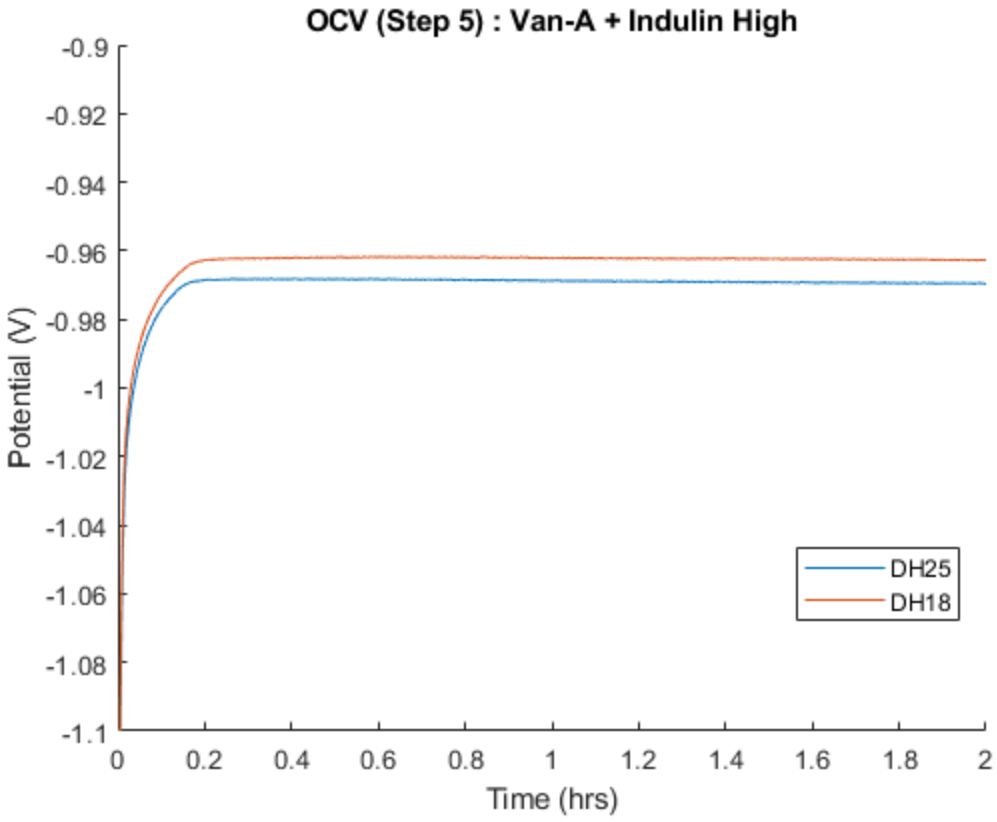

OCV (Step 5) : Van-HT Low
-0.95
-1
-1.05
-1.1
Potential (V)
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Time (hrs)
AL06
AL09

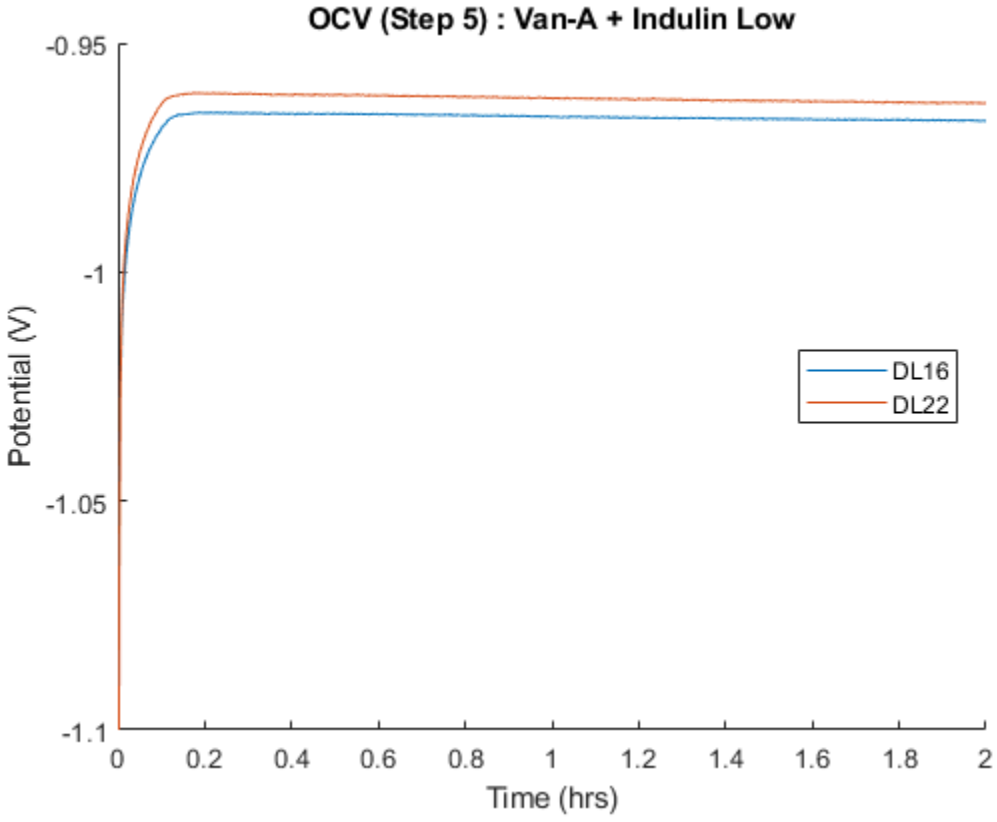

OCV (Step 5) : Van-A High
-0.95
-1
-1.05
-1.1
Potential (V)
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Time (hrs)
BH12
BH24

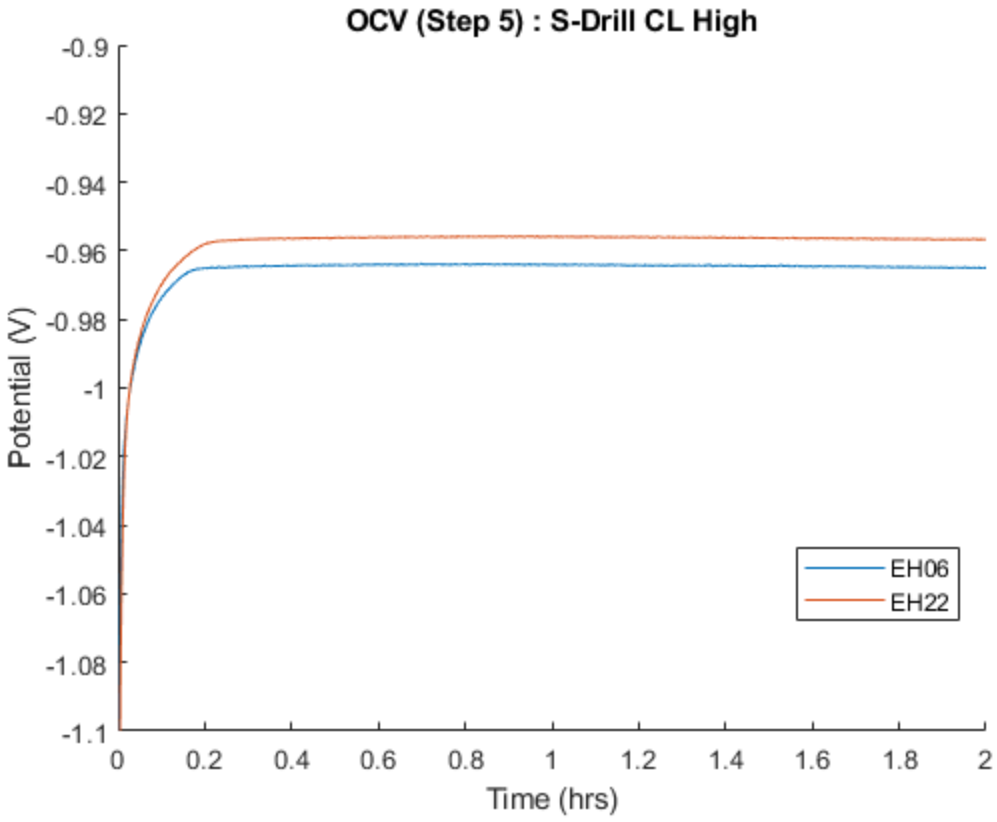

OCV (Step 5) : Van-A Low
-0.95
-1
-1.05
-1.1
Potential (V)
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Time (hrs)
BL18
BL14

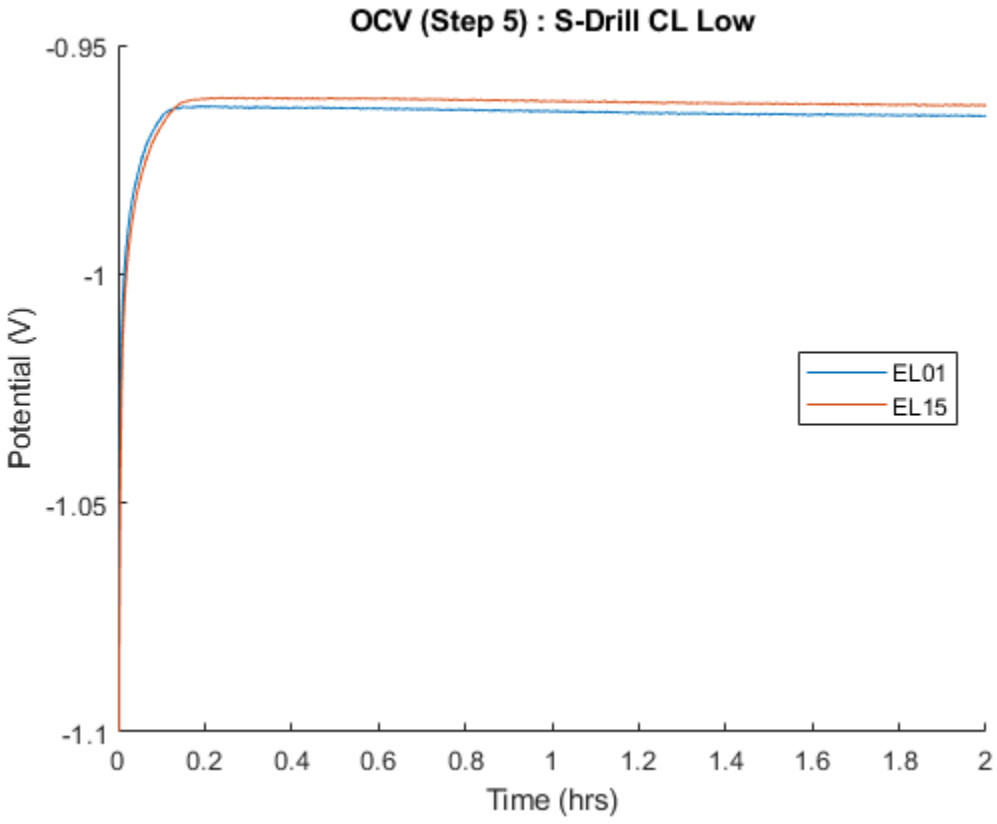

OCV (Step 5) : Van-DCA High
-0.95
-1
-1.05
-1.1
Potential (V)
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Time (hrs)
CH01
CH14

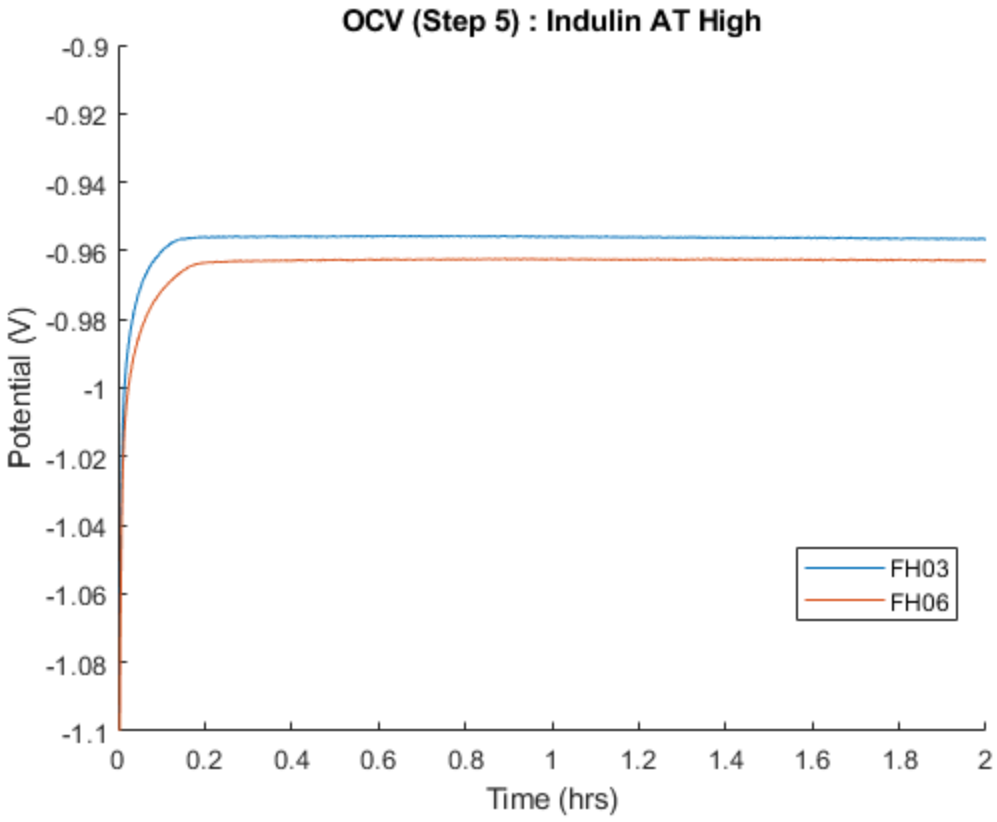

OCV (Step 5) : Van-DCA Low
-0.95
-1
-1.05
-1.1
Potential (V)
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Time (hrs)
CL23
CL11

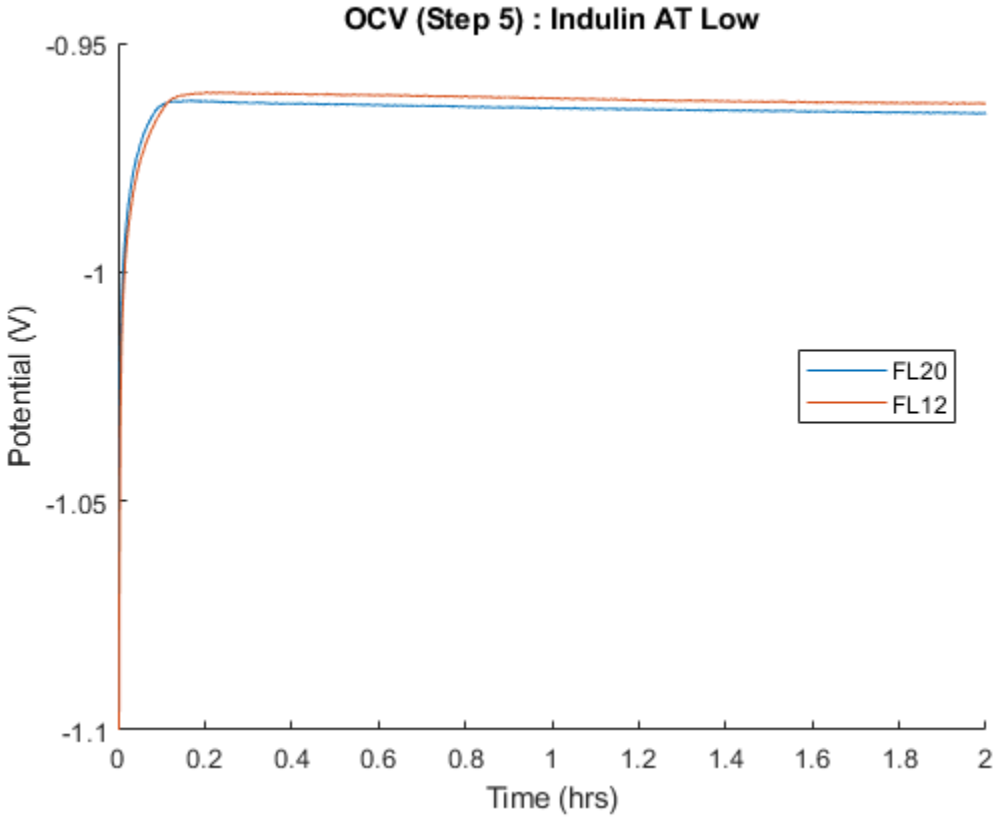

OCV (Step 5) : Van-A + Indulin High
Potential (V)
Time (hrs)
DH25
DH18


OCV (Step 5) : Van-A + Indulin Low
Potential (V)
Time (hrs)
DL16
DL22

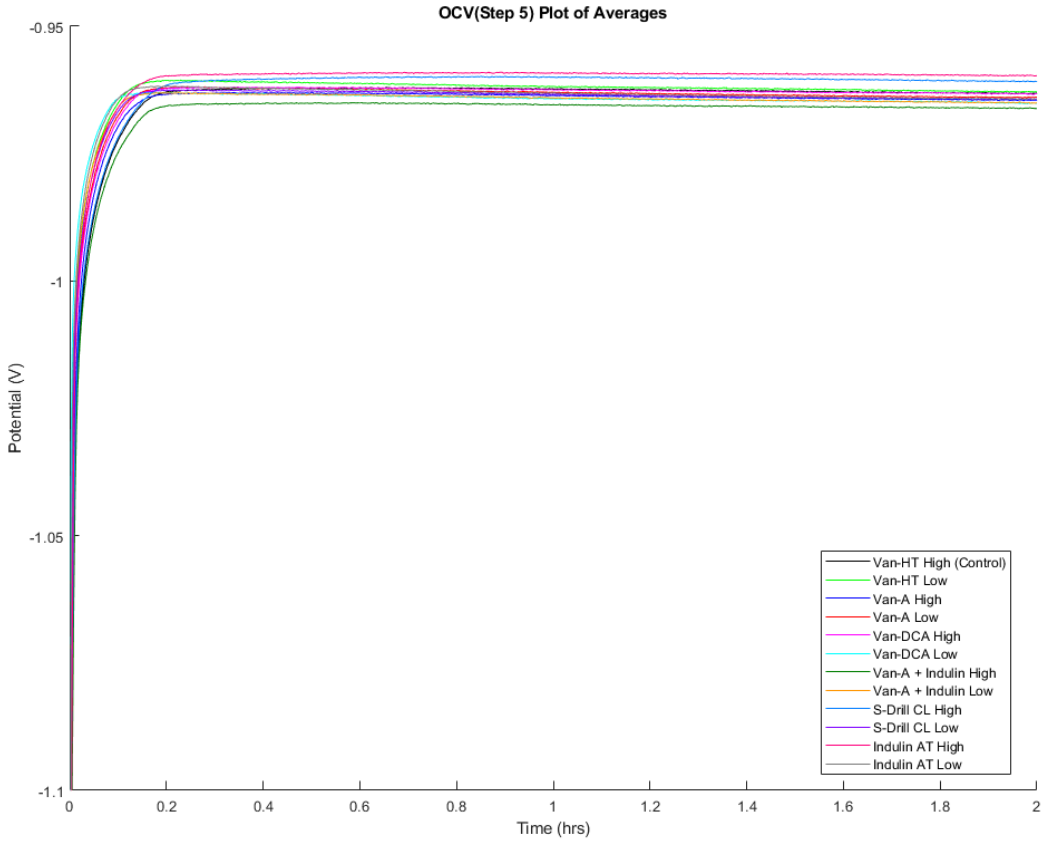

OCV (Step 5) : S-Drill CL High
Potential (V)
-0.9
-0.92
-0.94
-0.96
-0.98
-1
-1.02
-1.04
-1.06
-1.08
-1.1
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Time (hrs)
EH06
EH22


OCV (Step 5) : S-Drill CL Low
Potential (V)
-0.95
-1
-1.05
-1.1
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Time (hrs)
EL01
EL15


OCV (Step 5) : Indulin AT High
Potential (V)
-0.9
-0.92
-0.94
-0.96
-0.98
-1
-1.02
-1.04
-1.06
-1.08
-1.1
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Time (hrs)
FH03
FH06

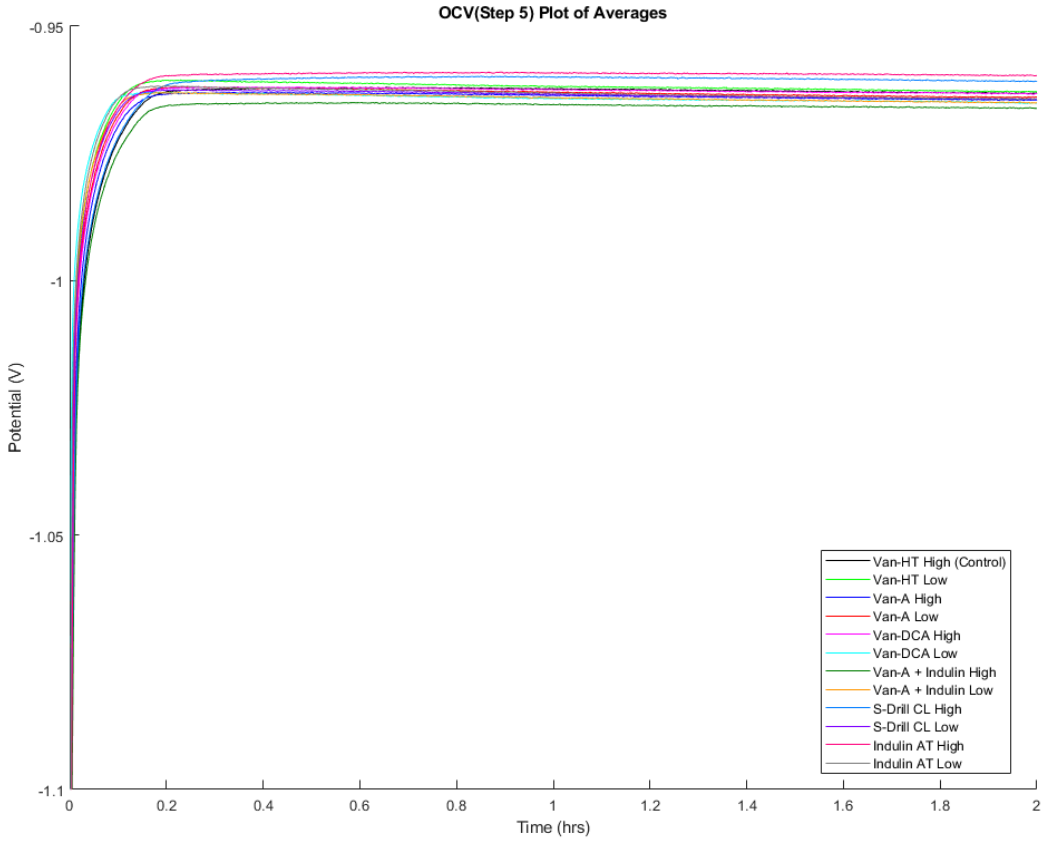

OCV (Step 5) : Indulin AT Low
Potential (V)
-0.95
-1
-1.05
-1.1
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Time (hrs)
FL20
FL12

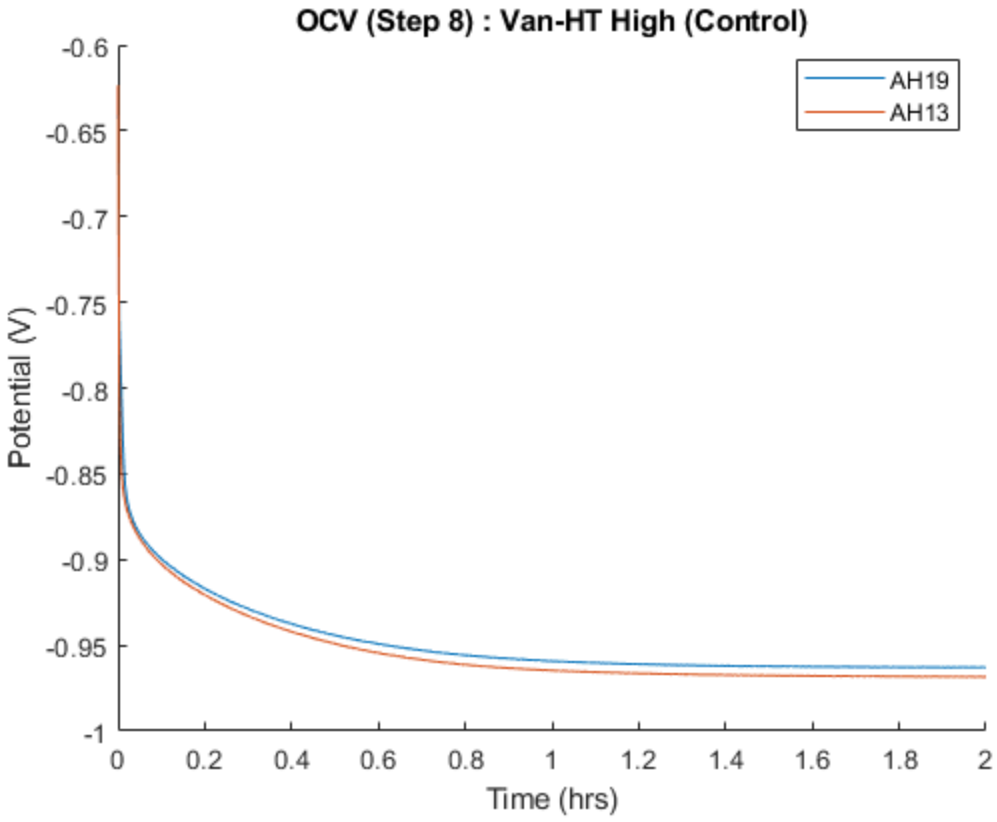
5. OCV Averages

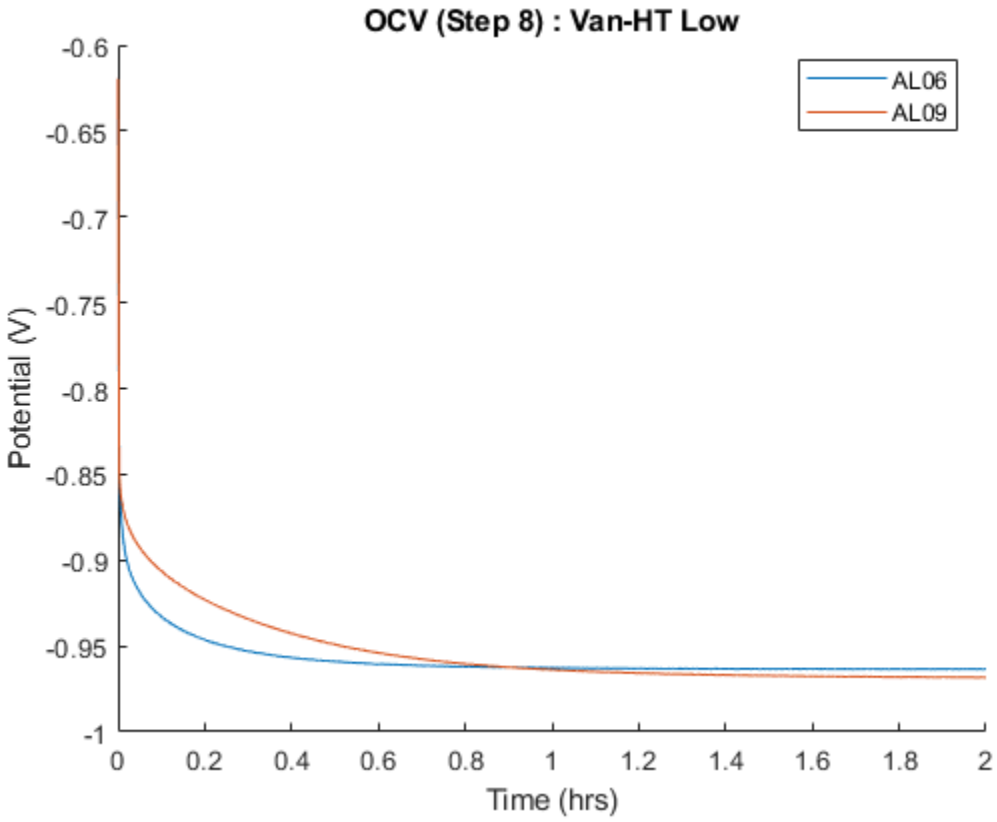


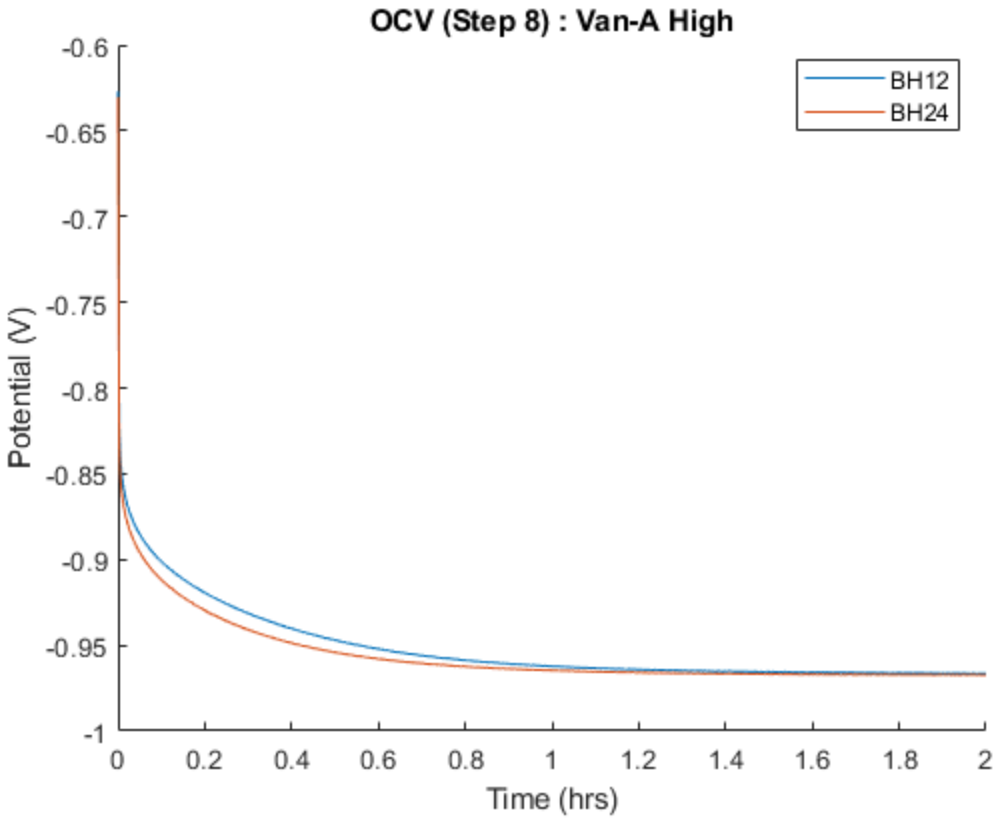
8. OCV

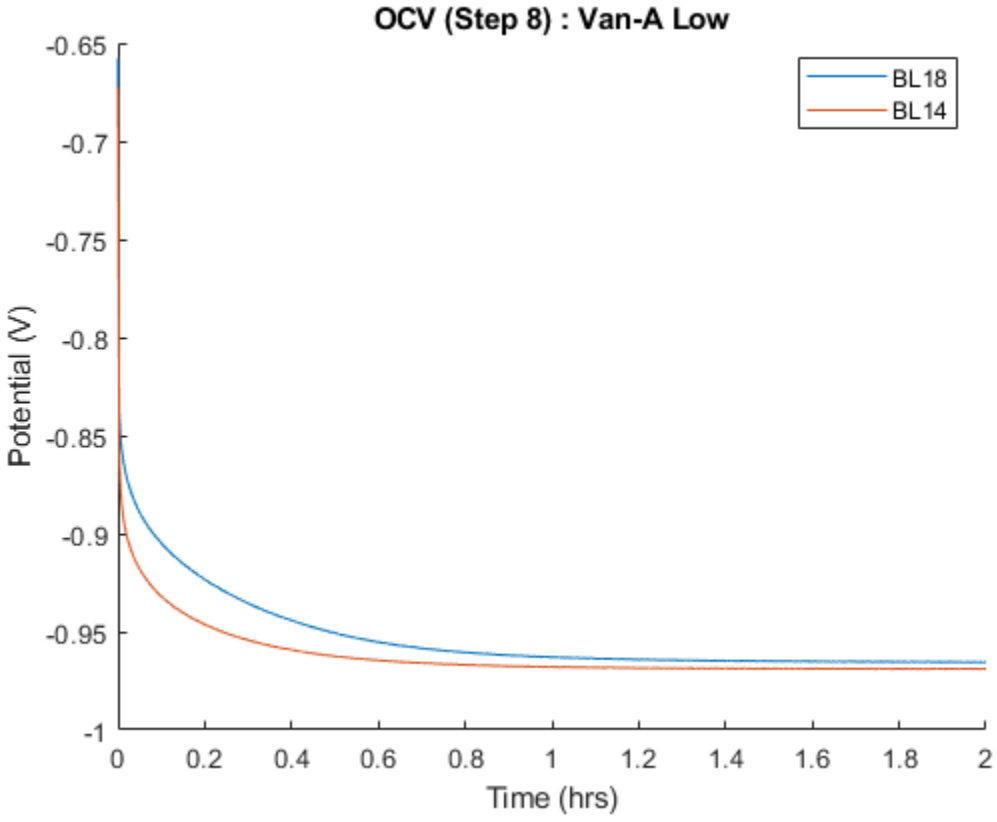
Define nprocess

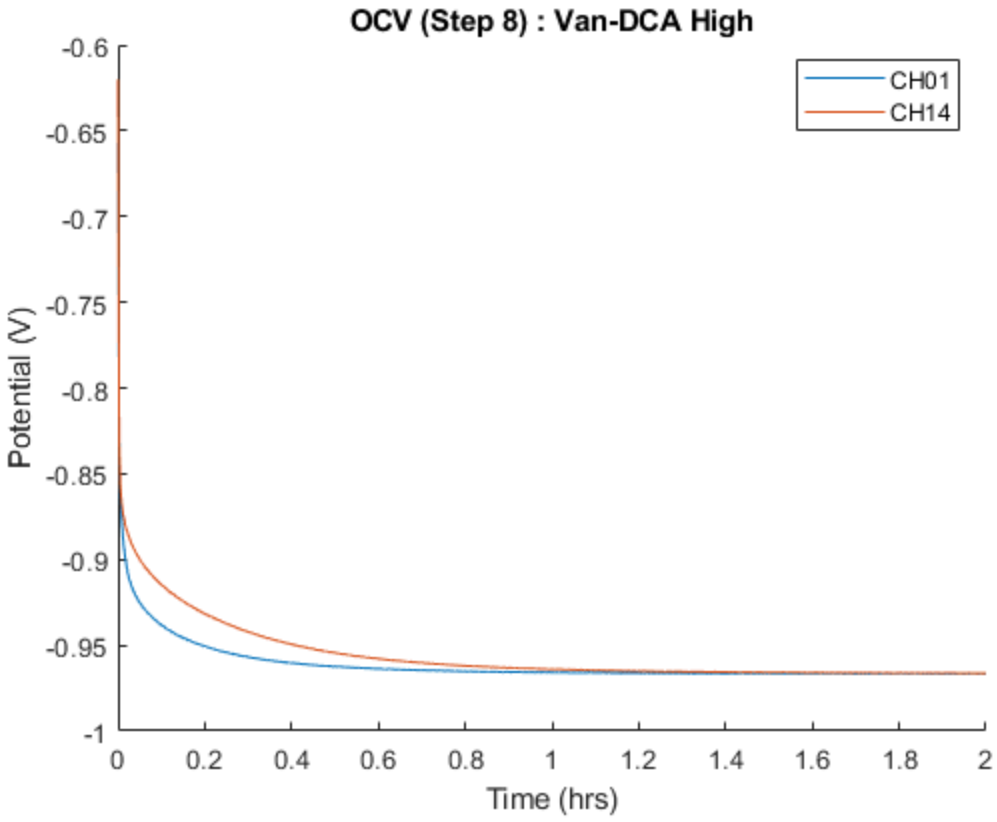

OCV(Step 5) Plot of Averages
-0.95
-1
-1.05
-1.1
Potential (V)
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Time (hrs)
Van-HT High (Control)
Van-HT Low
Van-A High
Van-A Low
Van-DCA High
Van-DCA Low
Van-A + Indulin High
Van-A + Indulin Low
S-Drill CL High
S-Drill CL Low
Indulin AT High
Indulin AT Low

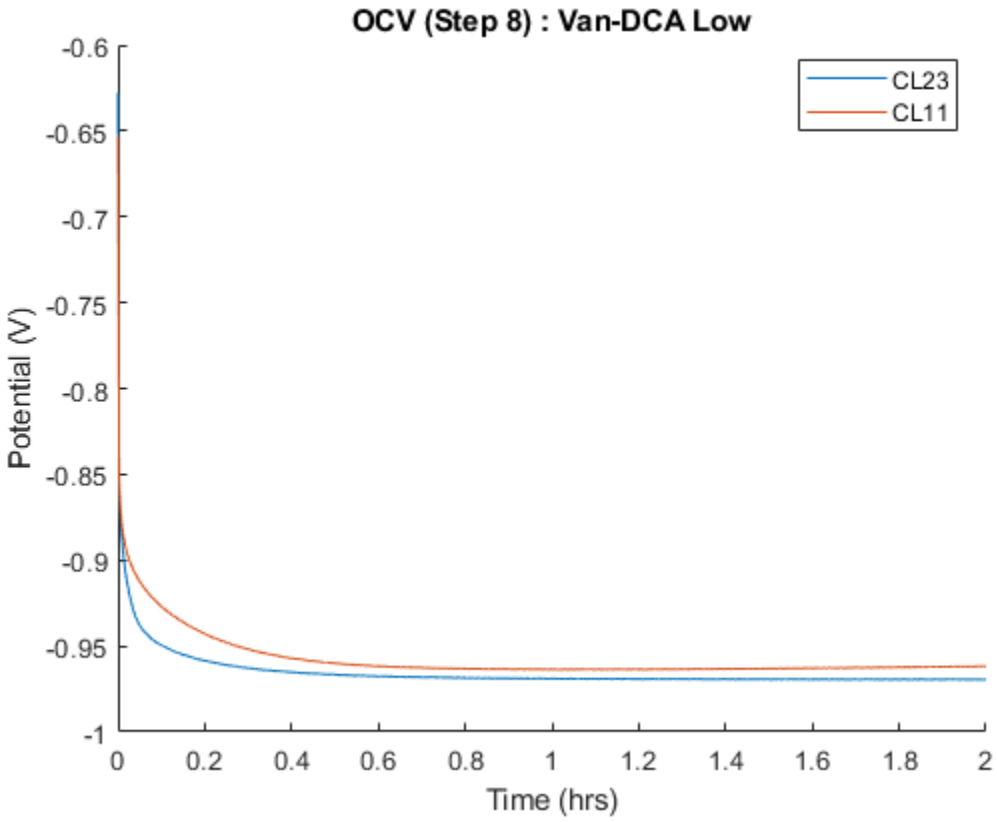

OCV (Step 8) : Van-HT High (Control)
AH19
AH13
Potential (V)
-0.6
-0.65
-0.7
-0.75
-0.8
-0.85
-0.9
-0.95
-1
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Time (hrs)

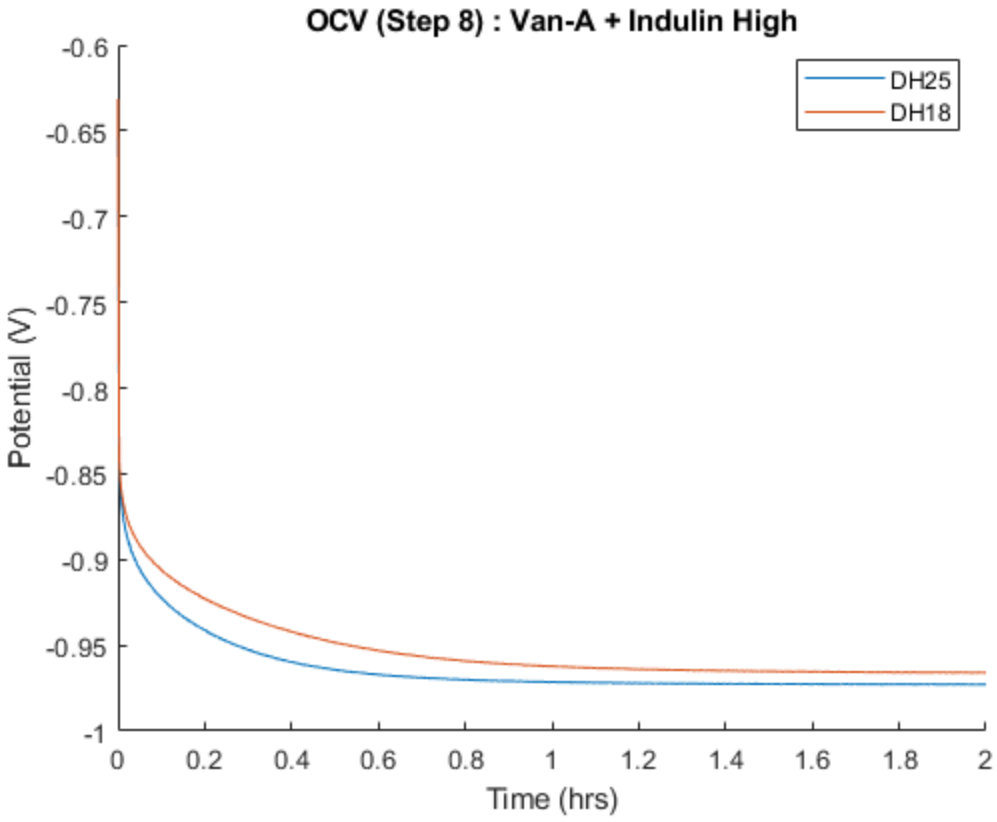

OCV (Step 8) : Van-HT Low
AL06
AL09
Potential (V)
-0.6
-0.65
-0.7
-0.75
-0.8
-0.85
-0.9
-0.95
-1
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Time (hrs)

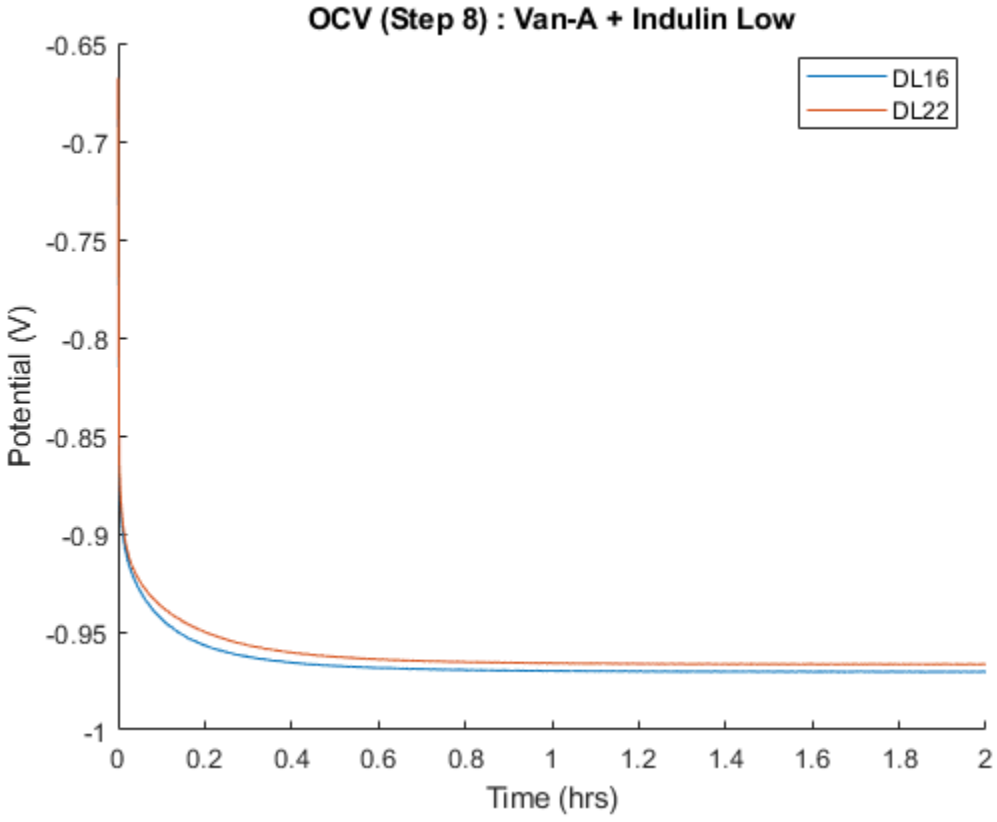

OCV (Step 8) : Van-A High
BH12
BH24
Potential (V)
-0.6
-0.65
-0.7
-0.75
-0.8
-0.85
-0.9
-0.95
-1
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Time (hrs)

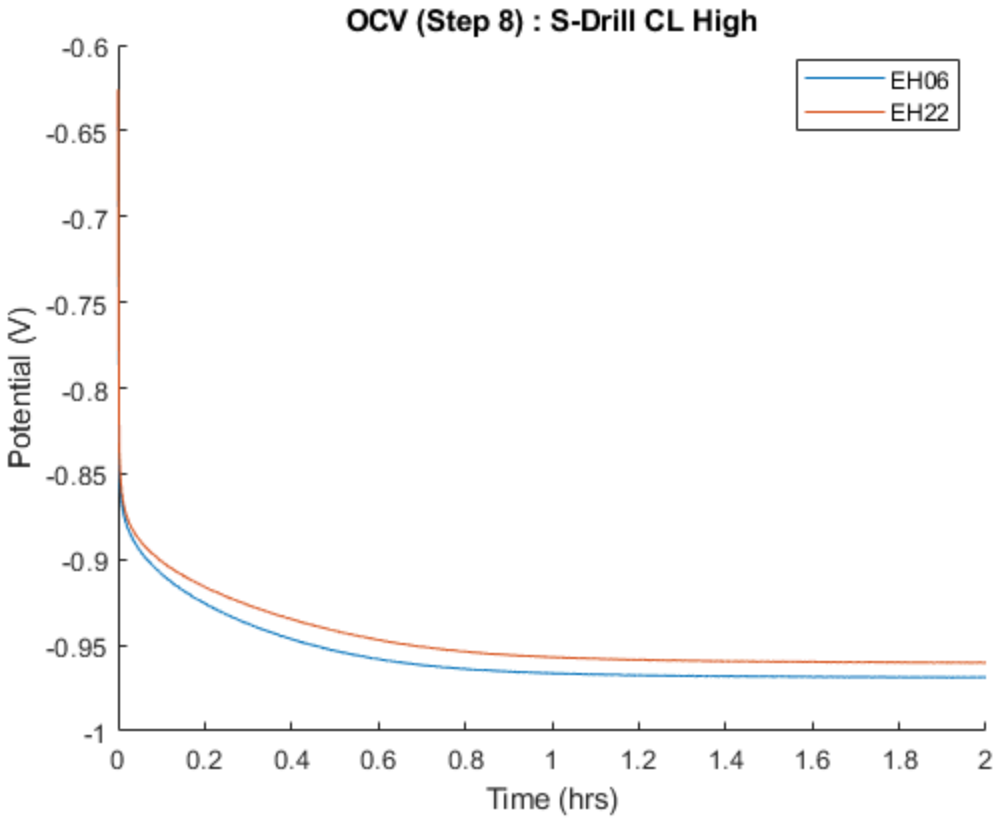

OCV (Step 8) : Van-A Low
BL18
BL14
Potential (V)
-0.65
-0.7
-0.75
-0.8
-0.85
-0.9
-0.95
-1
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Time (hrs)

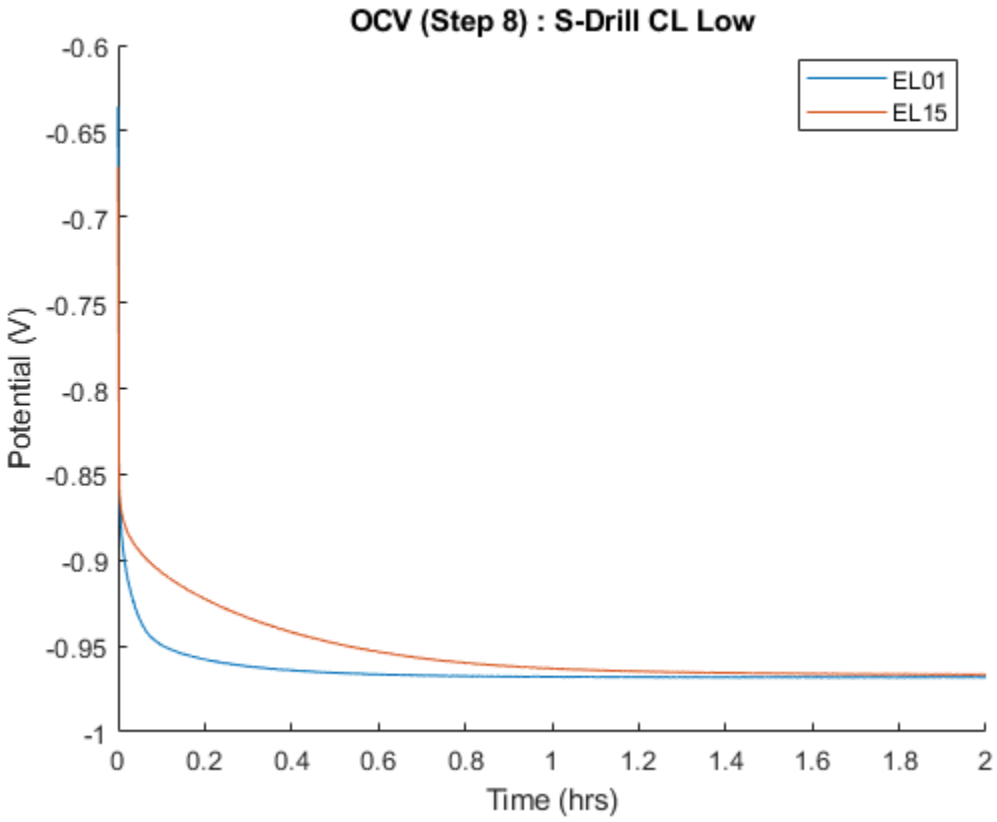

OCV (Step 8) : Van-DCA High
CH01
CH14
Potential (V)
-0.6
-0.65
-0.7
-0.75
-0.8
-0.85
-0.9
-0.95
-1
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Time (hrs)

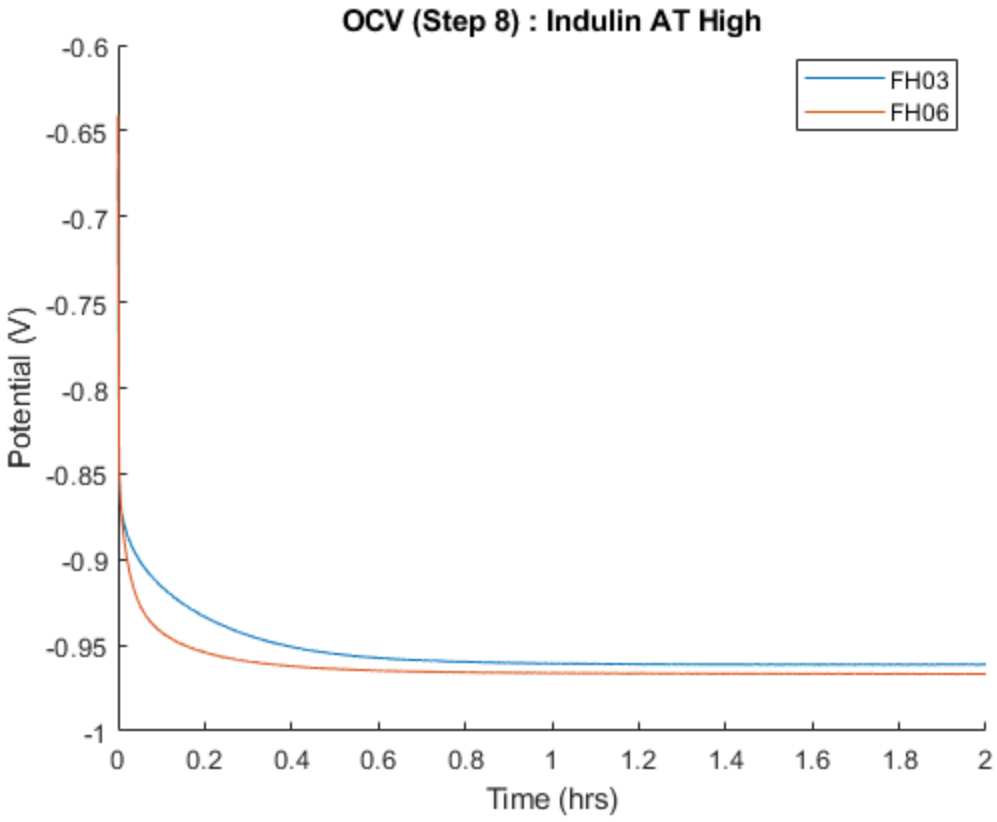

OCV (Step 8) : Van-DCA Low
CL23
CL11
Potential (V)
-0.6
-0.65
-0.7
-0.75
-0.8
-0.85
-0.9
-0.95
-1
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Time (hrs)

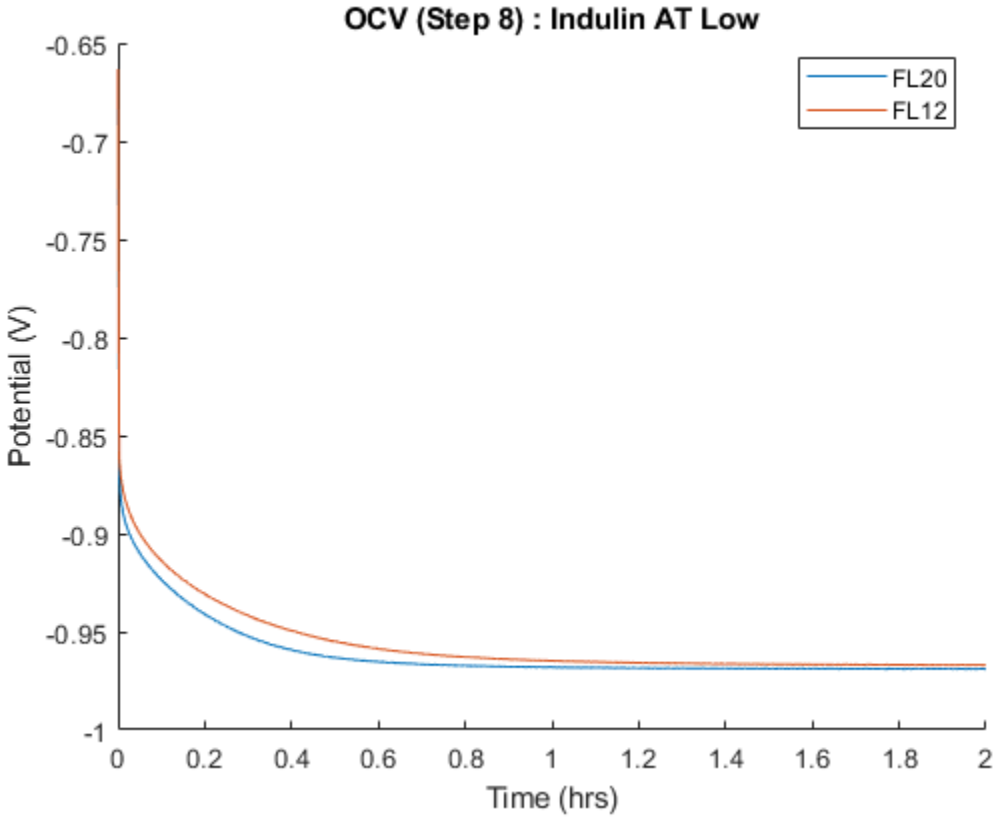

OCV (Step 8) : Van-A + Indulin High
DH25
DH18
Potential (V)
Time (hrs)
-0.6
-0.65
-0.7
-0.75
-0.8
-0.85
-0.9
-0.95
-1
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2


OCV (Step 8) : Van-A + Indulin Low
DL16
DL22
Potential (V)
Time (hrs)
-0.65
-0.7
-0.75
-0.8
-0.85
-0.9
-0.95
-1
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2

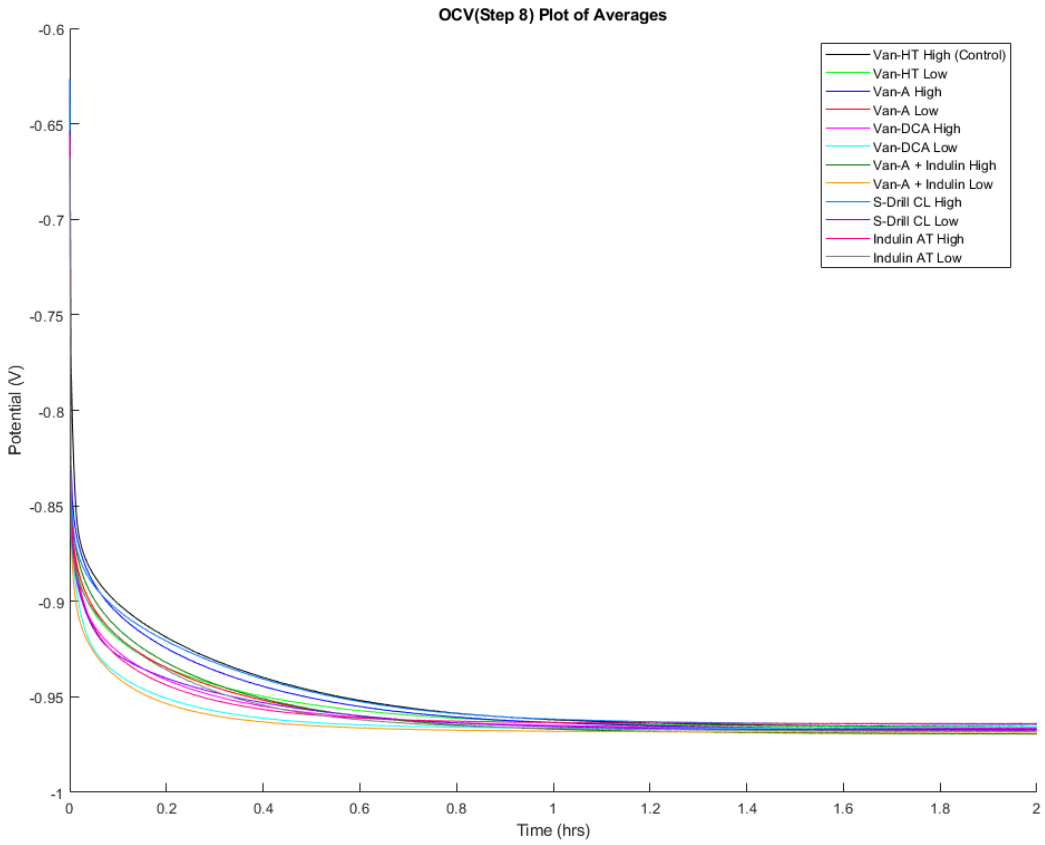

OCV (Step 8) : S-Drill CL High
EH06
EH22
Potential (V)
-0.6
-0.65
-0.7
-0.75
-0.8
-0.85
-0.9
-0.95
-1
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Time (hrs)


OCV (Step 8) : S-Drill CL Low
EL01
EL15
Potential (V)
-0.6
-0.65
-0.7
-0.75
-0.8
-0.85
-0.9
-0.95
-1
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Time (hrs)


OCV (Step 8) : Indulin AT High
FH03
FH06
Potential (V)
-0.6
-0.65
-0.7
-0.75
-0.8
-0.85
-0.9
-0.95
-1
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Time (hrs)


OCV (Step 8) : Indulin AT Low
FL20
FL12
Potential (V)
-0.65
-0.7
-0.75
-0.8
-0.85
-0.9
-0.95
-1
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Time (hrs)

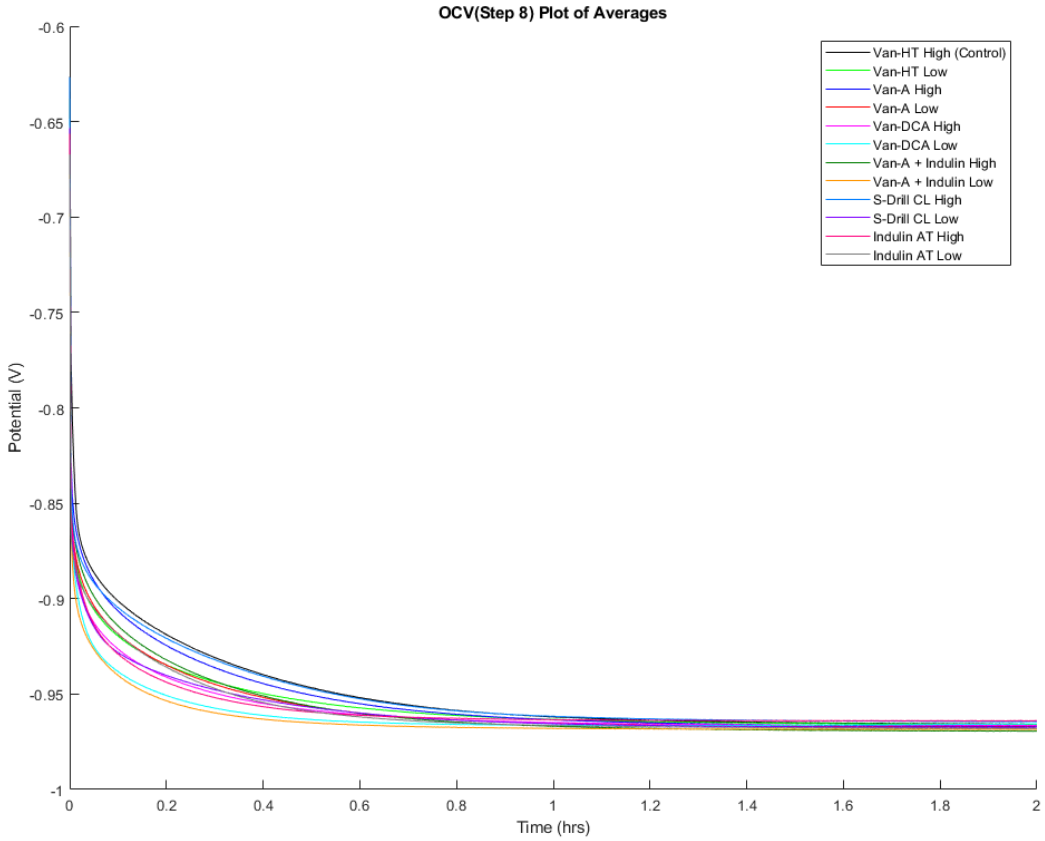
8. OCV Averages

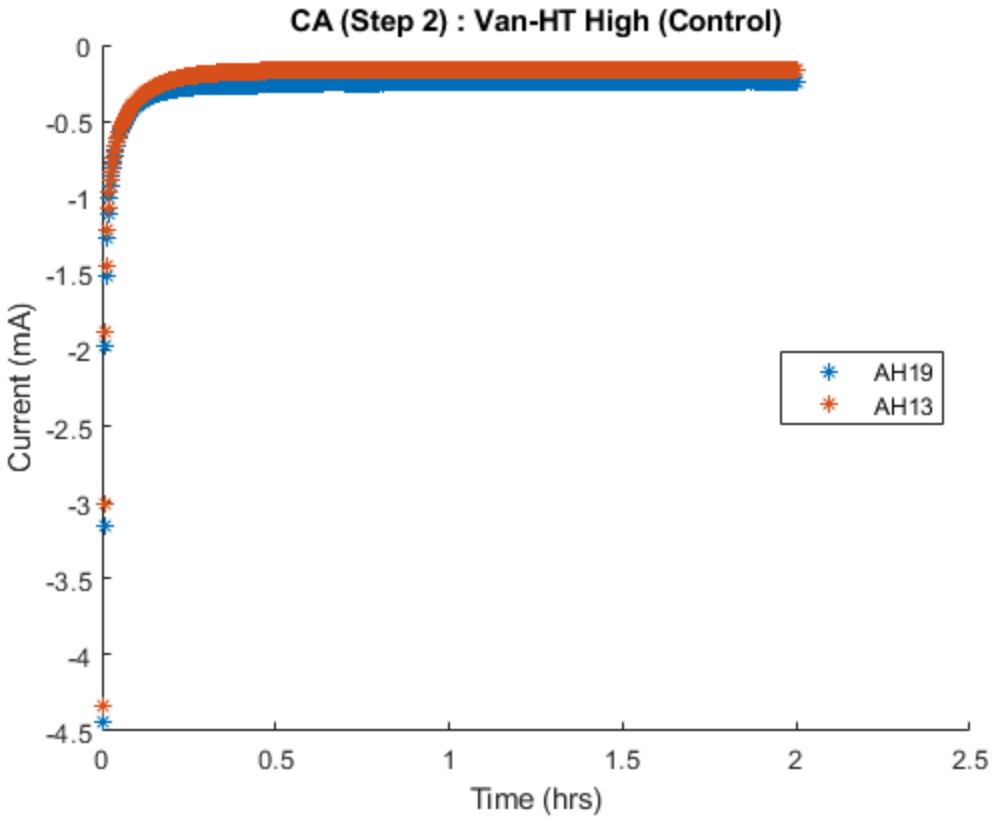


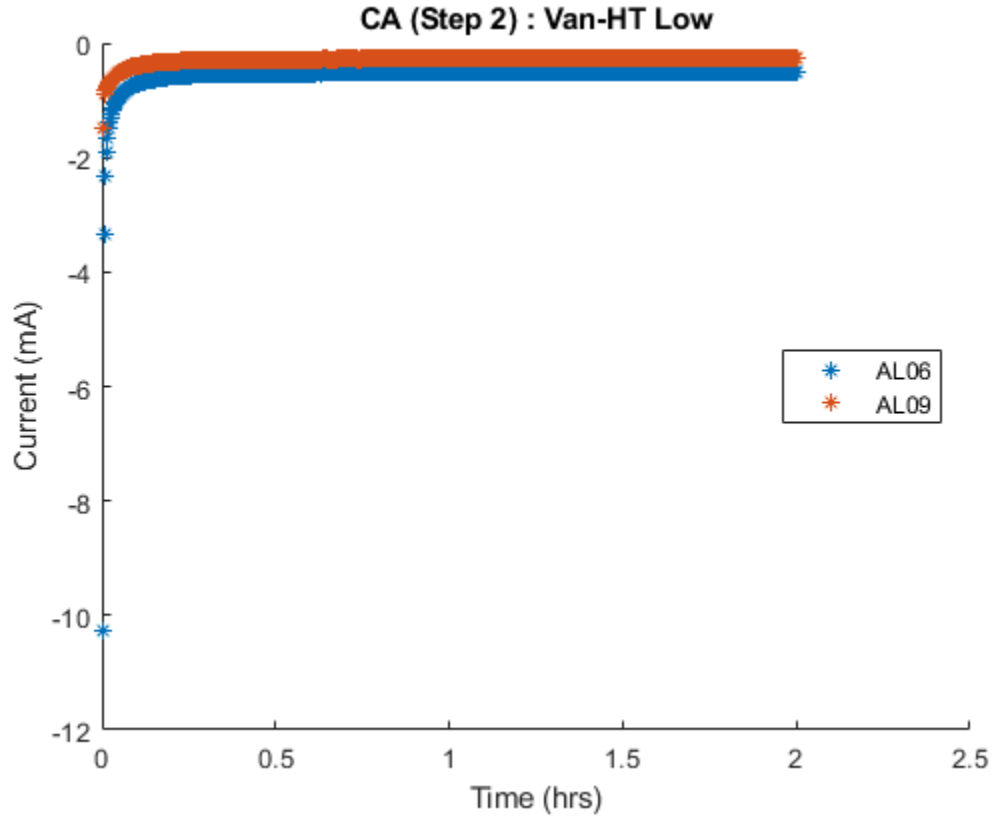
RUN CA PROCEDURE

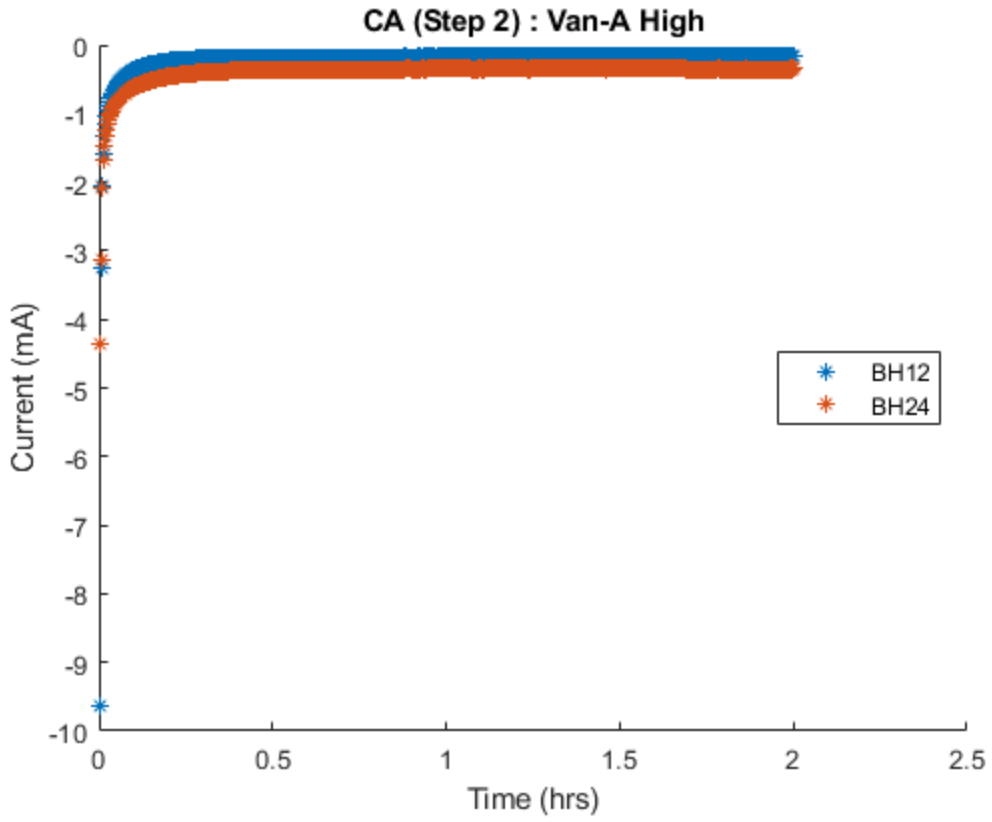
2. CA

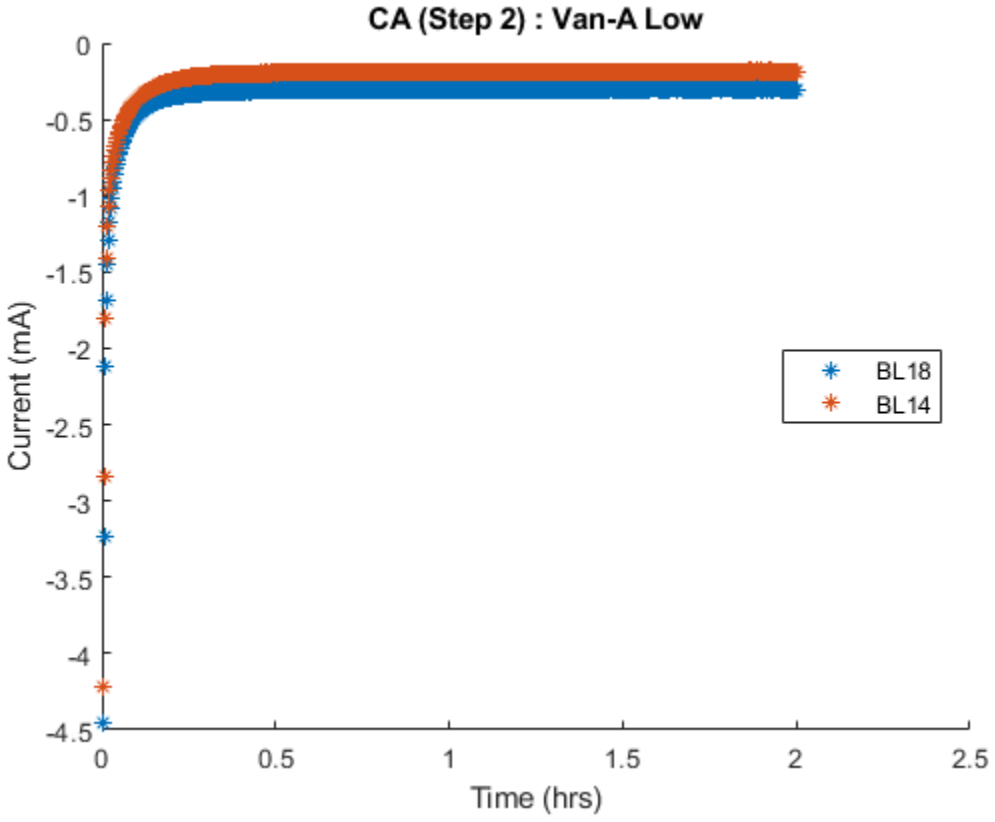
Define x and y variables

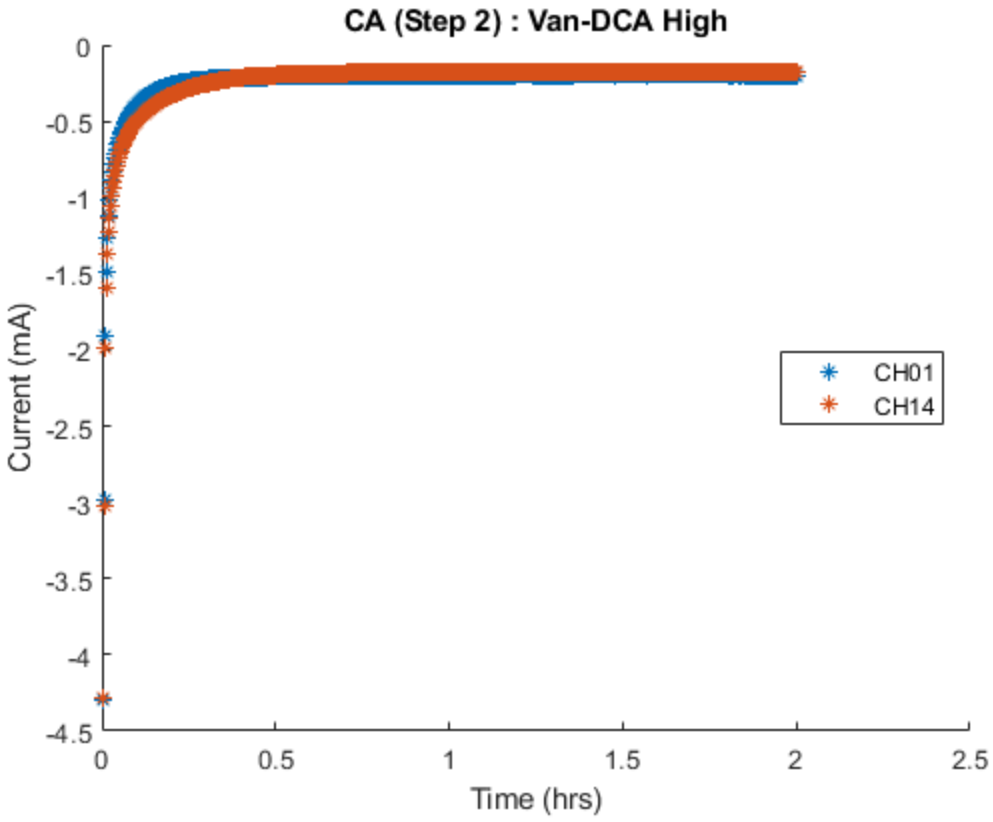

OCV(Step 8) Plot of Averages
Van-HT High (Control)
Van-HT Low
Van-A High
Van-A Low
Van-DCA High
Van-DCA Low
Van-A + Indulin High
Van-A + Indulin Low
S-Drill CL High
S-Drill CL Low
Indulin AT High
Indulin AT Low
Potential (V)
-0.6
-0.65
-0.7
-0.75
-0.8
-0.85
-0.9
-0.95
-1
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Time (hrs)

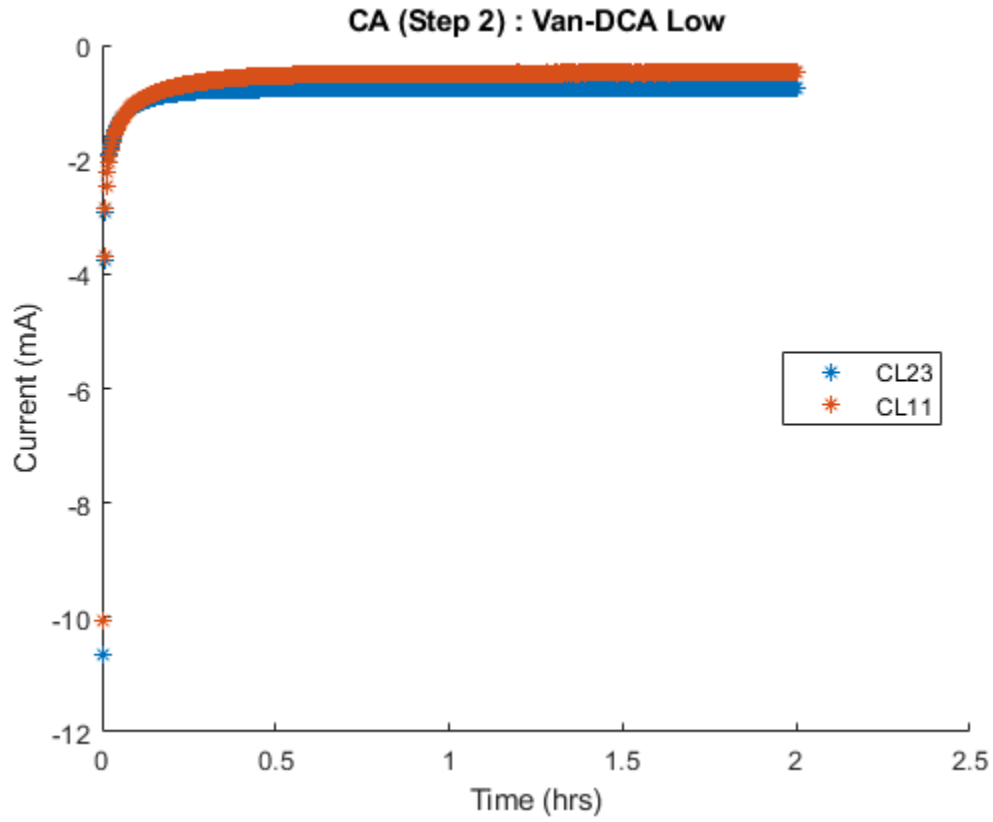

CA (Step 2) : Van-HT High (Control)
Current (mA)
Time (hrs)
AH19
AH13

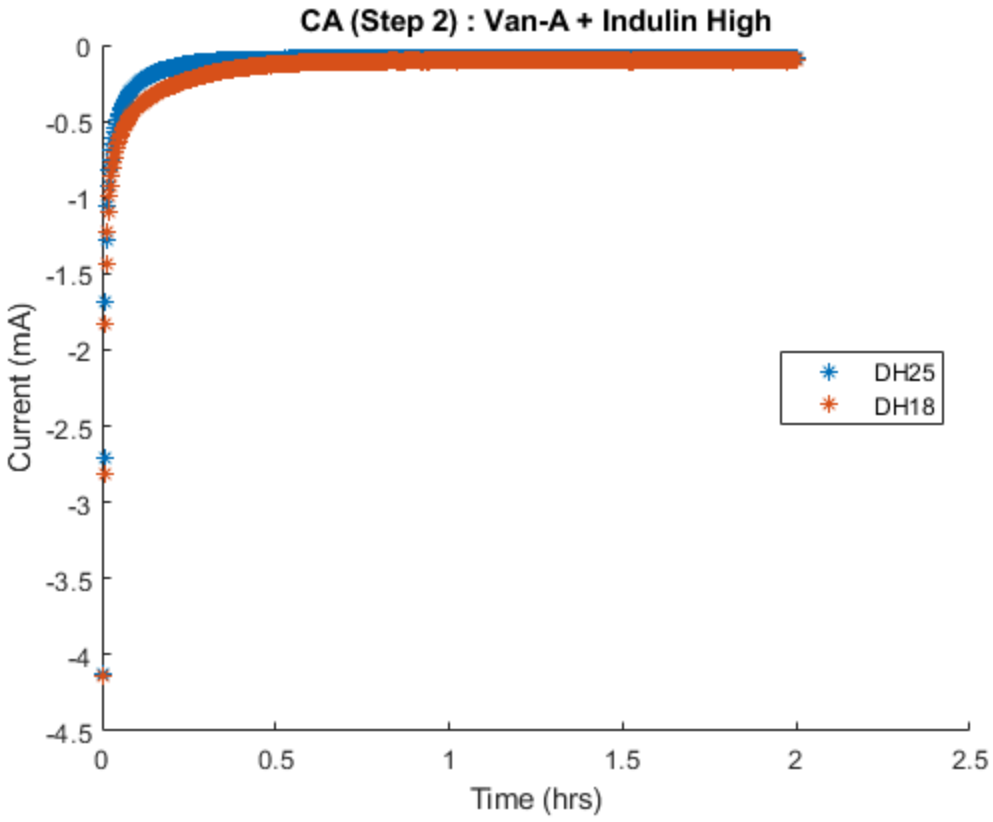

CA (Step 2) : Van-HT Low
Current (mA)
Time (hrs)
AL06
AL09

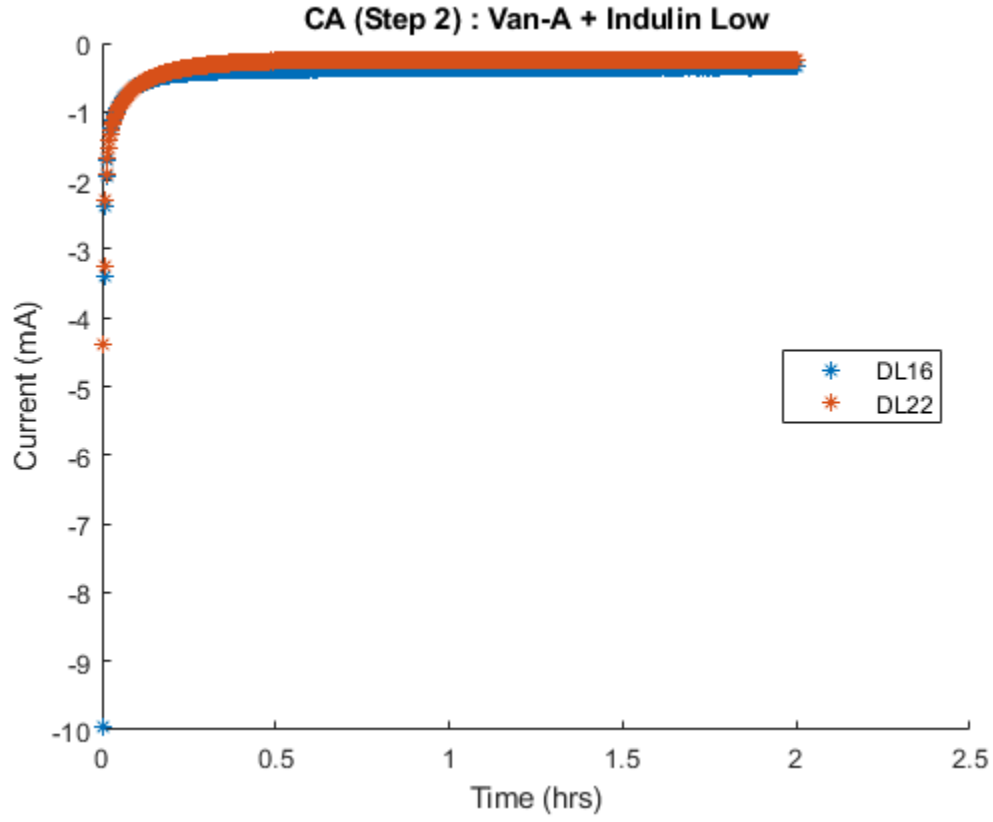

CA (Step 2) : Van-A High
Current (mA)
Time (hrs)
BH12
BH24
0
-1
-2
-3
-4
-5
-6
-7
-8
-9
-10
0
0.5
1
1.5
2
2.5

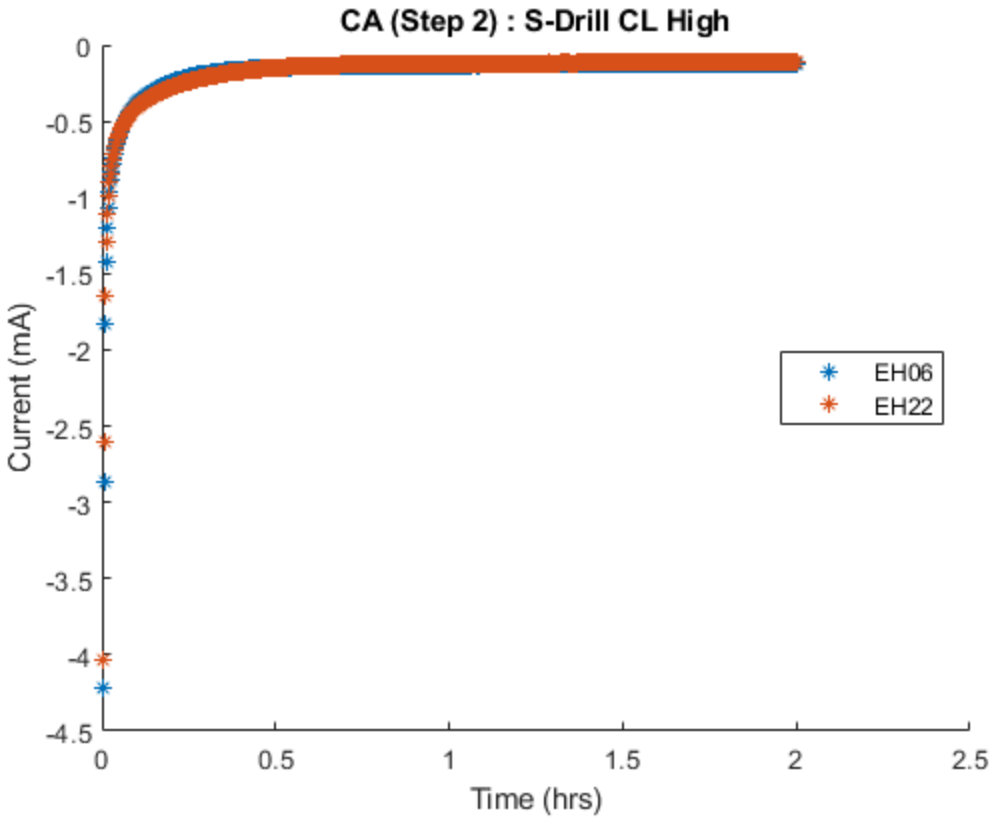

CA (Step 2) : Van-A Low
Current (mA)
Time (hrs)
BL18
BL14
0
-0.5
-1
-1.5
-2
-2.5
-3
-3.5
-4
-4.5
0
0.5
1
1.5
2
2.5

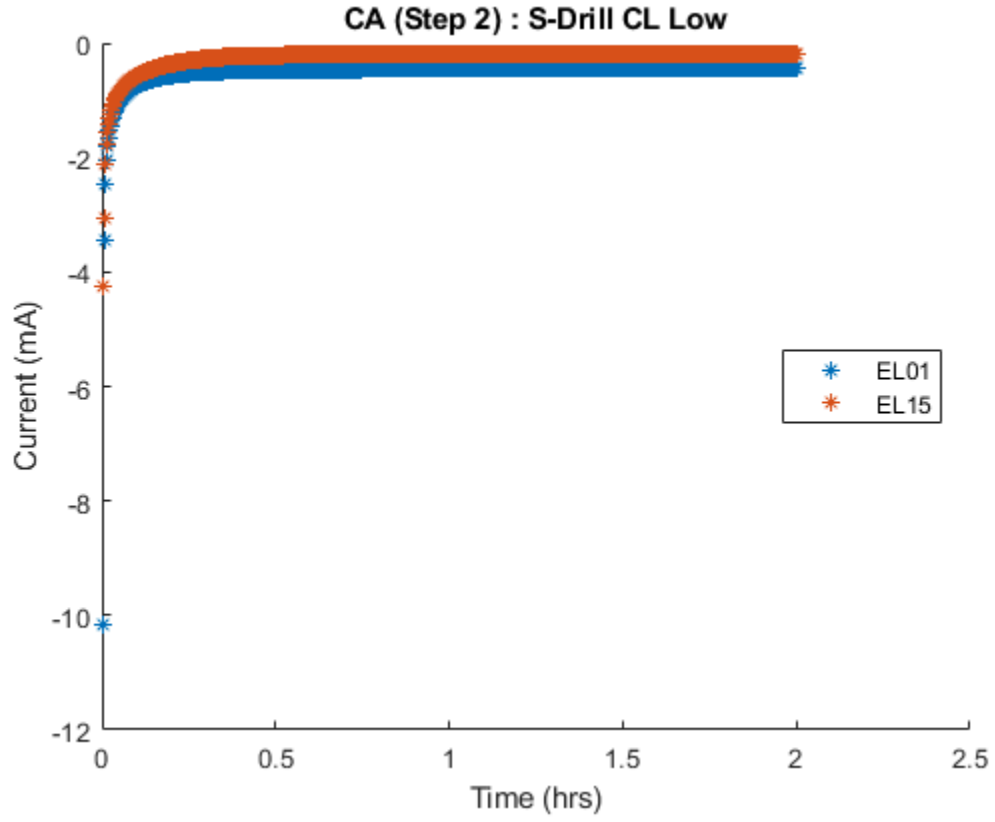

CA (Step 2) : Van-DCA High
Current (mA)
Time (hrs)
CH01
CH14
0
-0.5
-1
-1.5
-2
-2.5
-3
-3.5
-4
-4.5
0
0.5
1
1.5
2
2.5

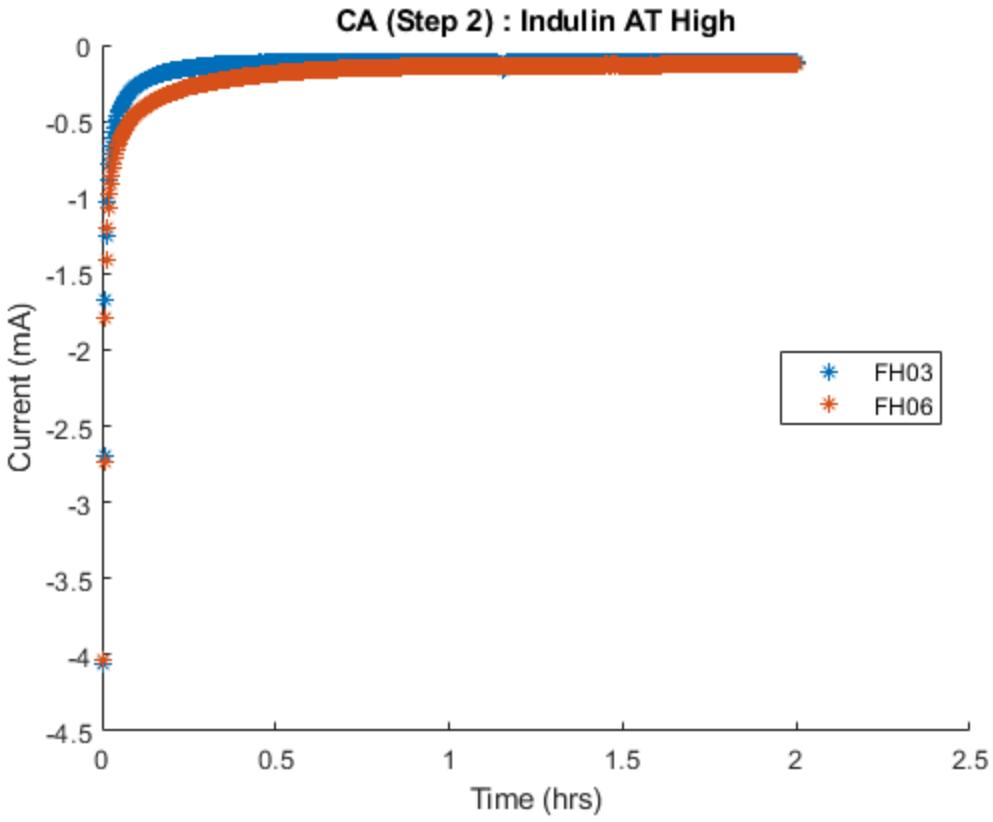

CA (Step 2) : Van-DCA Low
Current (mA)
Time (hrs)
CL23
CL11
0
-2
-4
-6
-8
-10
-12
0
0.5
1
1.5
2
2.5

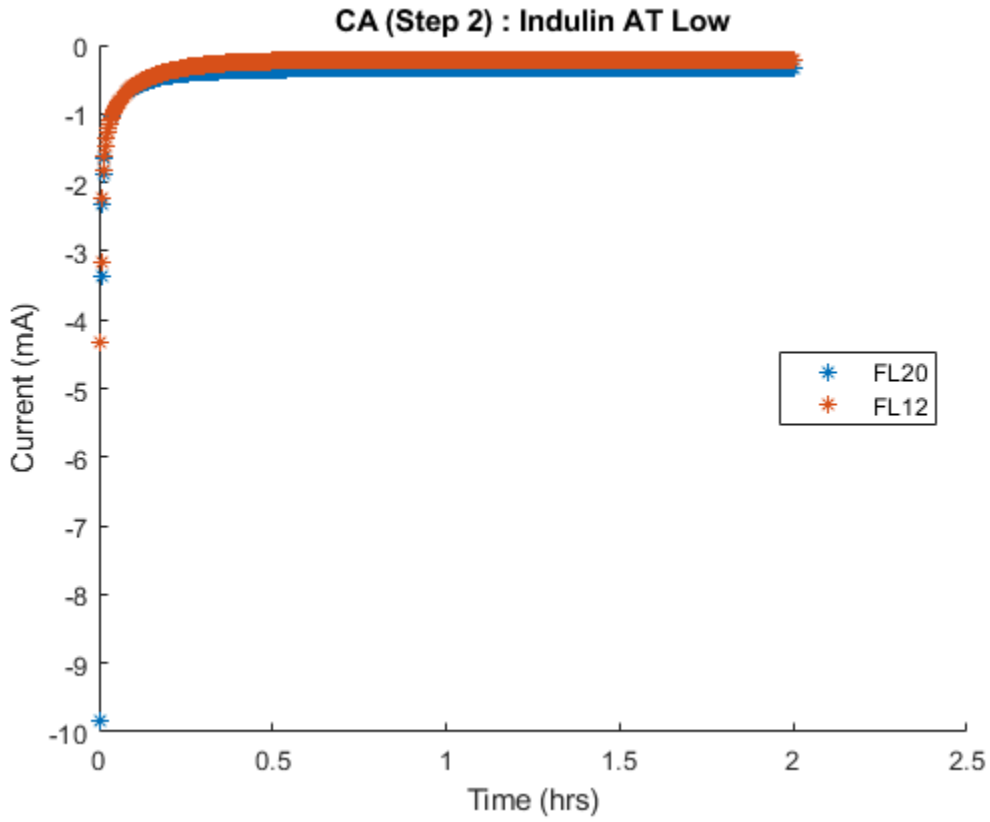

CA (Step 2) : Van-A + Indulin High
Current (mA)
Time (hrs)
DH25
DH18


CA (Step 2) : Van-A + Indulin Low
Current (mA)
Time (hrs)
DL16
DL22


CA (Step 2) : S-Drill CL High
Current (mA)
Time (hrs)
EH06
EH22
0
-0.5
-1
-1.5
-2
-2.5
-3
-3.5
-4
-4.5
0
0.5
1
1.5
2
2.5

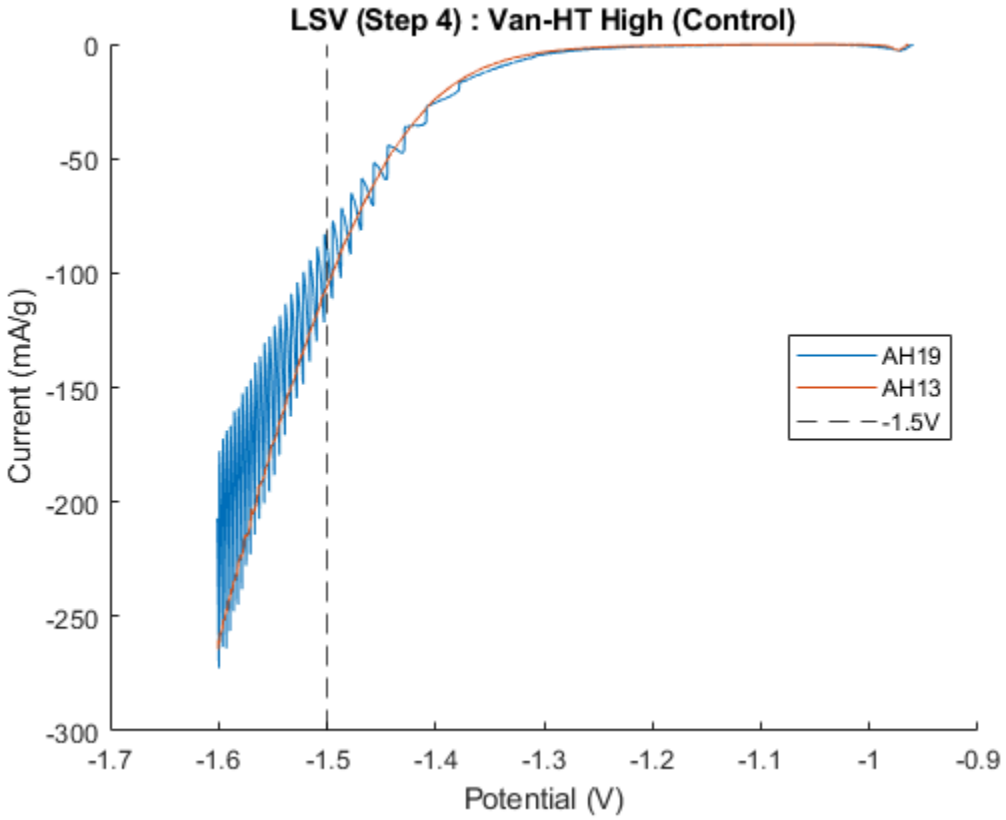

CA (Step 2) : S-Drill CL Low
Current (mA)
Time (hrs)
EL01
EL15
0
-2
-4
-6
-8
-10
-12
0
0.5
1
1.5
2
2.5

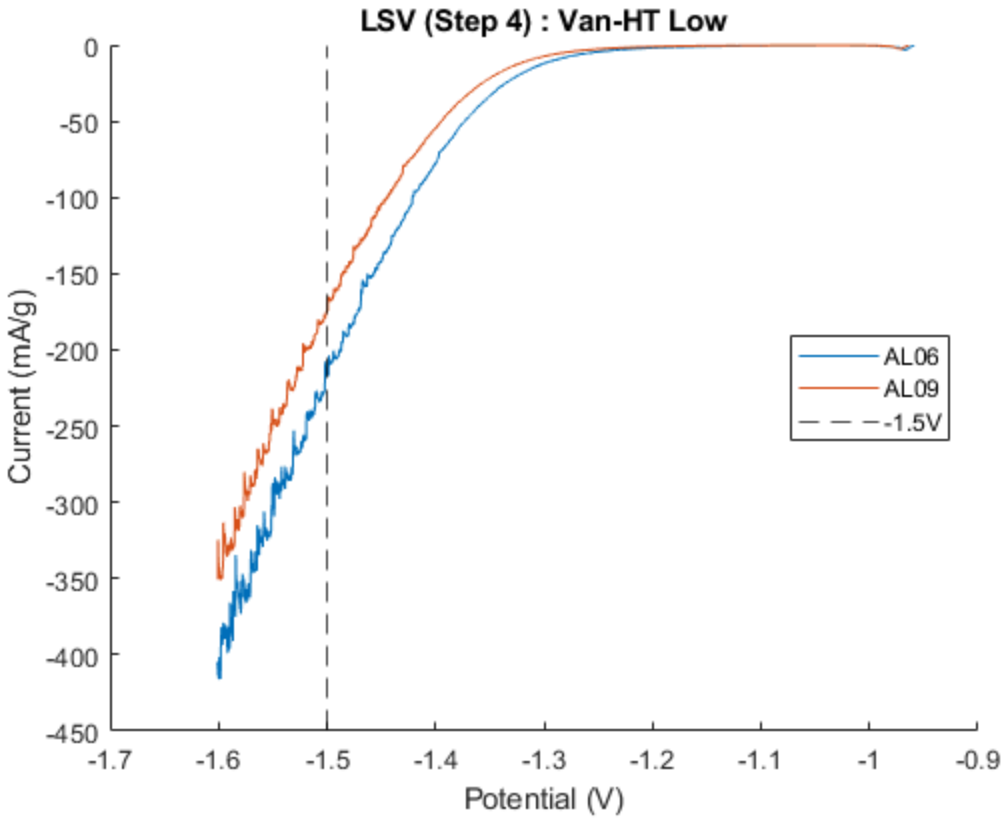

CA (Step 2) : Indulin AT High
Current (mA)
Time (hrs)
FH03
FH06
0
-0.5
-1
-1.5
-2
-2.5
-3
-3.5
-4
-4.5
0
0.5
1
1.5
2
2.5

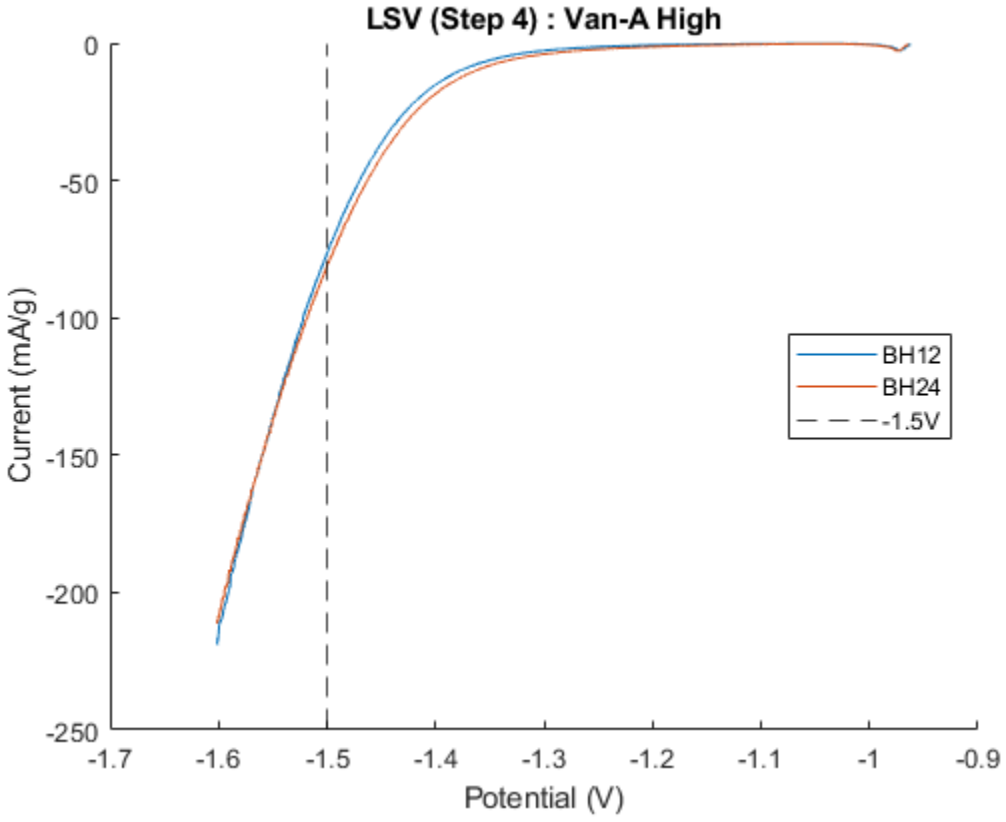

CA (Step 2) : Indulin AT Low
Current (mA)
Time (hrs)
FL20
FL12
0
-1
-2
-3
-4
-5
-6
-7
-8
-9
-10
0
0.5
1
1.5
2
2.5

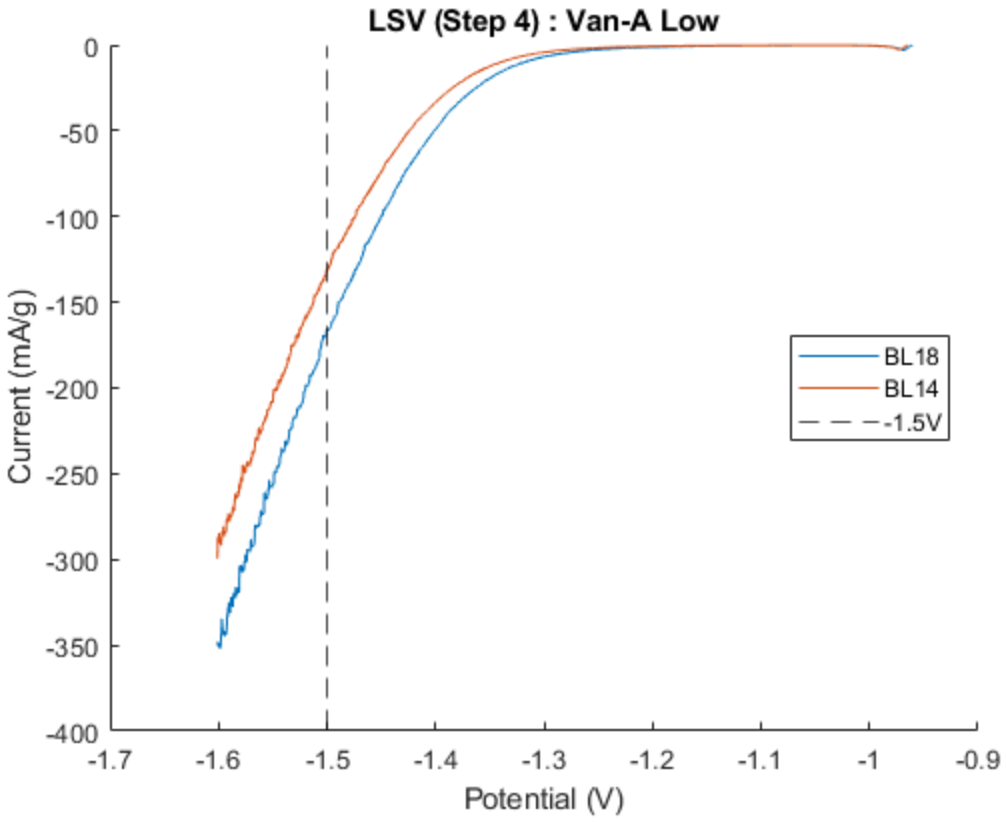
RUN LSV PROCEDURE

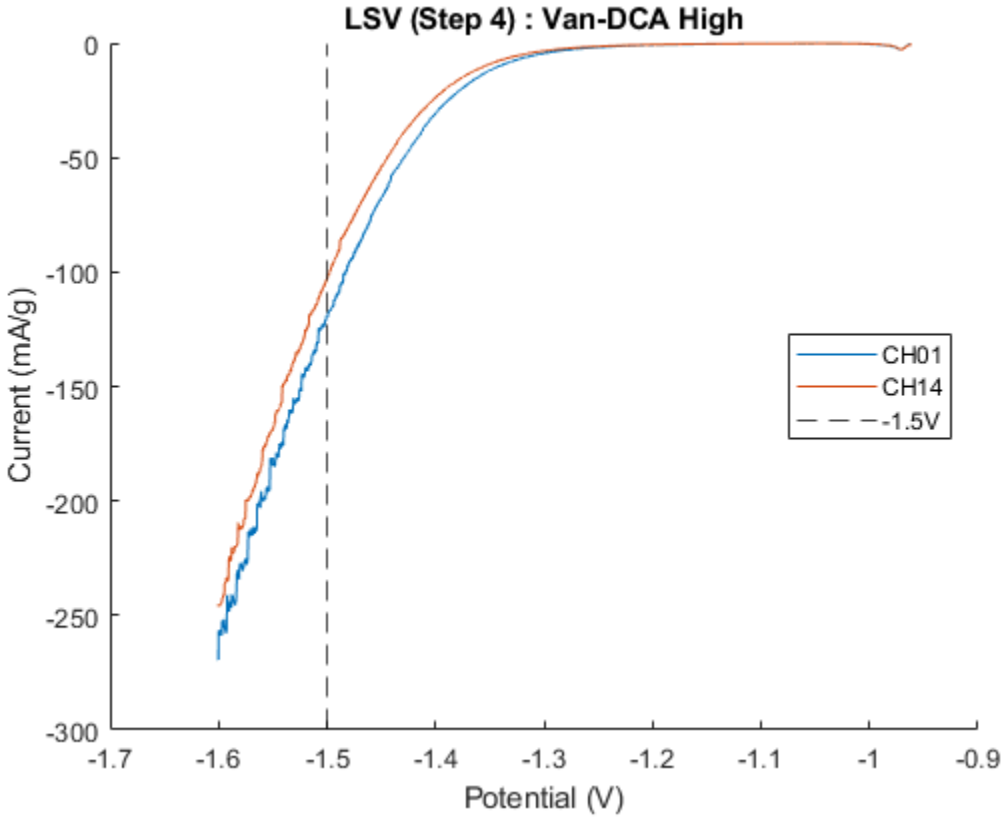
4.1 LSV Plots

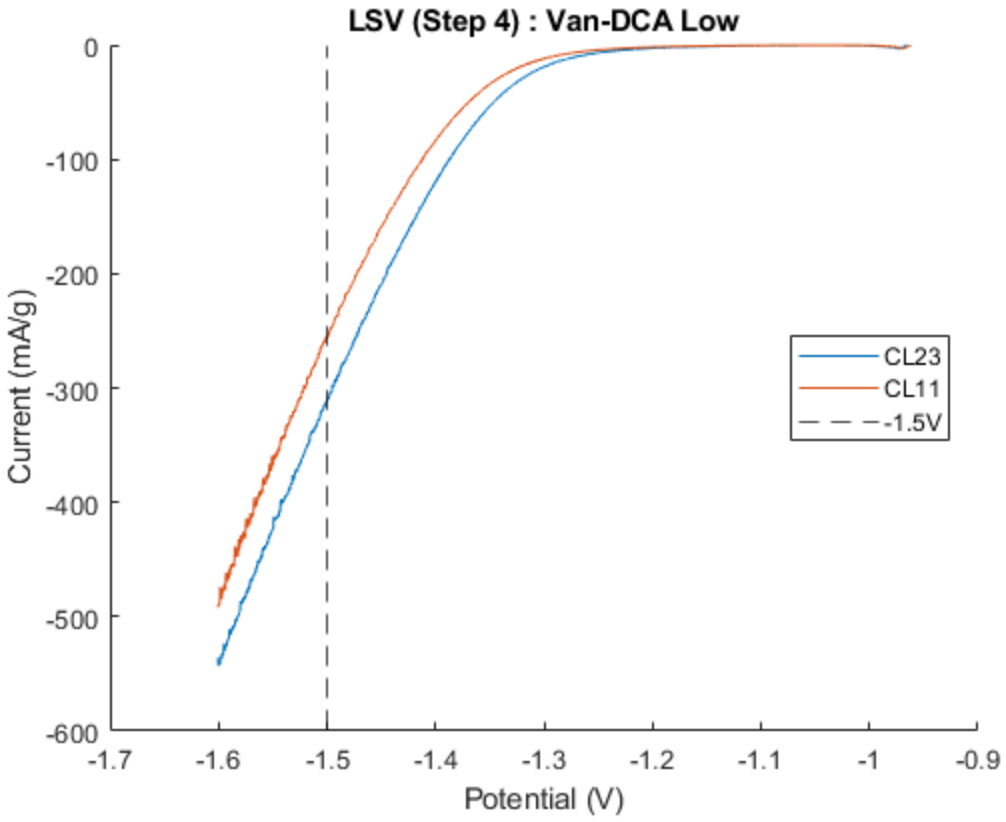


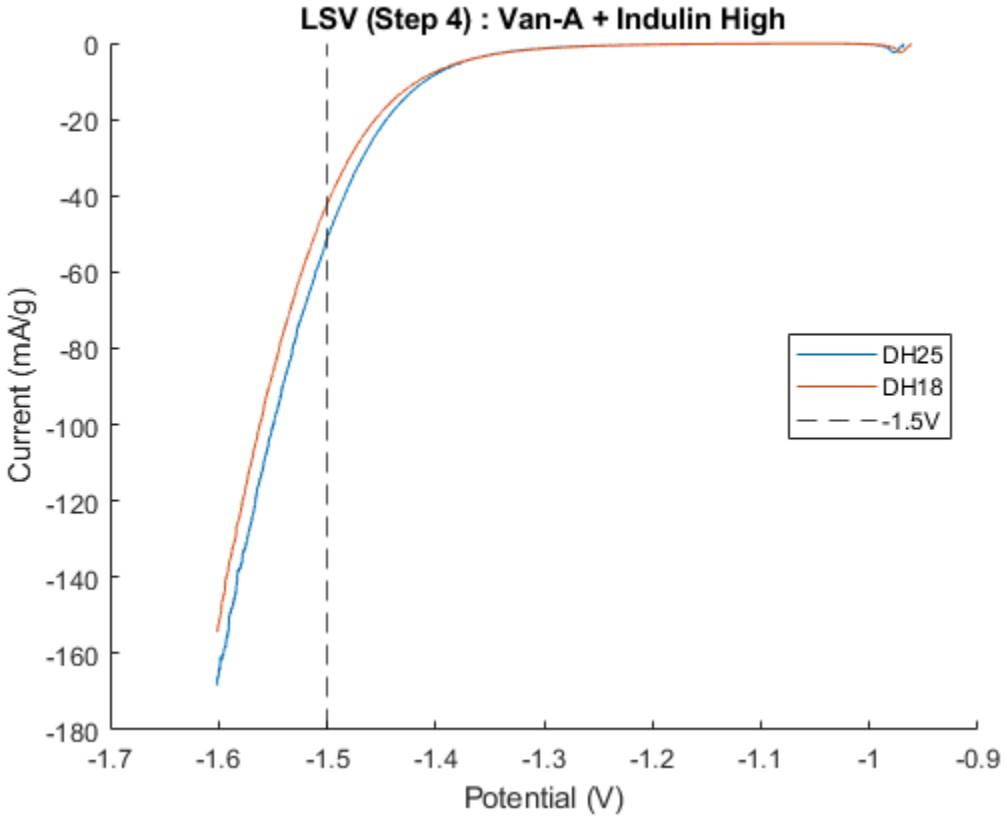

LSV (Step 4) : Van-HT Low
Current (mA/g)
Potential (V)
0
-50
-100
-150
-200
-250
-300
-350
-400
-450
-1.7
-1.6
-1.5
-1.4
-1.3
-1.2
-1.1
-1
-0.9
AL06
AL09
-1.5V

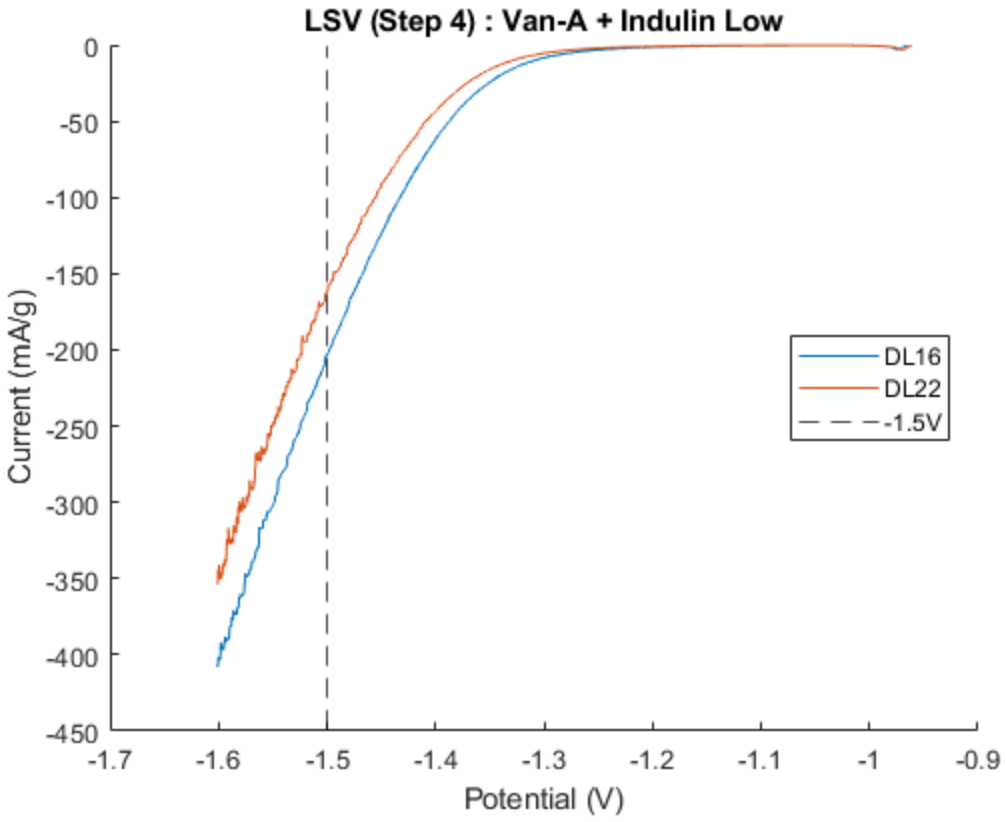

LSV (Step 4) : Van-A High
Current (mA/g)
Potential (V)
0
-50
-100
-150
-200
-250
-1.7
-1.6
-1.5
-1.4
-1.3
-1.2
-1.1
-1
-0.9
BH12
BH24
-1.5V

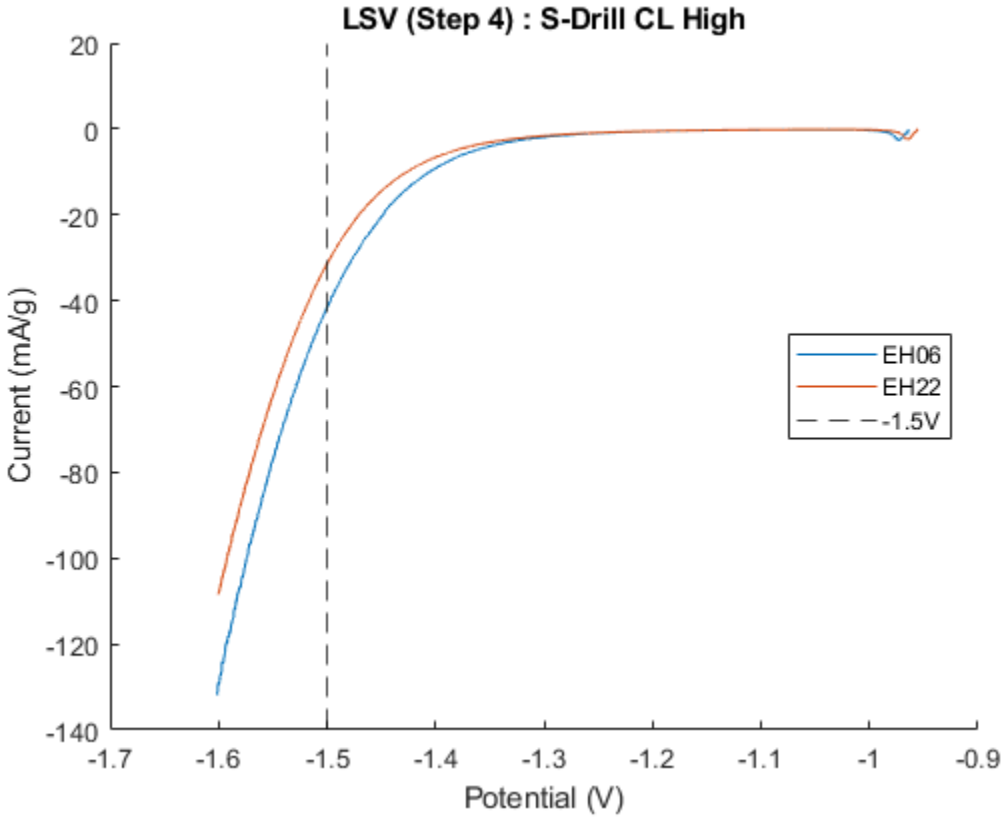

LSV (Step 4) : Van-A Low
Current (mA/g)
Potential (V)
0
-50
-100
-150
-200
-250
-300
-350
-400
-1.7
-1.6
-1.5
-1.4
-1.3
-1.2
-1.1
-1
-0.9
BL18
BL14
-1.5V

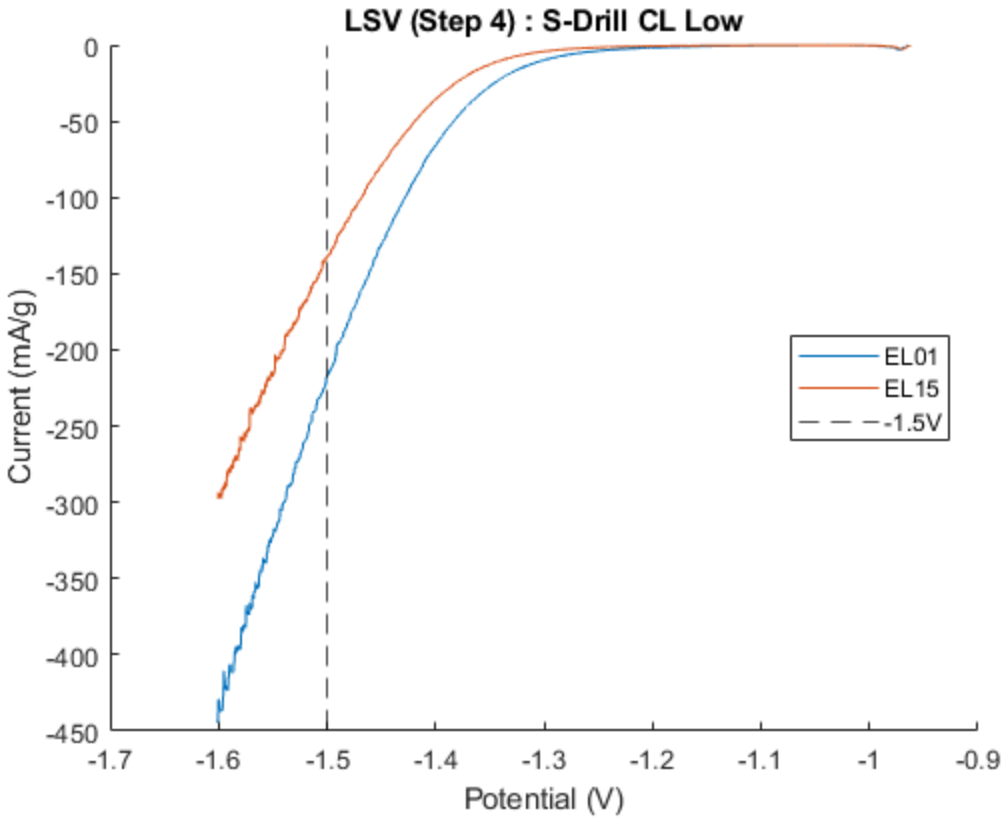

LSV (Step 4) : Van-DCA High
Current (mA/g)
Potential (V)
0
-50
-100
-150
-200
-250
-300
-1.7
-1.6
-1.5
-1.4
-1.3
-1.2
-1.1
-1
-0.9
CH01
CH14
-1.5V

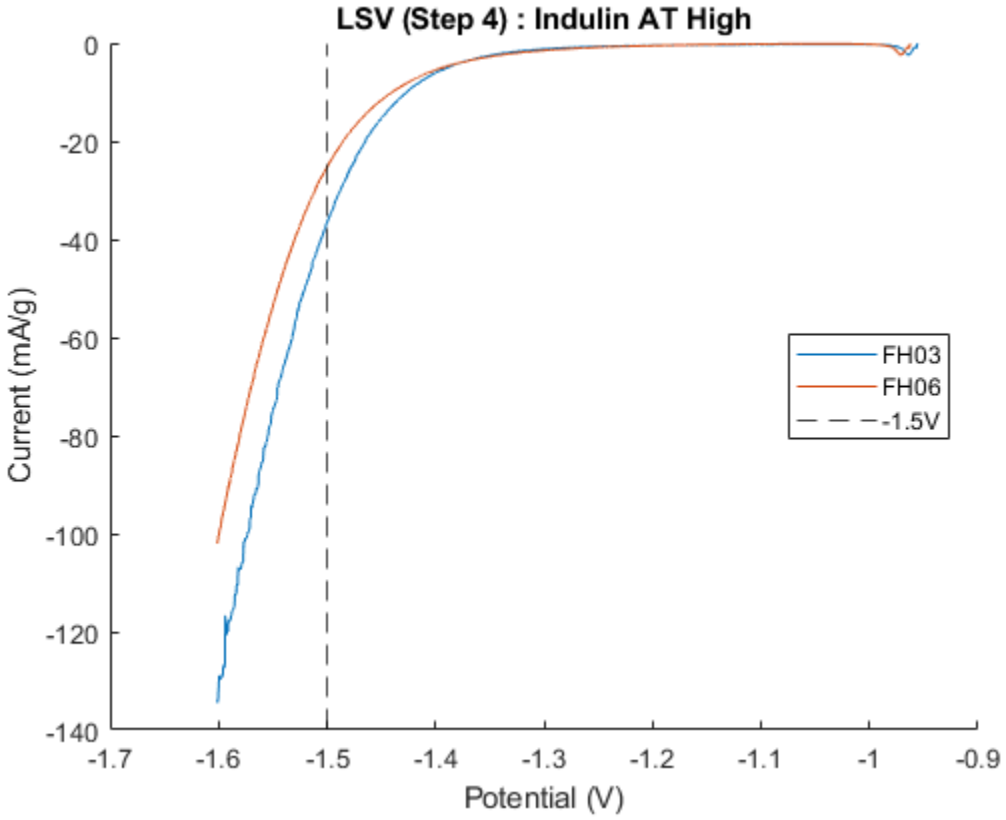

LSV (Step 4) : Van-DCA Low
Current (mA/g)
Potential (V)
0
-100
-200
-300
-400
-500
-600
-1.7
-1.6
-1.5
-1.4
-1.3
-1.2
-1.1
-1
-0.9
CL23
CL11
-1.5V

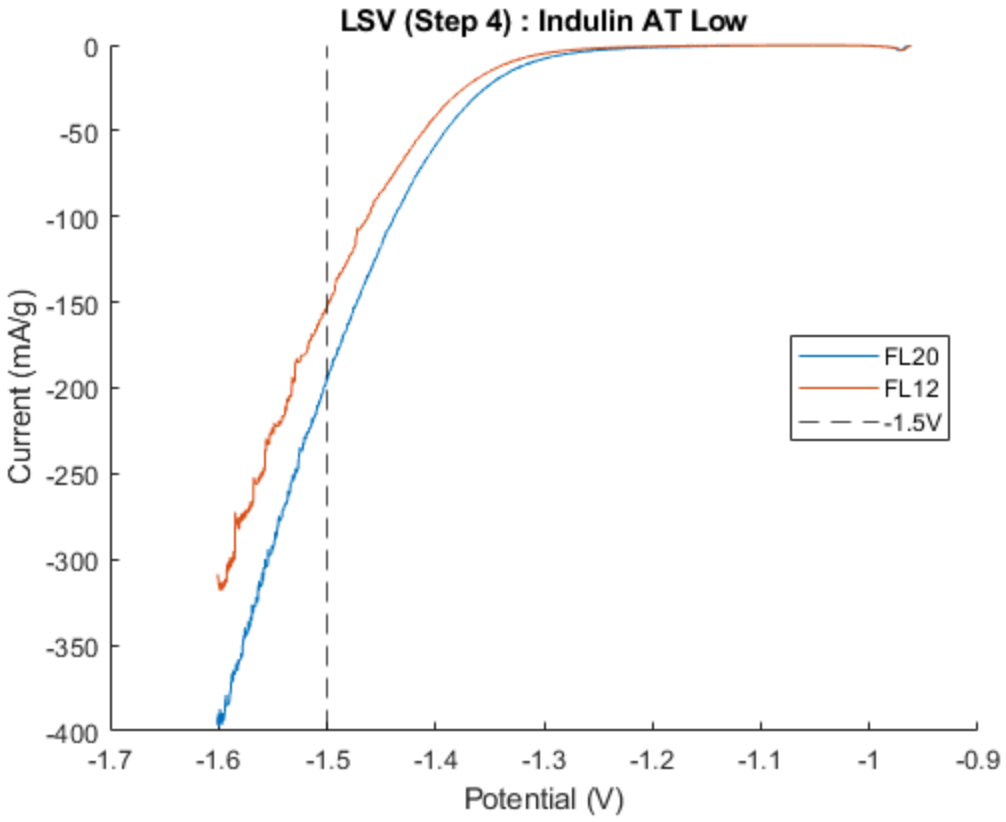

LSV (Step 4) : Van-A + Indulin High
Current (mA/g)
Potential (V)
0
-20
-40
-60
-80
-100
-120
-140
-160
-180
-1.7
-1.6
-1.5
-1.4
-1.3
-1.2
-1.1
-1
-0.9
DH25
DH18
-1.5V


LSV (Step 4) : Van-A + Indulin Low
Current (mA/g)
Potential (V)
0
-50
-100
-150
-200
-250
-300
-350
-400
-450
-1.7
-1.6
-1.5
-1.4
-1.3
-1.2
-1.1
-1
-0.9
DL16
DL22
-1.5V


LSV (Step 4) : S-Drill CL High
Current (mA/g)
Potential (V)
20
0
-20
-40
-60
-80
-100
-120
-140
-1.7
-1.6
-1.5
-1.4
-1.3
-1.2
-1.1
-1
-0.9
EH06
EH22
-1.5V


LSV (Step 4) : S-Drill CL Low
Current (mA/g)
Potential (V)
0
-50
-100
-150
-200
-250
-300
-350
-400
-450
-1.7
-1.6
-1.5
-1.4
-1.3
-1.2
-1.1
-1
-0.9
EL01
EL15
-1.5V


LSV (Step 4) : Indulin AT High
Current (mA/g)
Potential (V)
0
-20
-40
-60
-80
-100
-120
-140
-1.7
-1.6
-1.5
-1.4
-1.3
-1.2
-1.1
-1
-0.9
FH03
FH06
-1.5V



4.2 LSV Data analysis

The data analysis that we want. This will also include some graphs and whatnot.

Find the current @ fVoltage for each replicate of every formula

Create the excel file

```
Current at -1.5 V for formula                Van-HT High (Control) (Cup ID =
 AH19) of replicate  1:  -88.344 mA/g

Current at -1.5 V for formula                Van-HT High (Control) (Cup ID =
 AH13) of replicate  2: -105.936 mA/g

Current at -1.5 V for formula                          Van-HT Low (Cup ID =
 AL06) of replicate  1: -215.397 mA/g

Current at -1.5 V for formula                          Van-HT Low (Cup ID =
 AL09) of replicate  2: -175.649 mA/g

Current at -1.5 V for formula                          Van-A High (Cup ID =
 BH12) of replicate  1:  -76.848 mA/g
```

Current at -1.5 V for formula Van-A High (Cup ID = BH24) of replicate 2: -80.931 mA/g

Current at -1.5 V for formula Van-A Low (Cup ID = BL18) of replicate 1: -166.004 mA/g

Current at -1.5 V for formula Van-A Low (Cup ID = BL14) of replicate 2: -130.713 mA/g

Current at -1.5 V for formula Van-DCA High (Cup ID = CH01) of replicate 1: -119.591 mA/g

Current at -1.5 V for formula Van-DCA High (Cup ID = CH14) of replicate 2: -102.802 mA/g

Current at -1.5 V for formula Van-DCA Low (Cup ID = CL23) of replicate 1: -311.643 mA/g

Current at -1.5 V for formula Van-DCA Low (Cup ID = CL11) of replicate 2: -256.358 mA/g

Current at -1.5 V for formula Van-A + Indulin High (Cup ID = DH25) of replicate 1: -51.136 mA/g

Current at -1.5 V for formula Van-A + Indulin High (Cup ID = DH18) of replicate 2: -42.397 mA/g

Current at -1.5 V for formula Van-A + Indulin Low (Cup ID = DL16) of replicate 1: -202.957 mA/g

Current at -1.5 V for formula Van-A + Indulin Low (Cup ID = DL22) of replicate 2: -162.305 mA/g

Current at -1.5 V for formula S-Drill CL High (Cup ID = EH06) of replicate 1: -41.757 mA/g

Current at -1.5 V for formula S-Drill CL High (Cup ID = EH22) of replicate 2: -31.519 mA/g

Current at -1.5 V for formula S-Drill CL Low (Cup ID = EL01) of replicate 1: -216.527 mA/g

Current at -1.5 V for formula S-Drill CL Low (Cup ID = EL15) of replicate 2: -139.814 mA/g

Current at -1.5 V for formula Indulin AT High (Cup ID = FH03) of replicate 1: -36.620 mA/g

Current at -1.5 V for formula Indulin AT High (Cup ID = FH06) of replicate 2: -25.416 mA/g

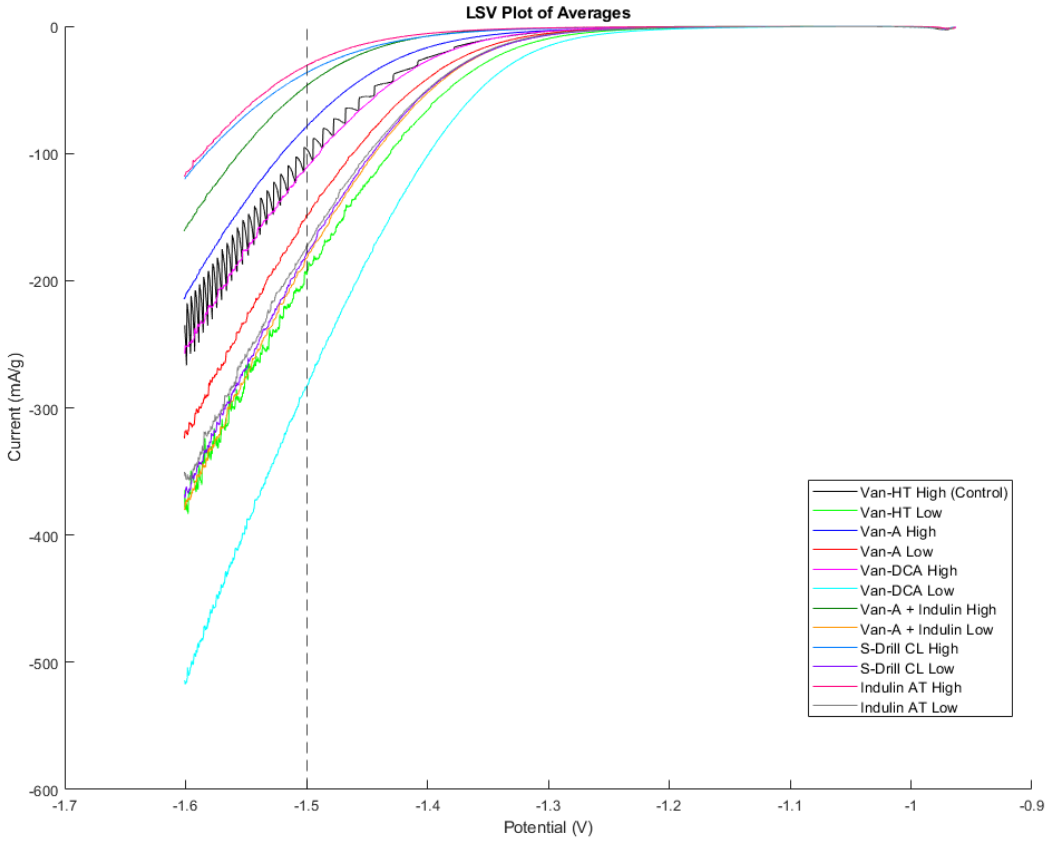
Current at -1.5 V for formula Indulin AT Low (Cup ID = FL20) of replicate 1: -195.324 mA/g

Current at -1.5 V for formula Indulin AT Low (Cup ID = FL12) of replicate 2: -152.373 mA/g

-88.344024
-105.936423
-215.397441
-175.648839
-76.848159
-80.930587
-166.004429
-130.712773
-119.591466
-102.802120
-311.643036
-256.358481
-51.136226
-42.397030
-202.957185
-162.304645
-41.756742
-31.519119
-216.526893
-139.813648
-36.620304
-25.415895
-195.323737
-152.373304

LSV Average Plot

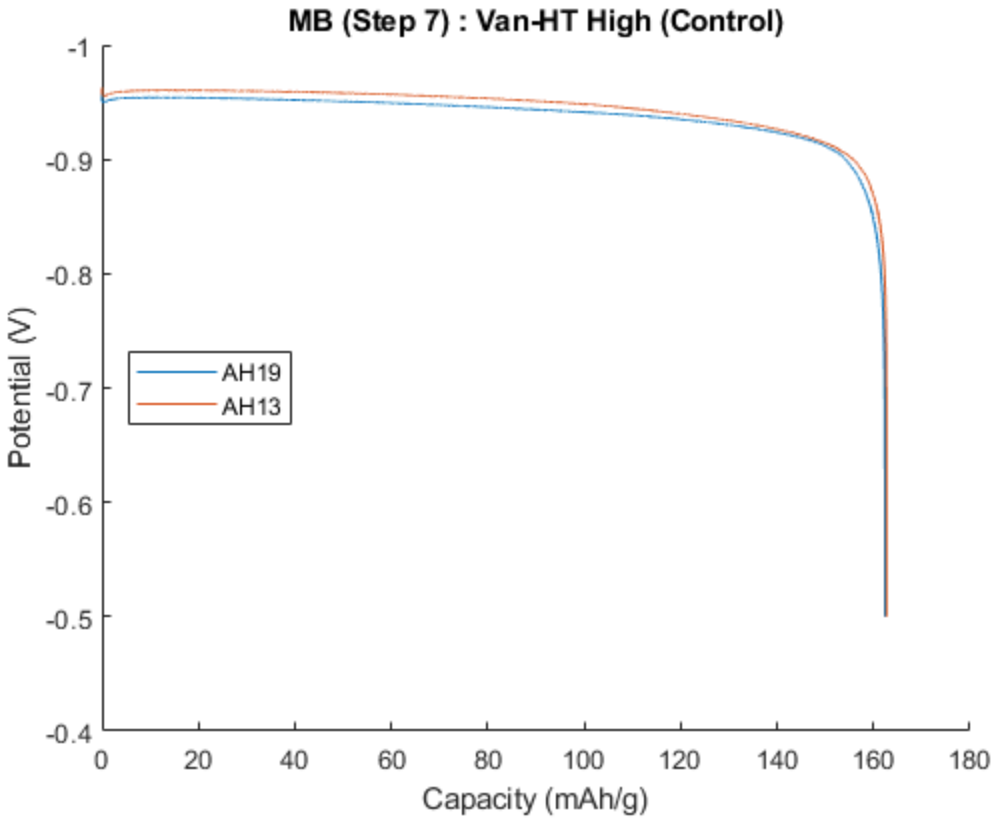
Issue: Not all the replicates have the same amount of data Solution: Find the one with the lowest amount of data

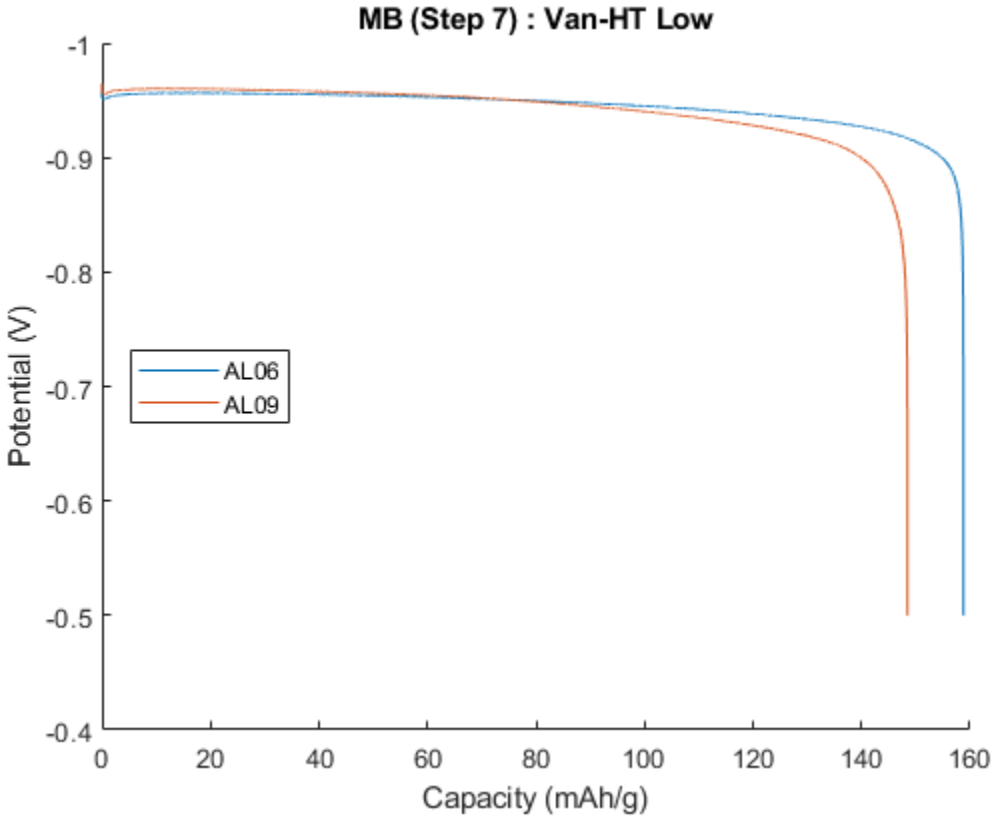


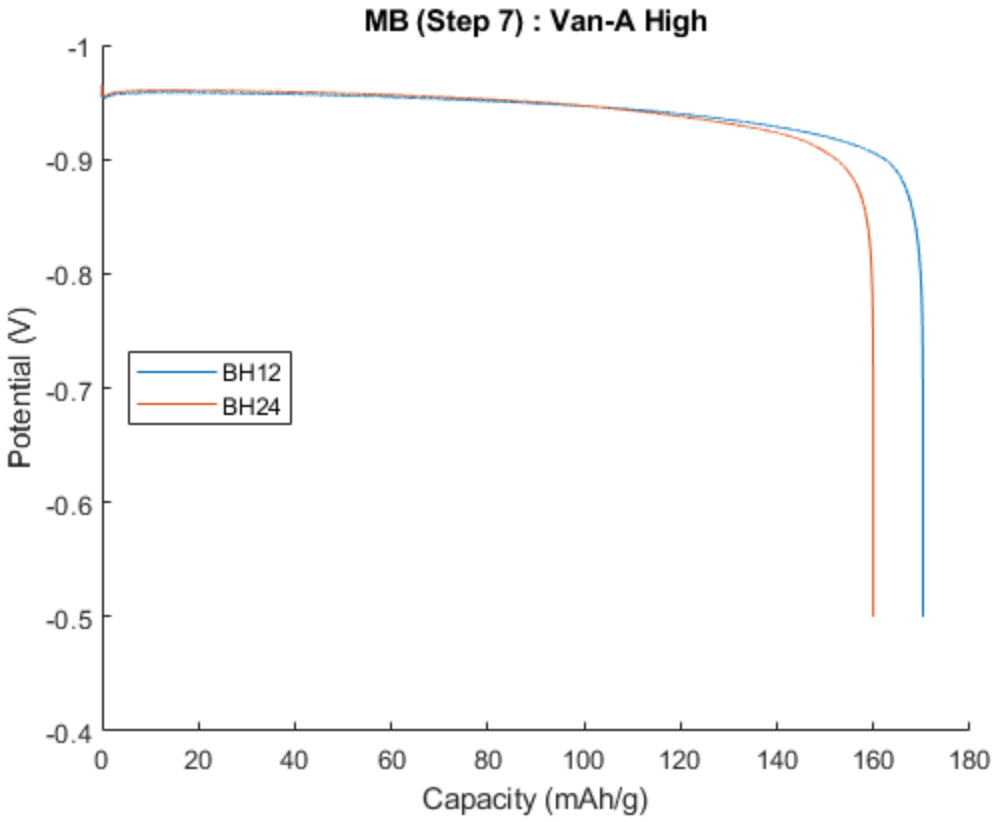
RUN MB PROCEDURE

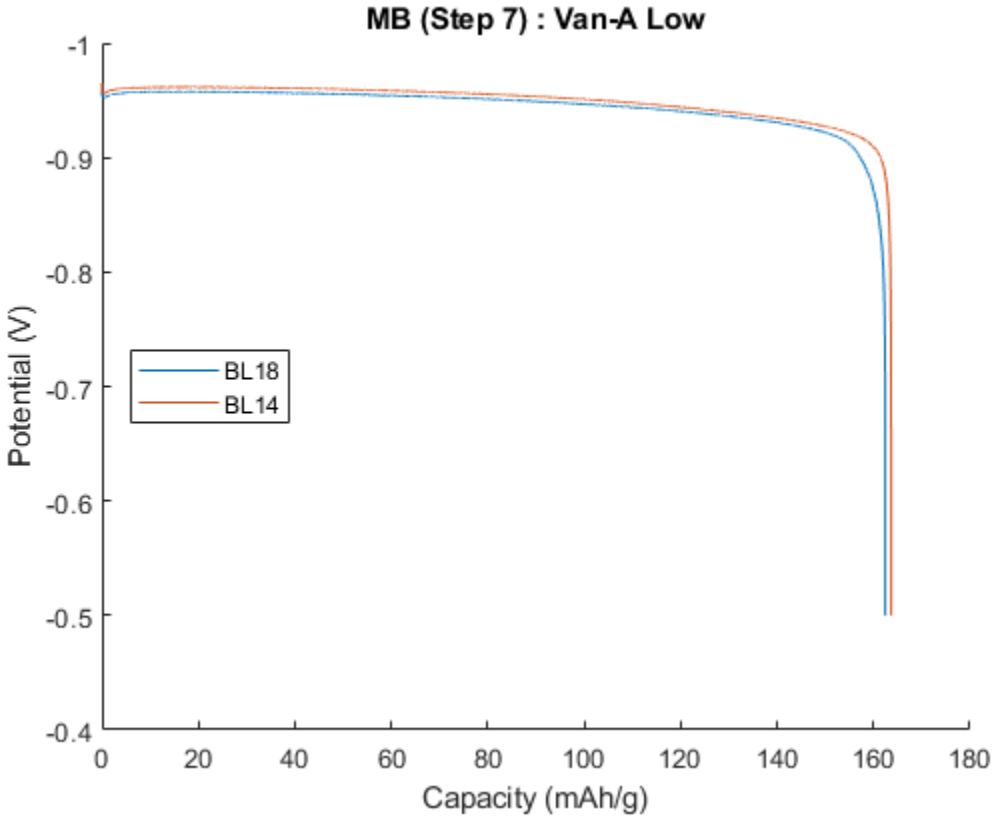
7.1 MB PLOTS

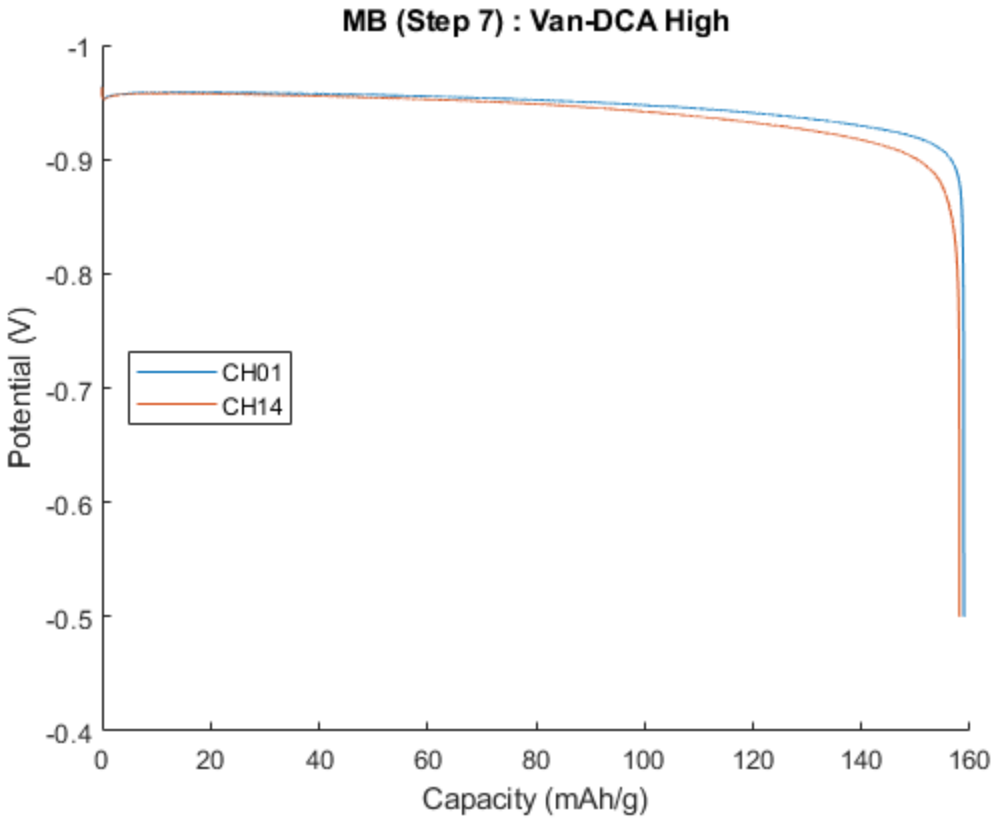
Define x and y variables

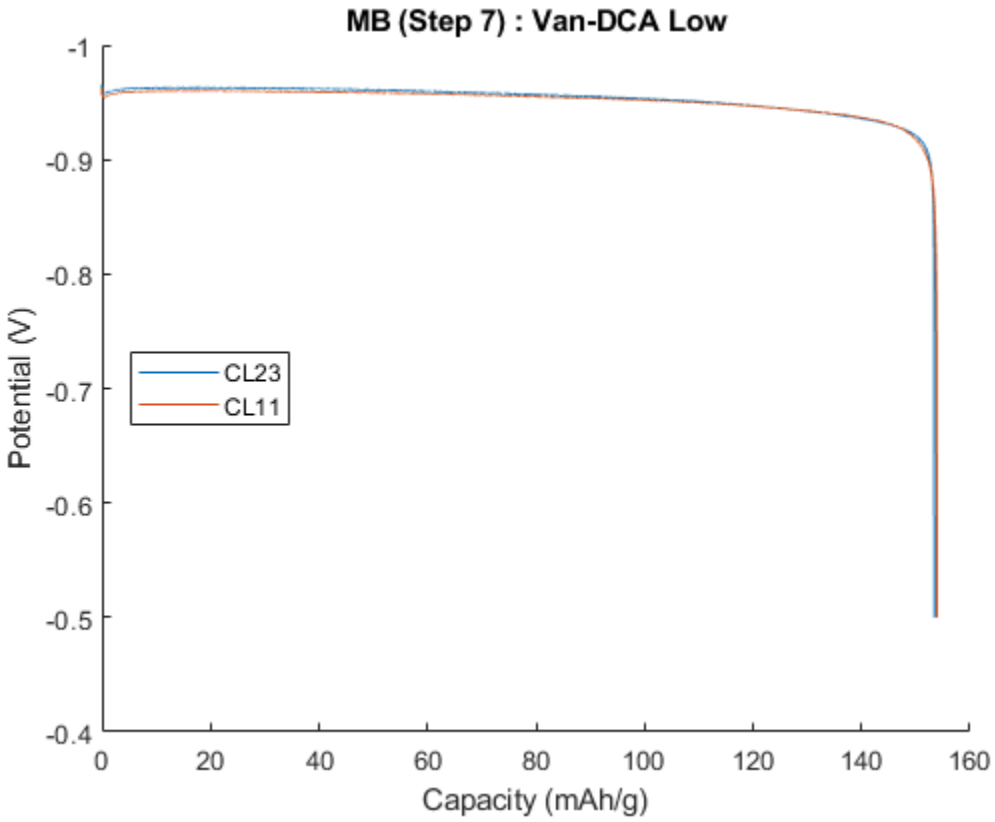

MB (Step 7) : Van-HT High (Control)
Potential (V)
Capacity (mAh/g)
AH19
AH13
-1
-0.9
-0.8
-0.7
-0.6
-0.5
-0.4
0
20
40
60
80
100
120
140
160
180

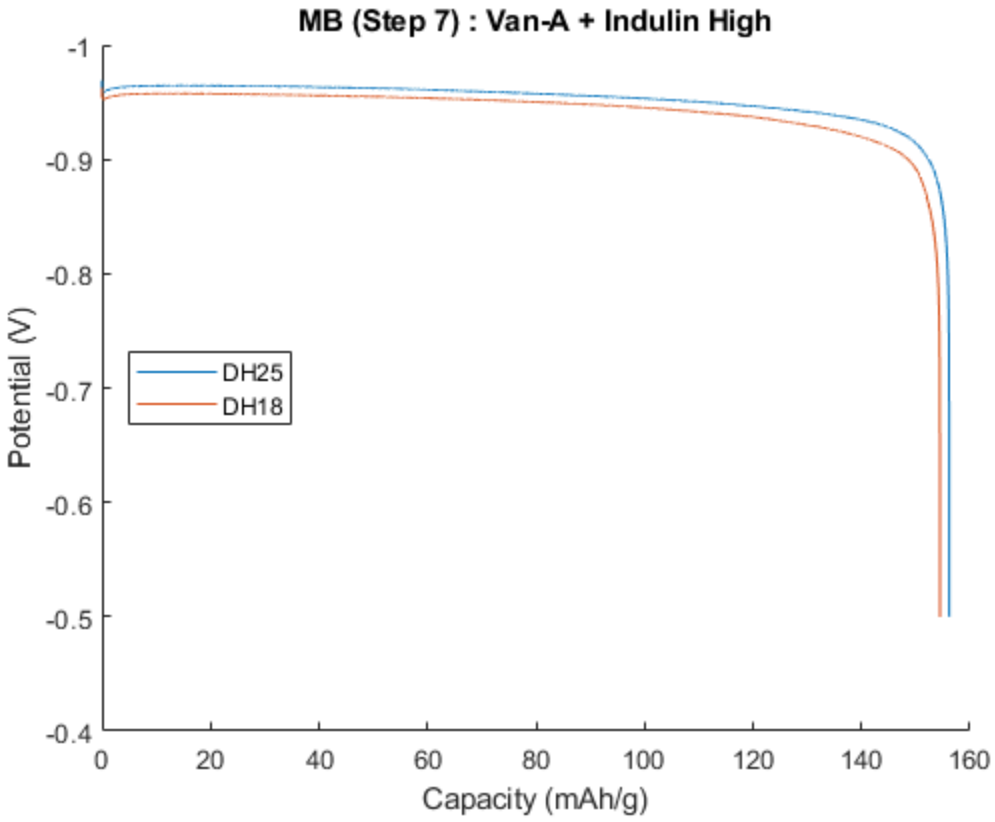

MB (Step 7) : Van-HT Low
Potential (V)
Capacity (mAh/g)
AL06
AL09
-1
-0.9
-0.8
-0.7
-0.6
-0.5
-0.4
0
20
40
60
80
100
120
140
160

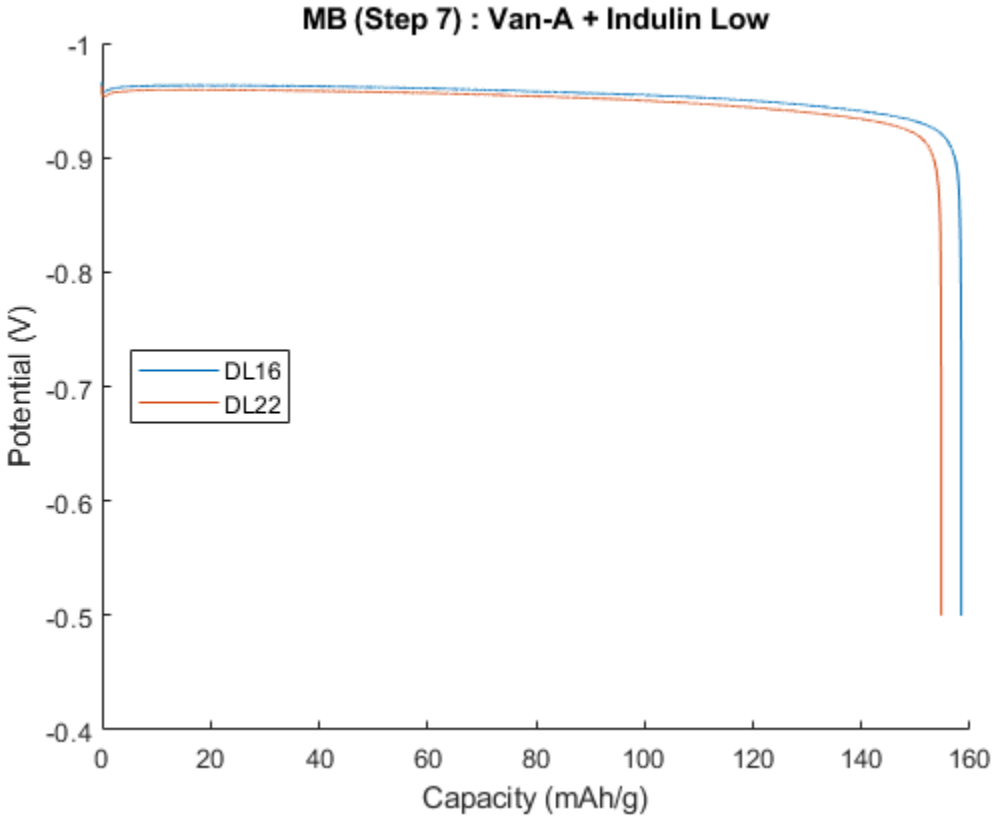

MB (Step 7) : Van-A High
Potential (V)
Capacity (mAh/g)
BH12
BH24
-1
-0.9
-0.8
-0.7
-0.6
-0.5
-0.4
0
20
40
60
80
100
120
140
160
180

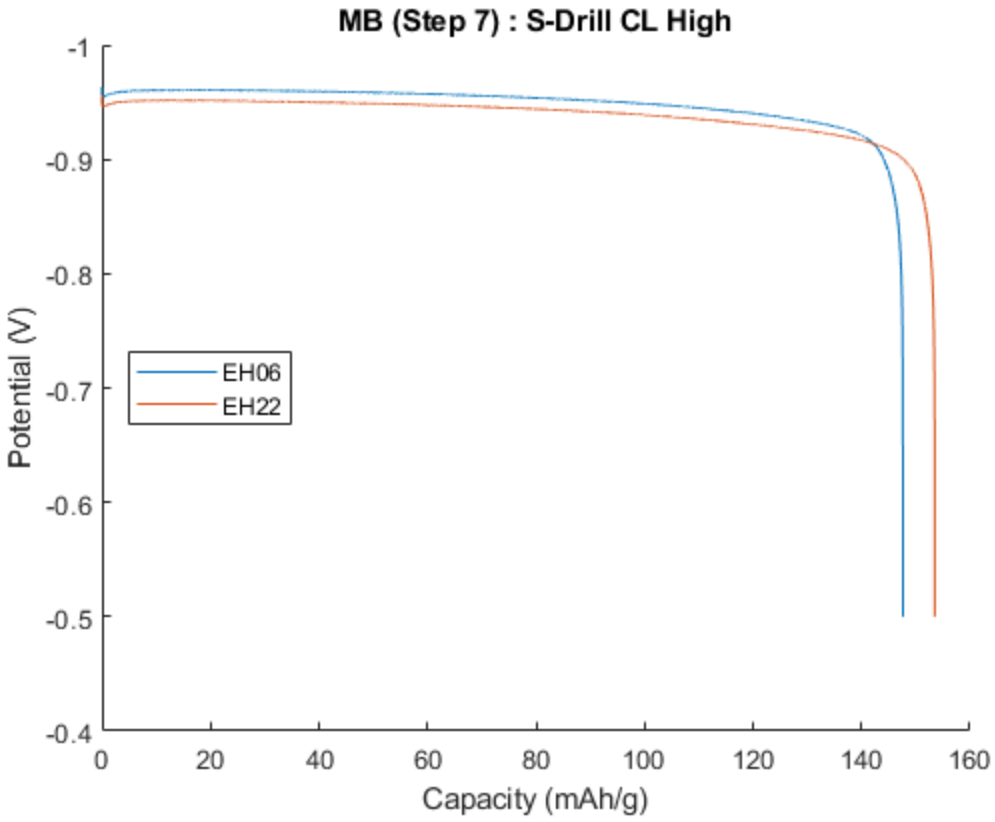

MB (Step 7) : Van-A Low
Potential (V)
Capacity (mAh/g)
BL18
BL14
-1
-0.9
-0.8
-0.7
-0.6
-0.5
-0.4
0
20
40
60
80
100
120
140
160
180

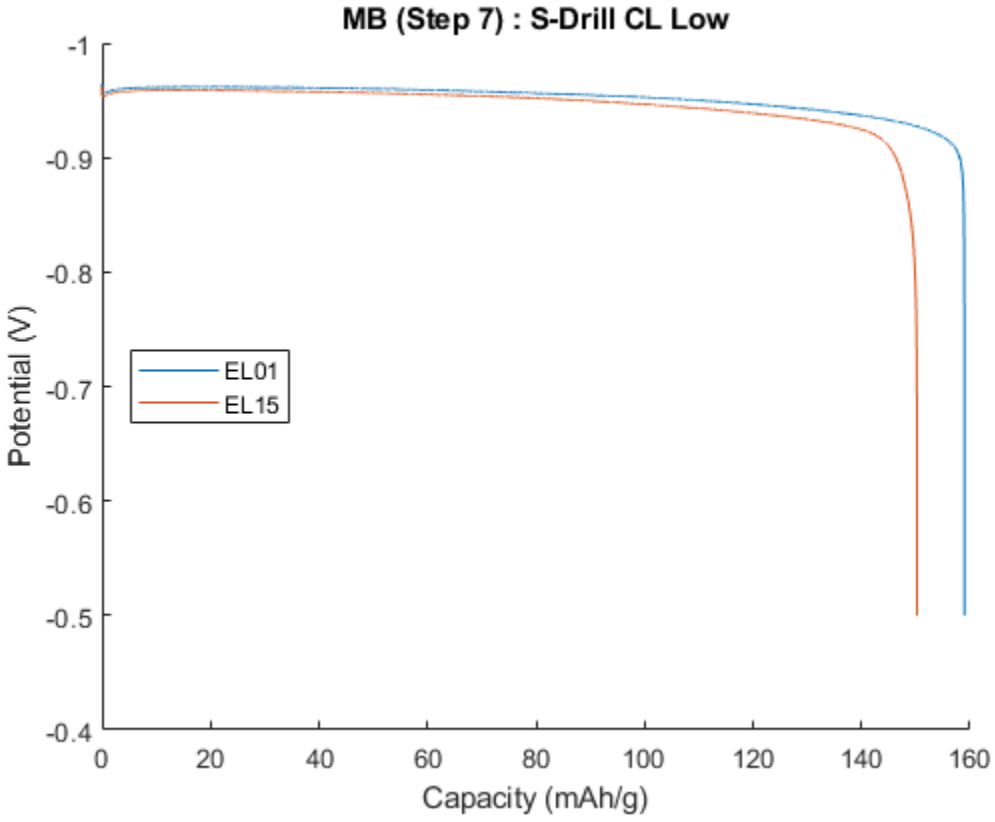

MB (Step 7) : Van-DCA High
Potential (V)
Capacity (mAh/g)
CH01
CH14
-1
-0.9
-0.8
-0.7
-0.6
-0.5
-0.4
0
20
40
60
80
100
120
140
160

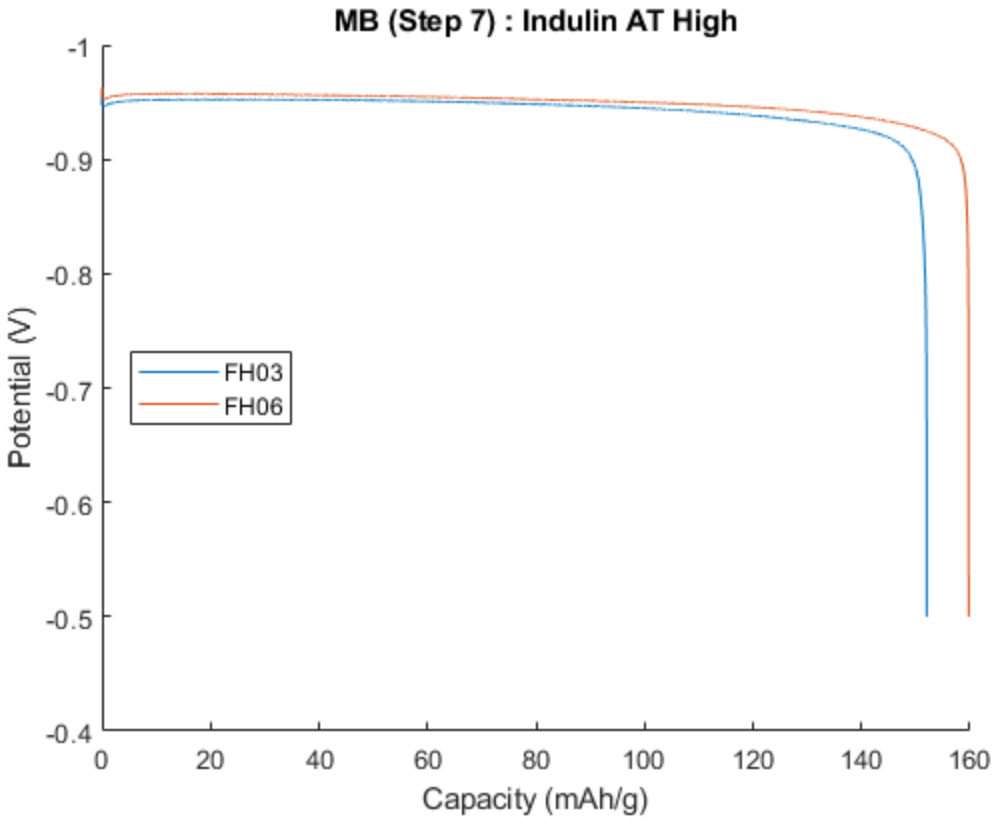

MB (Step 7) : Van-DCA Low
Potential (V)
Capacity (mAh/g)
CL23
CL11
-1
-0.9
-0.8
-0.7
-0.6
-0.5
-0.4
0
20
40
60
80
100
120
140
160

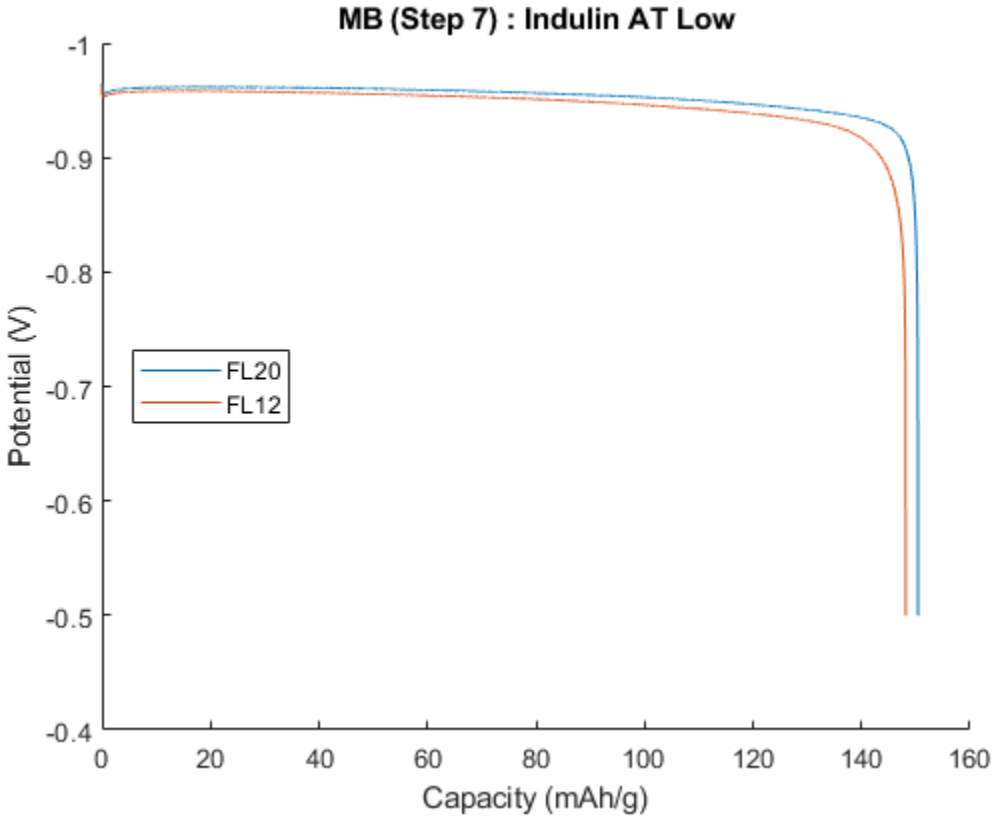

MB (Step 7) : Van-A + Indulin High
Potential (V)
Capacity (mAh/g)
DH25
DH18
-1
-0.9
-0.8
-0.7
-0.6
-0.5
-0.4
0
20
40
60
80
100
120
140
160


MB (Step 7) : Van-A + Indulin Low
Potential (V)
Capacity (mAh/g)
DL16
DL22
-1
-0.9
-0.8
-0.7
-0.6
-0.5
-0.4
0
20
40
60
80
100
120
140
160


MB (Step 7) : S-Drill CL High
Potential (V)
Capacity (mAh/g)
EH06
EH22
-1
-0.9
-0.8
-0.7
-0.6
-0.5
-0.4
0
20
40
60
80
100
120
140
160


MB (Step 7) : S-Drill CL Low
Potential (V)
Capacity (mAh/g)
EL01
EL15
-1
-0.9
-0.8
-0.7
-0.6
-0.5
-0.4
0
20
40
60
80
100
120
140
160


MB (Step 7) : Indulin AT High
Potential (V)
Capacity (mAh/g)
FH03
FH06
-1
-0.9
-0.8
-0.7
-0.6
-0.5
-0.4
0
20
40
60
80
100
120
140
160


MB (Step 7) : Indulin AT Low
Potential (V)
Capacity (mAh/g)
FL20
FL12
-1
-0.9
-0.8
-0.7
-0.6
-0.5
-0.4
0
20
40
60
80
100
120
140
160

7.2 MB Data Analysis

Final Capacity Value for formula Van-HT High (Control) (Cup ID = AH19) of replicate 1: 162.378

Final Capacity Value for formula Van-HT High (Control) (Cup ID = AH13) of replicate 2: 162.702

Final Capacity Value for formula Van-HT Low (Cup ID = AL06) of replicate 1: 158.808

Final Capacity Value for formula Van-HT Low (Cup ID = AL09) of replicate 2: 148.494

Final Capacity Value for formula Van-A High (Cup ID = BH12) of replicate 1: 170.278

Final Capacity Value for formula Van-A High (Cup ID = BH24) of replicate 2: 159.957

Final Capacity Value for formula Van-A Low (Cup ID = BL18) of replicate 1: 162.445

Final Capacity Value for formula Van-A Low (Cup ID = BL14) of replicate 2: 163.656

Final Capacity Value for formula Van-DCA High (Cup ID = CH01) of replicate 1: 158.877

Final Capacity Value for formula Van-DCA High (Cup ID = CH14) of replicate 2: 158.087

Final Capacity Value for formula Van-DCA Low (Cup ID = CL23) of replicate 1: 153.439

Final Capacity Value for formula Van-DCA Low (Cup ID = CL11) of replicate 2: 153.906

Final Capacity Value for formula Van-A + Indulin High (Cup ID = DH25) of replicate 1: 156.173

Final Capacity Value for formula Van-A + Indulin High (Cup ID = DH18) of replicate 2: 154.468

Final Capacity Value for formula Van-A + Indulin Low (Cup ID = DL16) of replicate 1: 158.400

Final Capacity Value for formula Van-A + Indulin Low (Cup ID = DL22) of replicate 2: 154.705

Final Capacity Value for formula S-Drill CL High (Cup ID = EH06) of replicate 1: 147.643

Final Capacity Value for formula S-Drill CL High (Cup ID = EH22) of replicate 2: 153.523

Final Capacity Value for formula S-Drill CL Low (Cup ID = EL01) of replicate 1: 158.986

Final Capacity Value for formula S-Drill CL Low (Cup ID = EL15) of replicate 2: 150.252

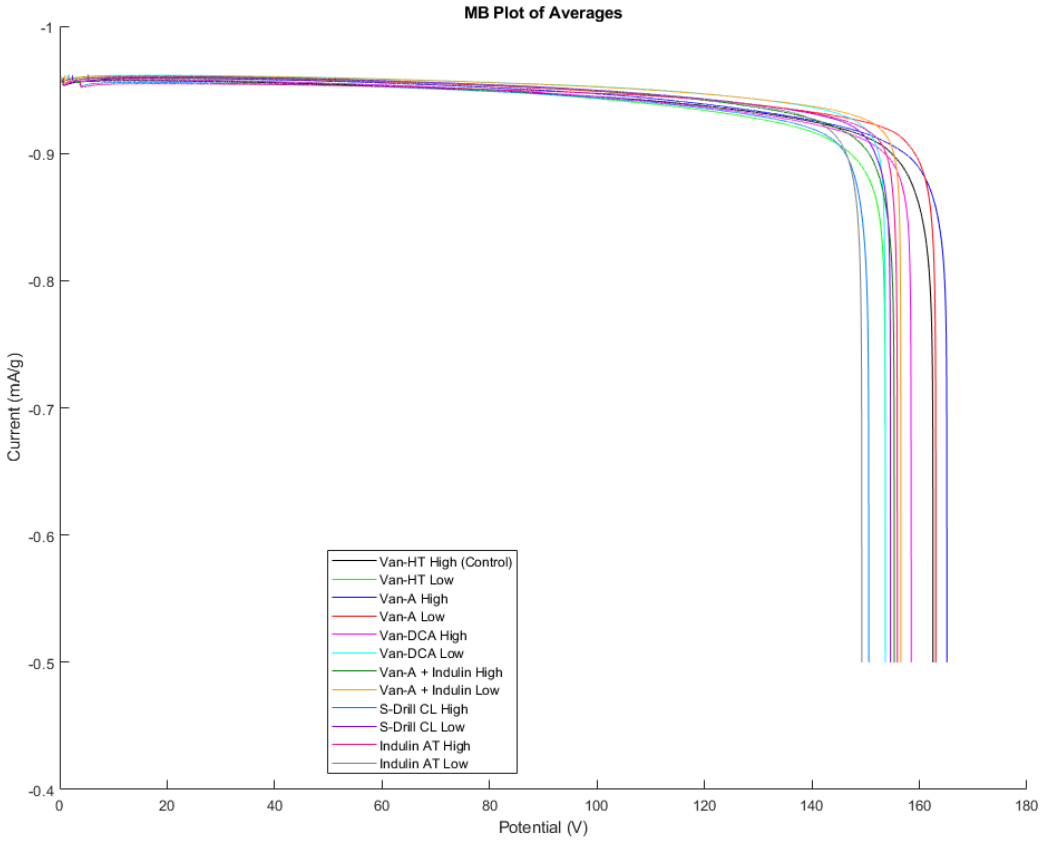
Final Capacity Value for formula Indulin AT High (Cup ID = FH03) of replicate 1: 152.030

Final Capacity Value for formula Indulin AT High (Cup ID = FH06) of replicate 2: 159.750

Final Capacity Value for formula Indulin AT Low (Cup ID = FL20) of replicate 1: 150.416

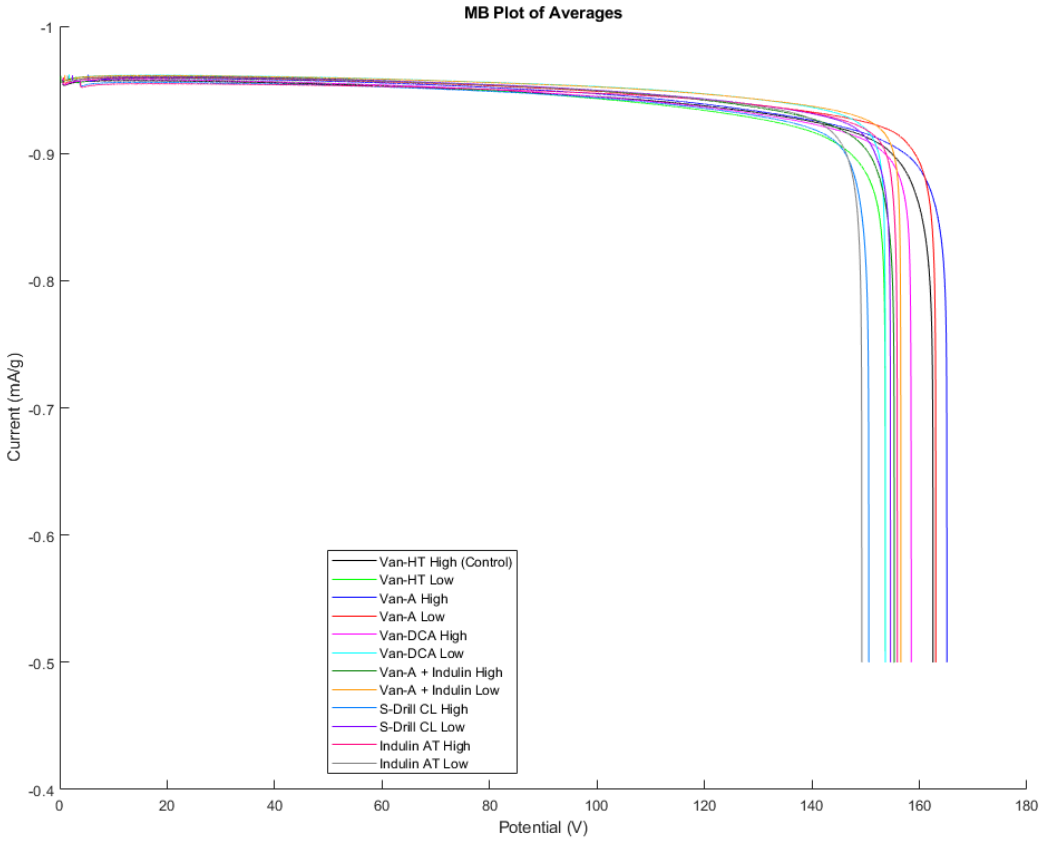
Final Capacity Value for formula Indulin AT Low (Cup ID = FL12) of replicate 2: 148.143

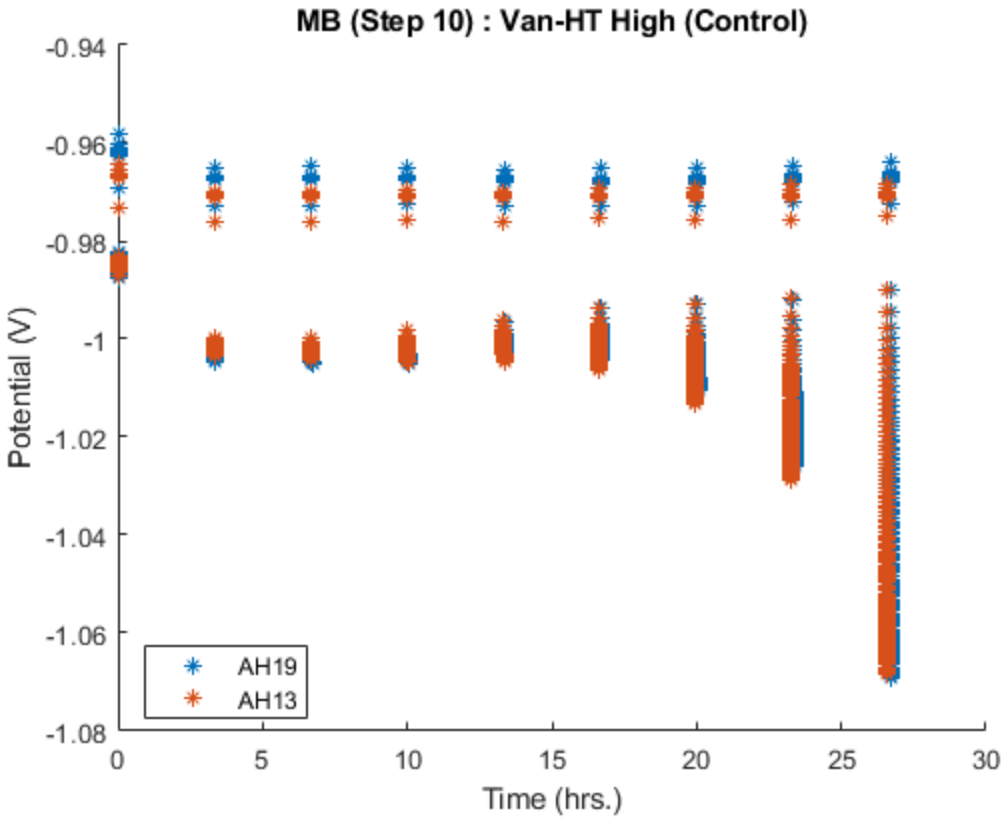
162.377808
162.701503
158.808211
148.494063
170.277660
159.956719
162.444922
163.656439
158.876975
158.087379
153.438603
153.906205
156.172565
154.468132
158.399668
154.705064
147.642884
153.522555
158.985942
150.252079
152.030407
159.749510
150.416015
148.142506

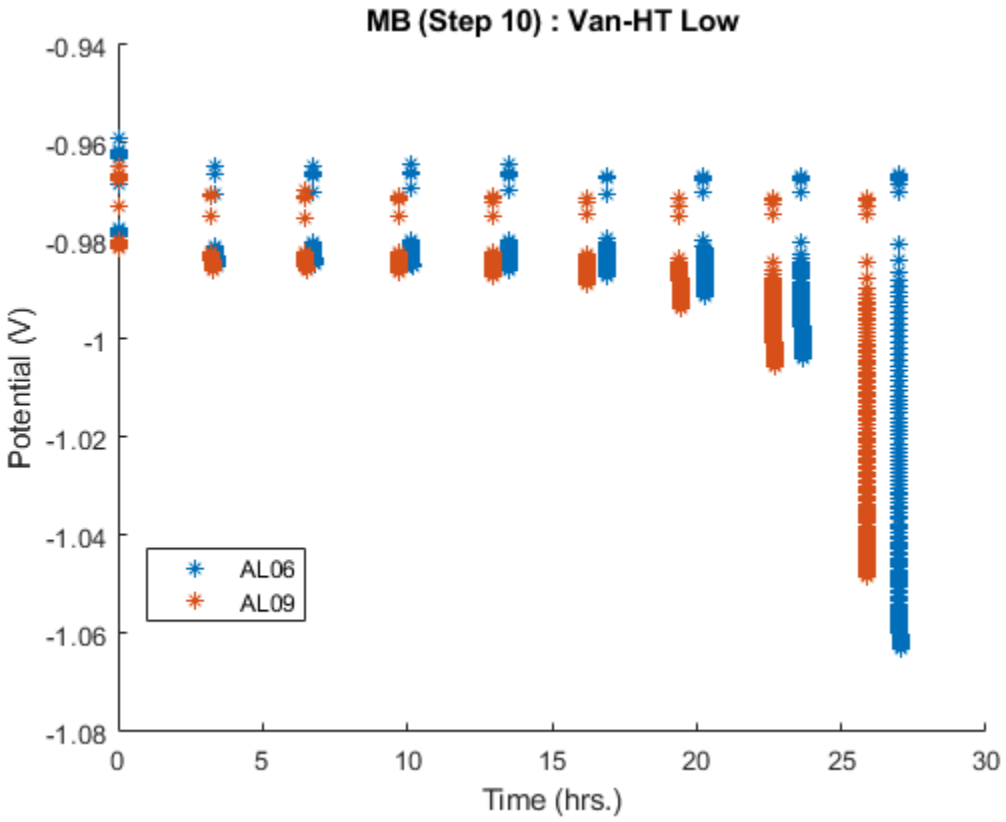


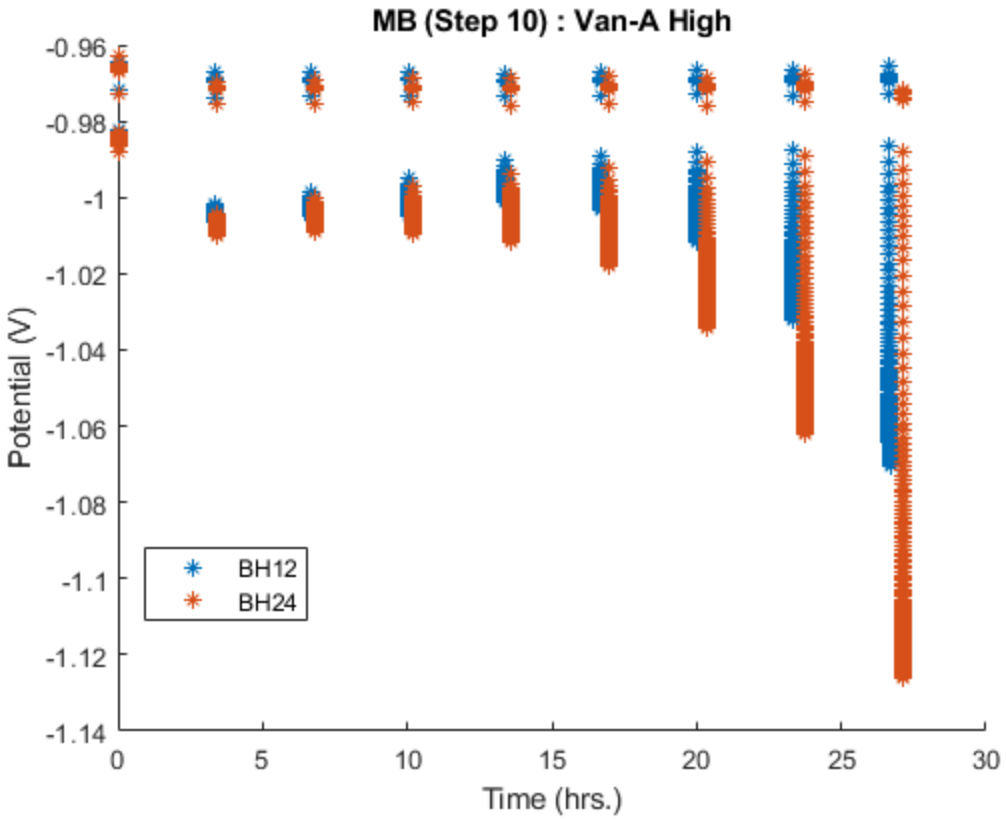
10.1 MB PLOTS

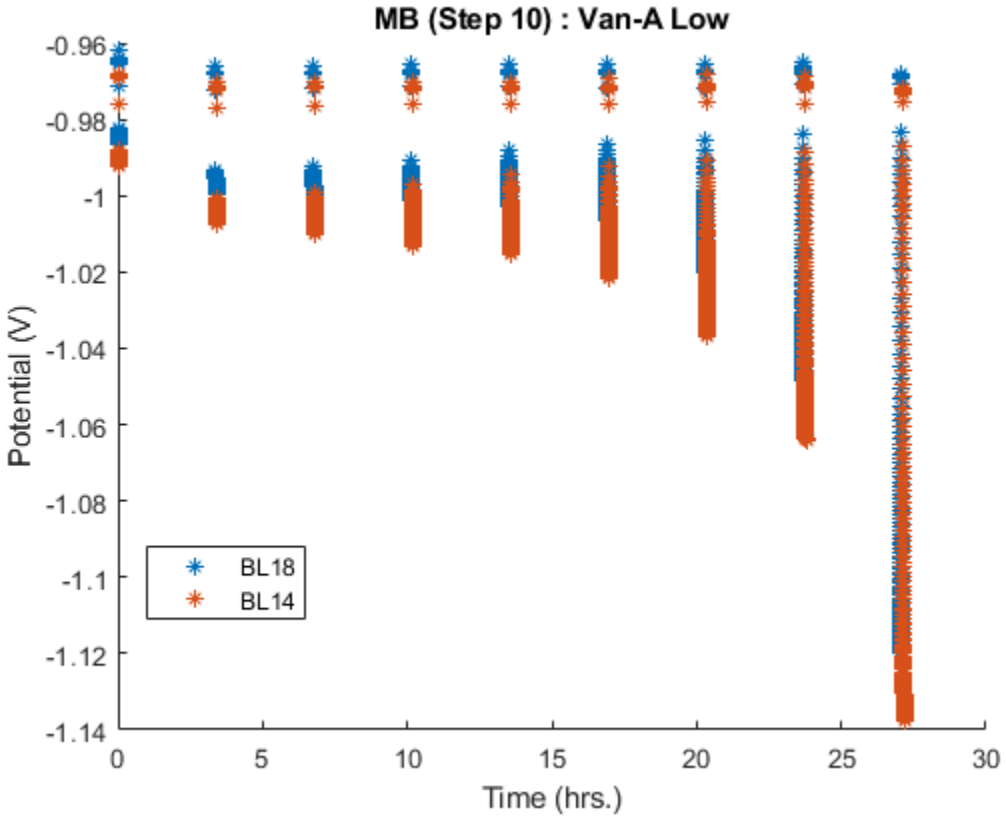
Define x and y variables

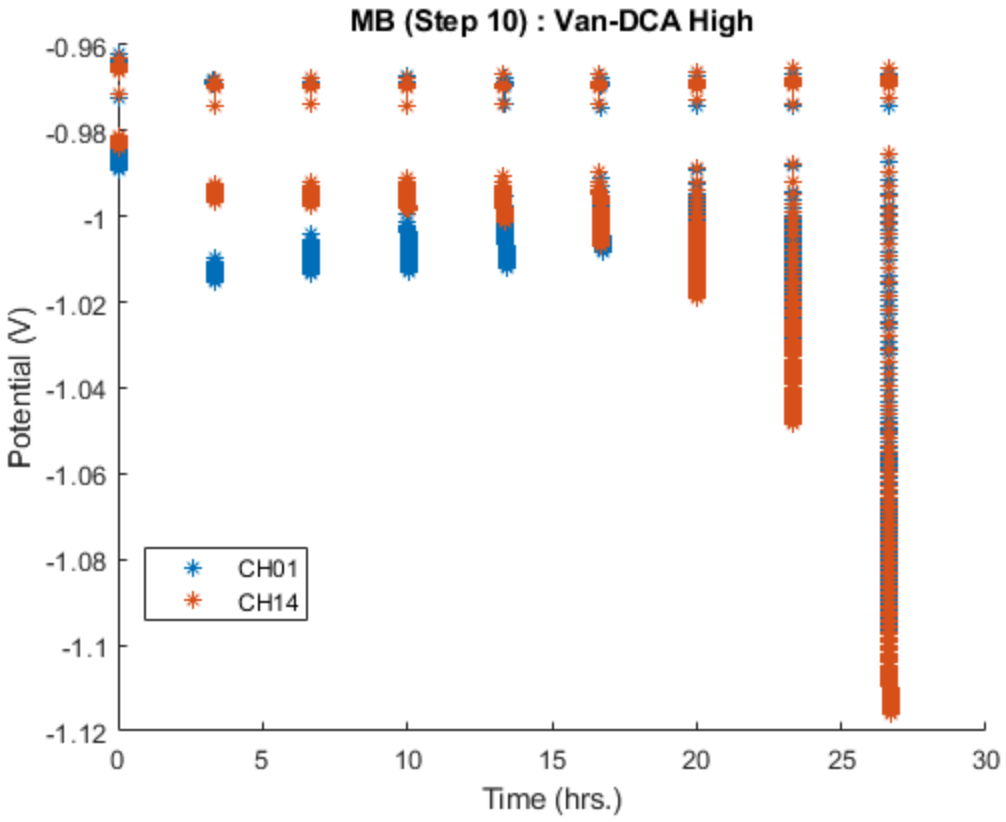

MB Plot of Averages
Current (mA/g)
Potential (V)
-1
-0.9
-0.8
-0.7
-0.6
-0.5
-0.4
0
20
40
60
80
100
120
140
160
180
Van-HT High (Control)
Van-HT Low
Van-A High
Van-A Low
Van-DCA High
Van-DCA Low
Van-A + Indulin High
Van-A + Indulin Low
S-Drill CL High
S-Drill CL Low
Indulin AT High
Indulin AT Low

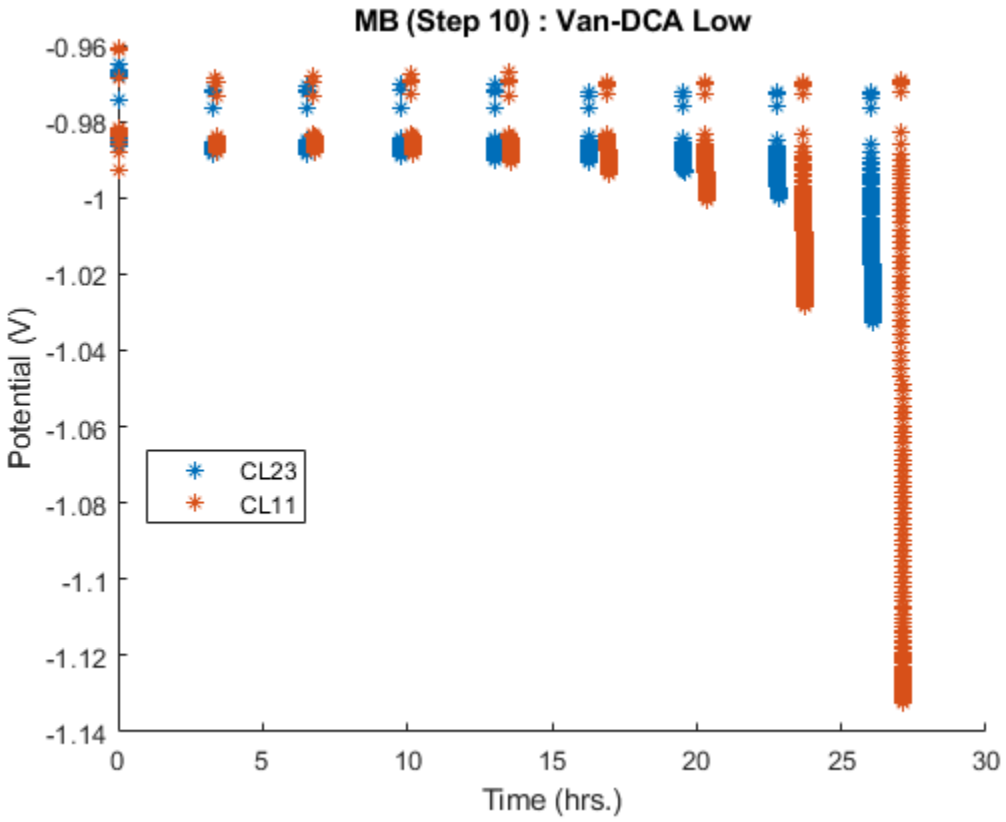

MB (Step 10) : Van-HT High (Control)
Potential (V)
Time (hrs.)
AH19
AH13
-0.94
-0.96
-0.98
-1
-1.02
-1.04
-1.06
-1.08
0
5
10
15
20
25
30

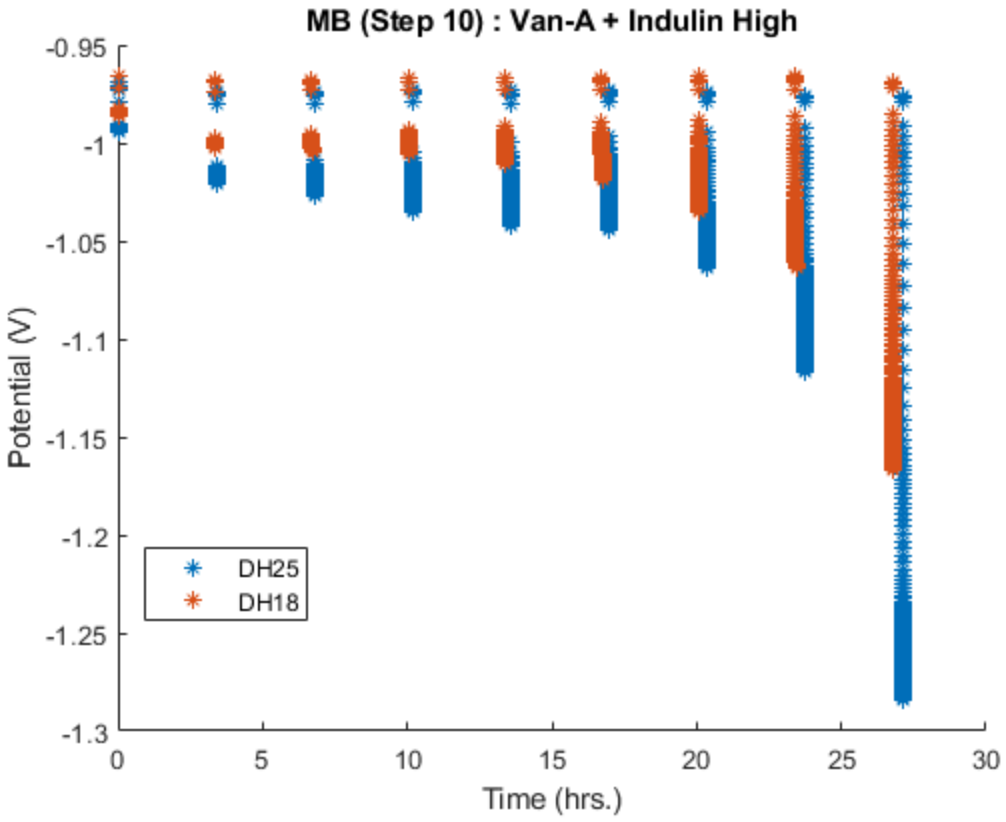

MB (Step 10) : Van-HT Low
Potential (V)
Time (hrs.)
AL06
AL09
-0.94
-0.96
-0.98
-1
-1.02
-1.04
-1.06
-1.08
0
5
10
15
20
25
30

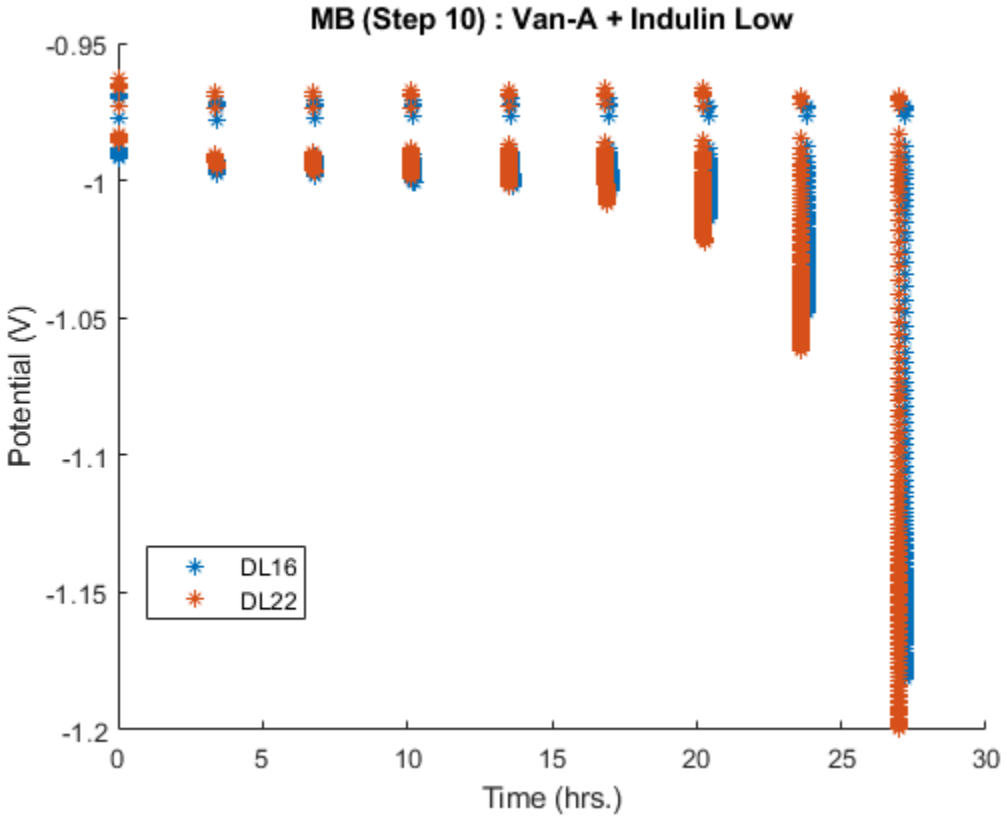

MB (Step 10) : Van-A High
Potential (V)
Time (hrs.)
BH12
BH24
-0.96
-0.98
-1
-1.02
-1.04
-1.06
-1.08
-1.1
-1.12
-1.14
0
5
10
15
20
25
30

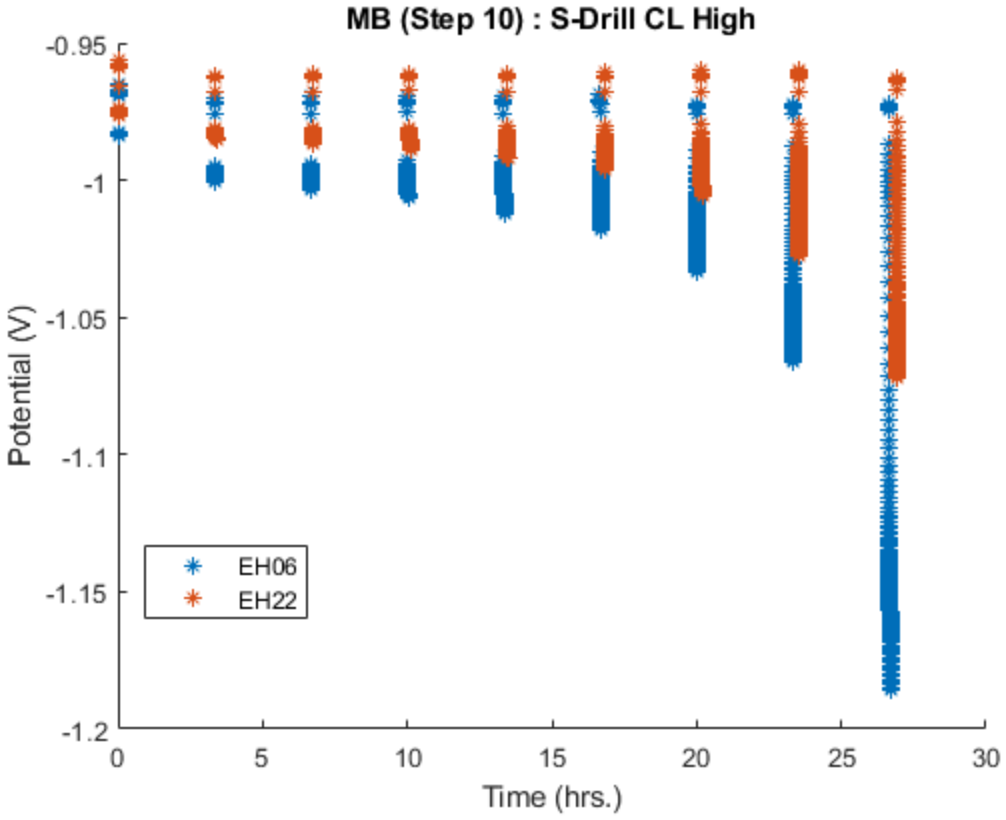

MB (Step 10) : Van-A Low
Potential (V)
Time (hrs.)
BL18
BL14
-0.96
-0.98
-1
-1.02
-1.04
-1.06
-1.08
-1.1
-1.12
-1.14
0
5
10
15
20
25
30

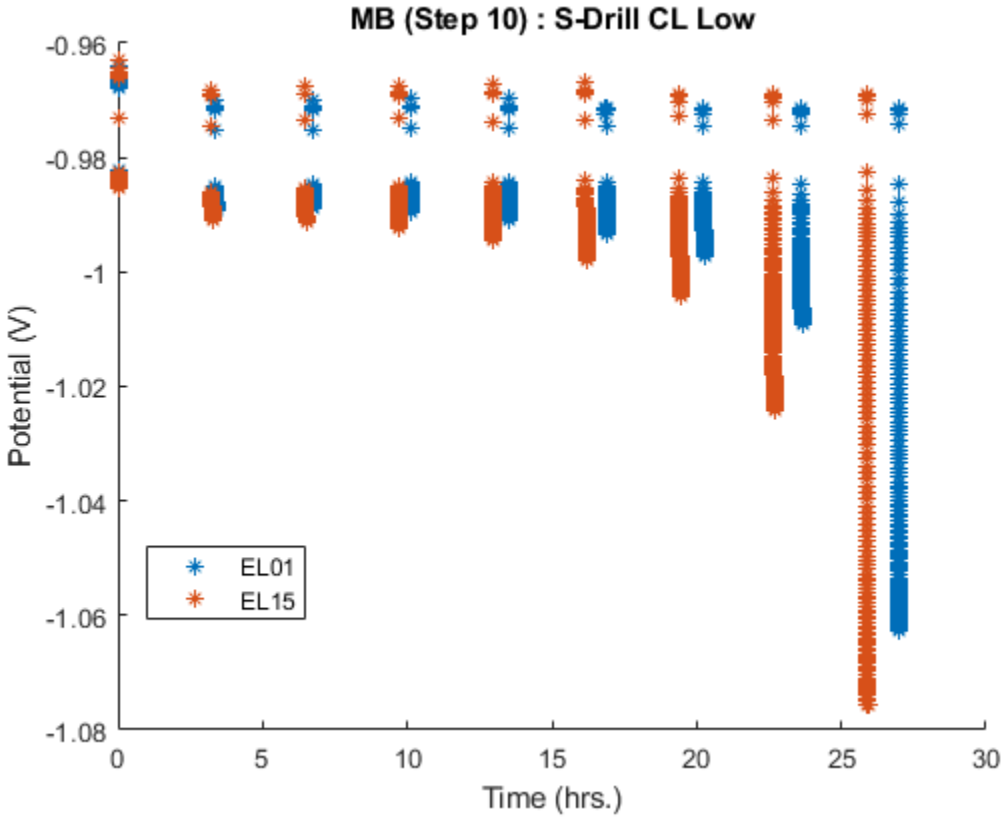

MB (Step 10) : Van-DCA High
Potential (V)
Time (hrs.)
CH01
CH14
-0.96
-0.98
-1
-1.02
-1.04
-1.06
-1.08
-1.1
-1.12
0
5
10
15
20
25
30

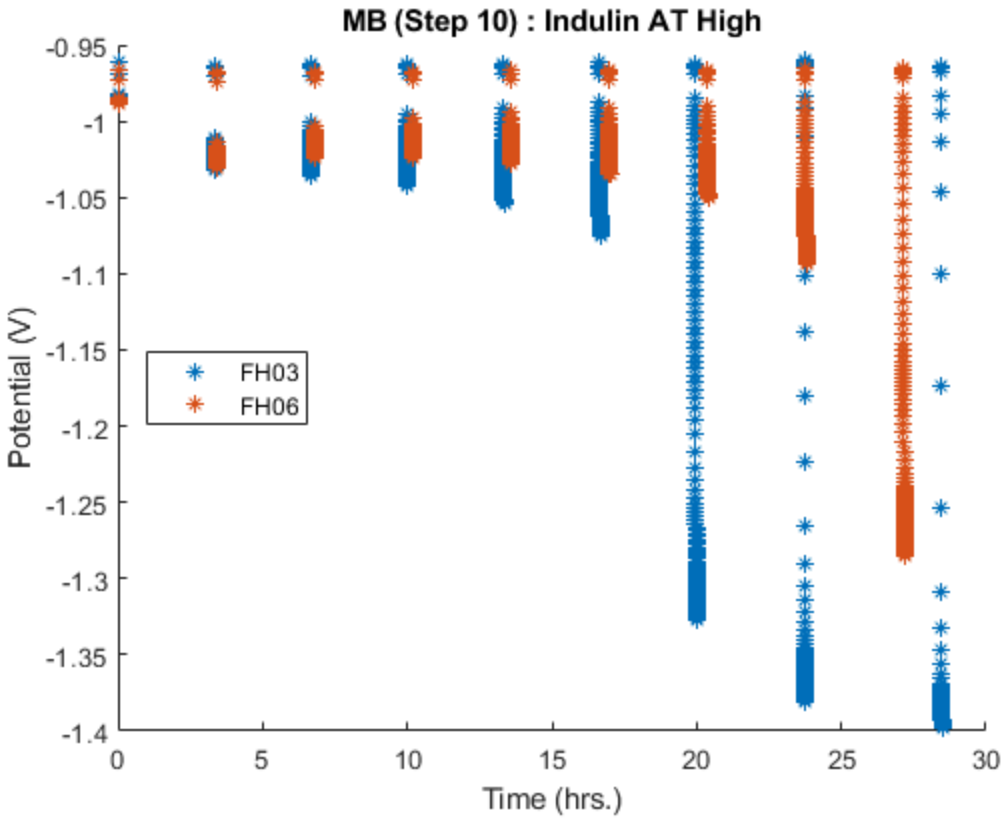

MB (Step 10) : Van-DCA Low
Potential (V)
Time (hrs.)
CL23
CL11
-0.96
-0.98
-1
-1.02
-1.04
-1.06
-1.08
-1.1
-1.12
-1.14
0
5
10
15
20
25
30

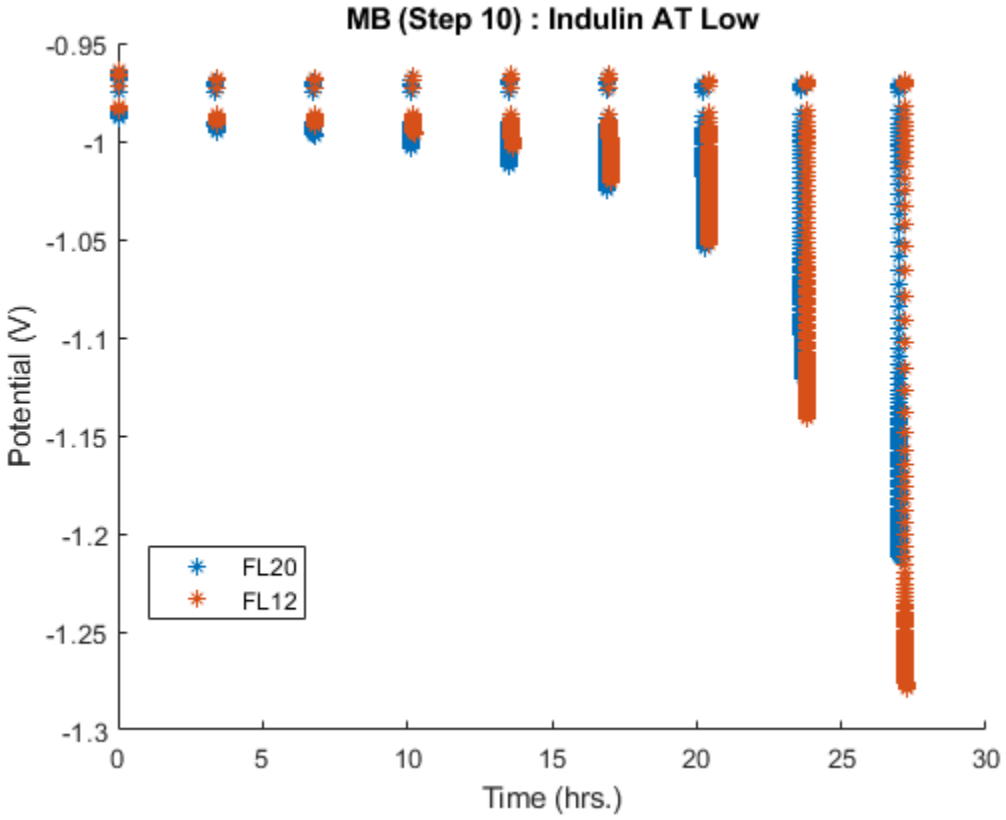

MB (Step 10) : Van-A + Indulin High
Potential (V)
Time (hrs.)
DH25
DH18
-0.95
-1
-1.05
-1.1
-1.15
-1.2
-1.25
-1.3
0
5
10
15
20
25
30


MB (Step 10) : Van-A + Indulin Low
Potential (V)
Time (hrs.)
DL16
DL22
-0.95
-1
-1.05
-1.1
-1.15
-1.2
0
5
10
15
20
25
30


MB (Step 10) : S-Drill CL High
Potential (V)
Time (hrs.)
EH06
EH22
-0.95
-1
-1.05
-1.1
-1.15
-1.2
0
5
10
15
20
25
30

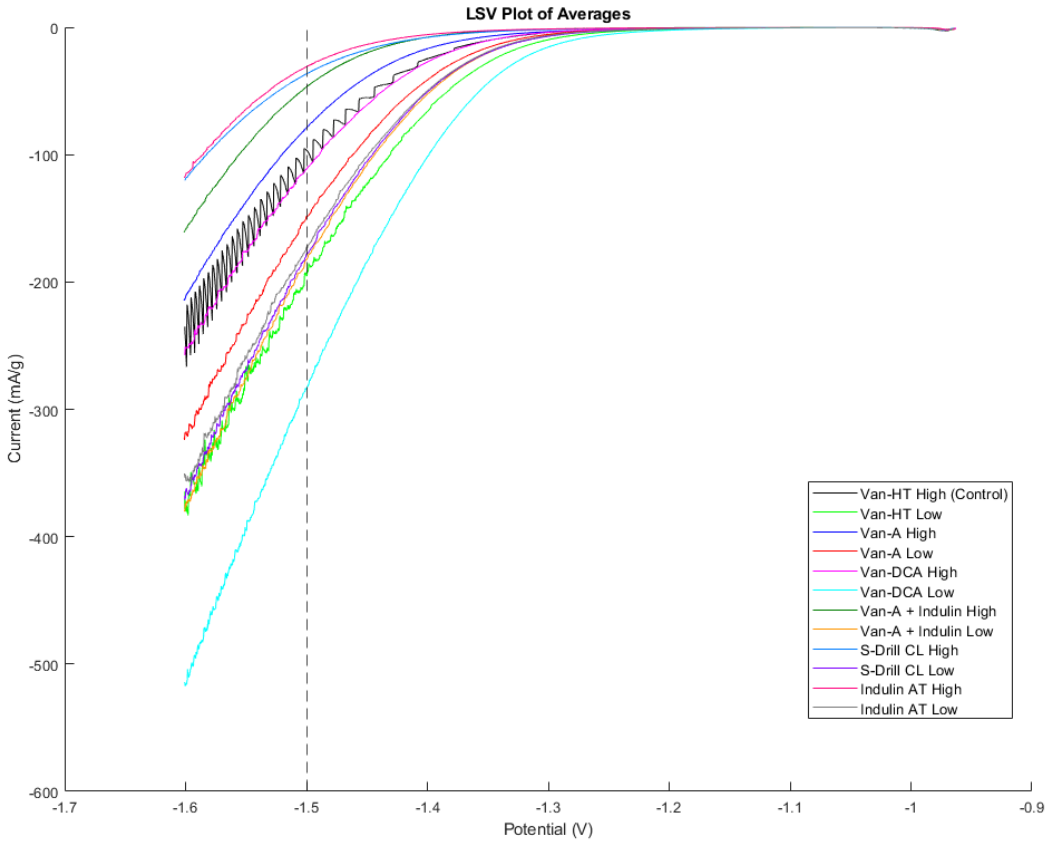

MB (Step 10) : S-Drill CL Low
Potential (V)
Time (hrs.)
EL01
EL15
-0.96
-0.98
-1
-1.02
-1.04
-1.06
-1.08
0
5
10
15
20
25
30

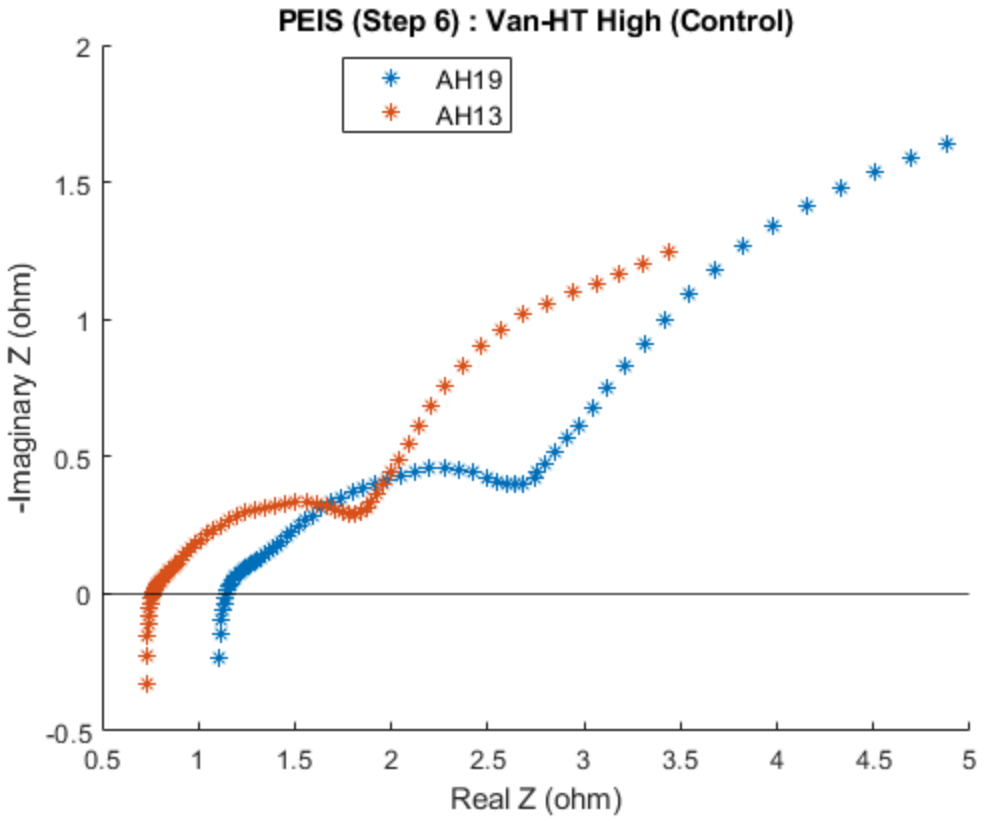

MB (Step 10) : Indulin AT High
Potential (V)
Time (hrs.)
FH03
FH06
-0.95
-1
-1.05
-1.1
-1.15
-1.2
-1.25
-1.3
-1.35
-1.4
0
5
10
15
20
25
30

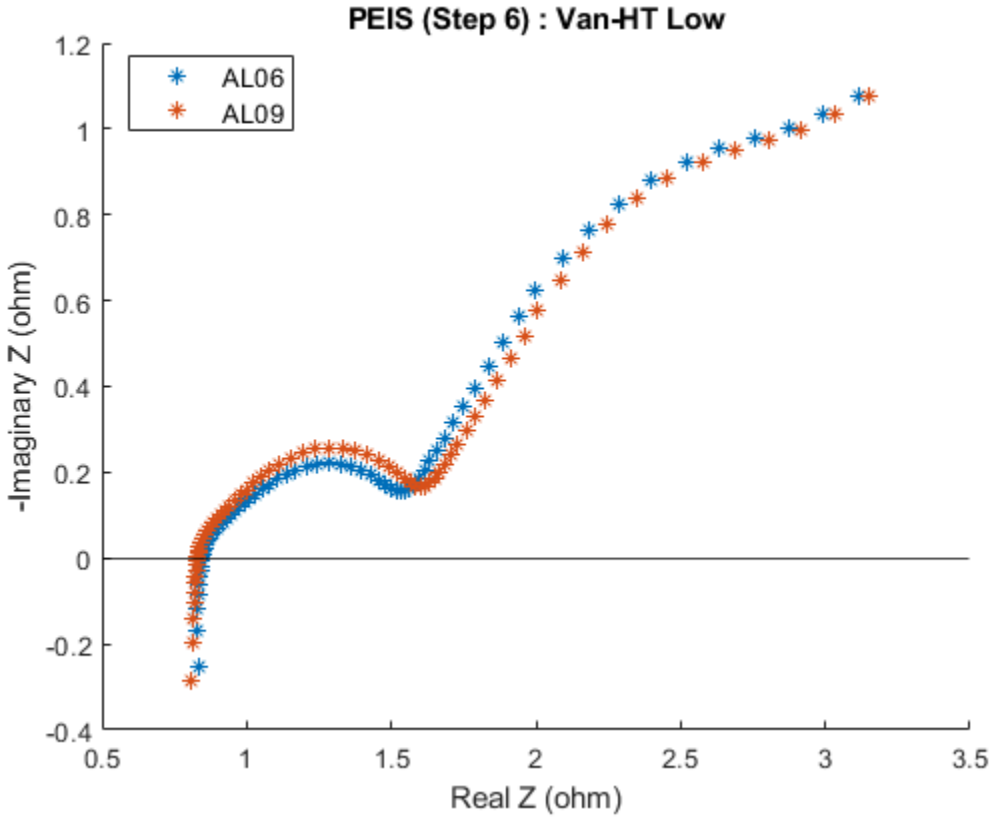

MB (Step 10) : Indulin AT Low
Potential (V)
Time (hrs.)
FL20
FL12
-0.95
-1
-1.05
-1.1
-1.15
-1.2
-1.25
-1.3
0
5
10
15
20
25
30

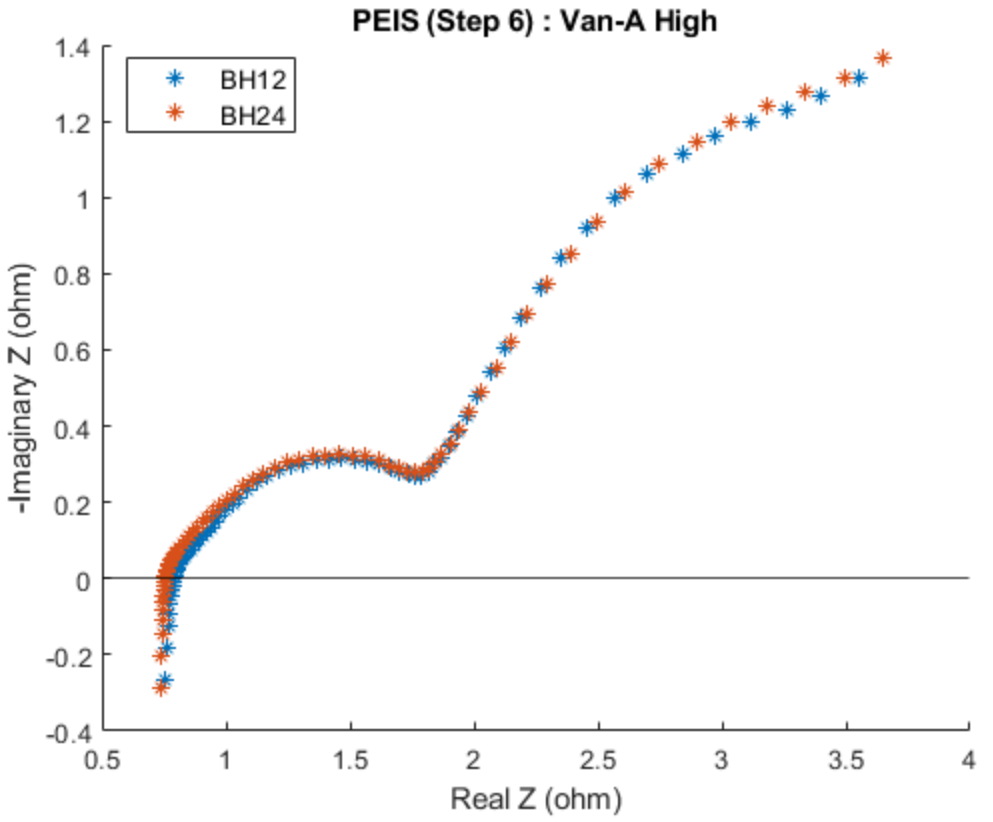
RUN PEIS PROCEDURE

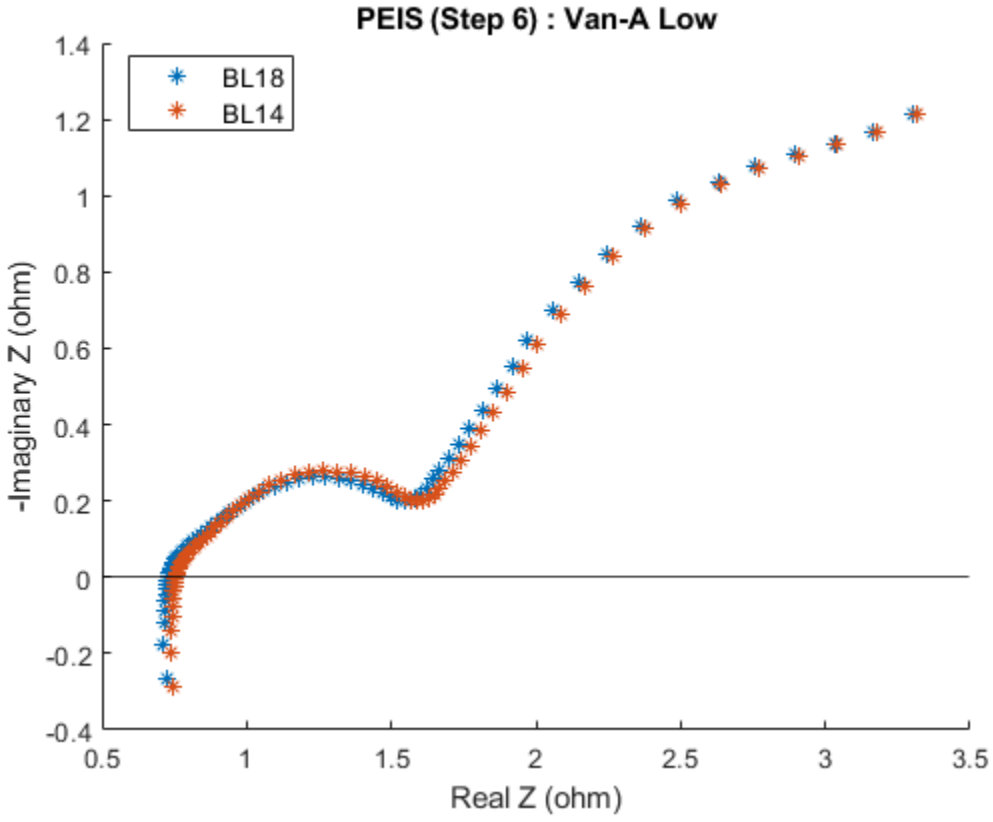
6. PEIS

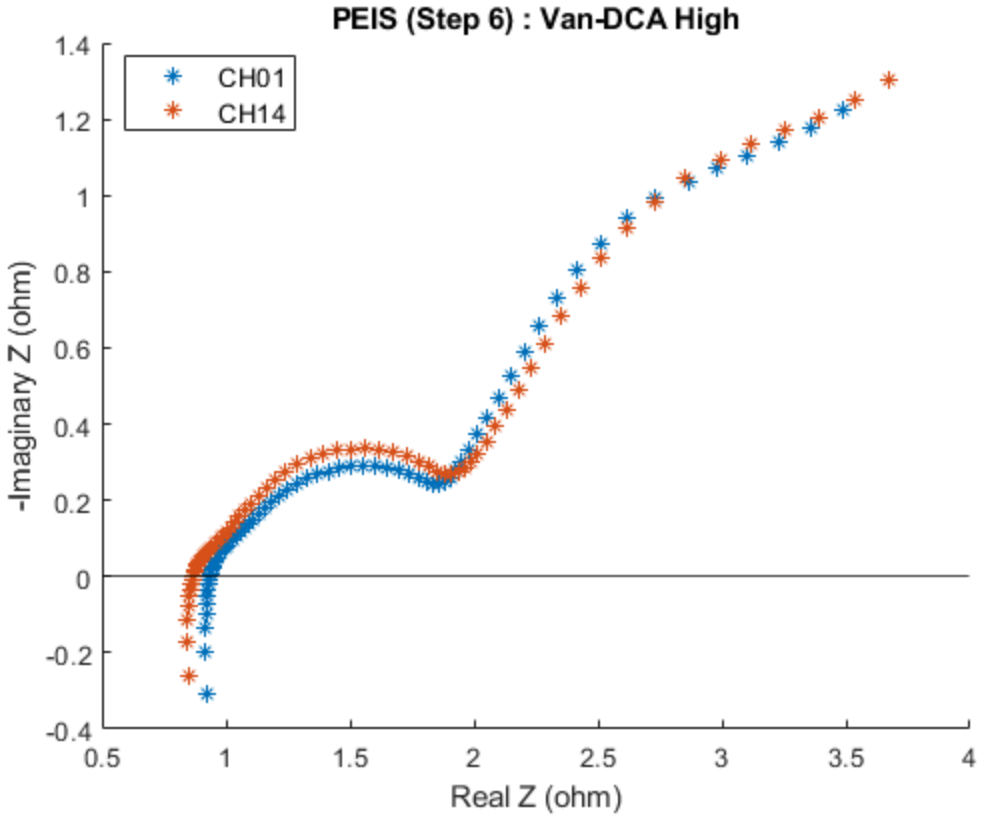


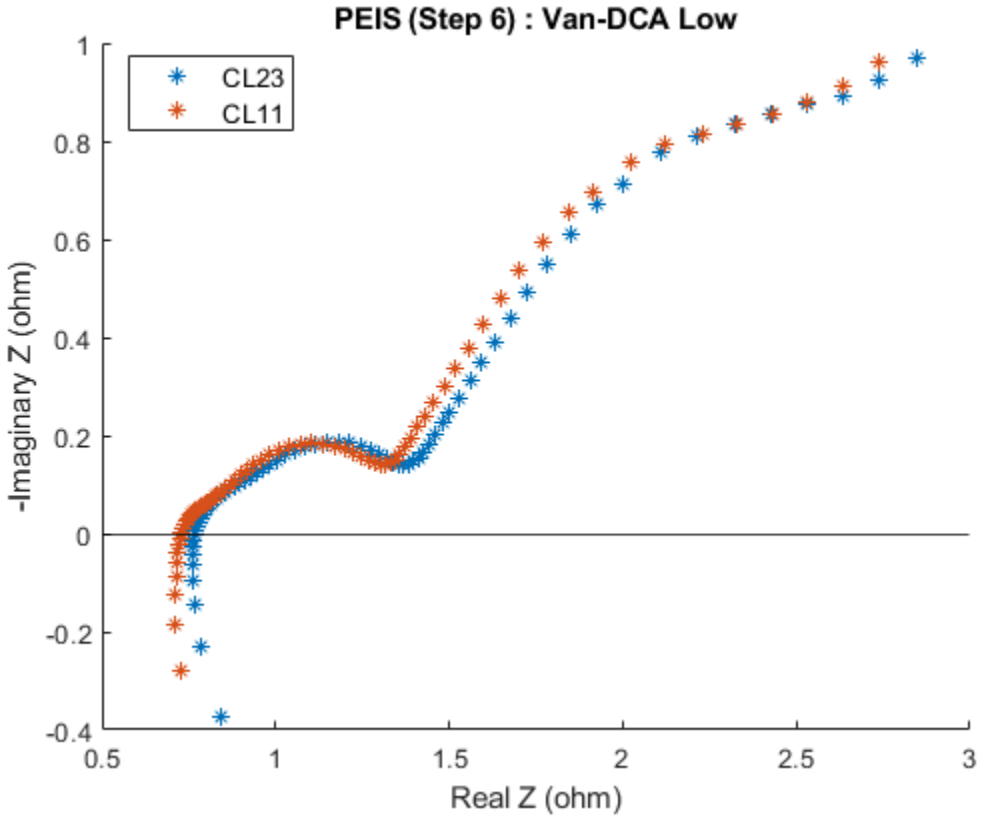

PEIS (Step 6) : Van-HT High (Control)
AH19
AH13
-Imaginary Z (ohm)
Real Z (ohm)
2
1.5
1
0.5
0
-0.5
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5

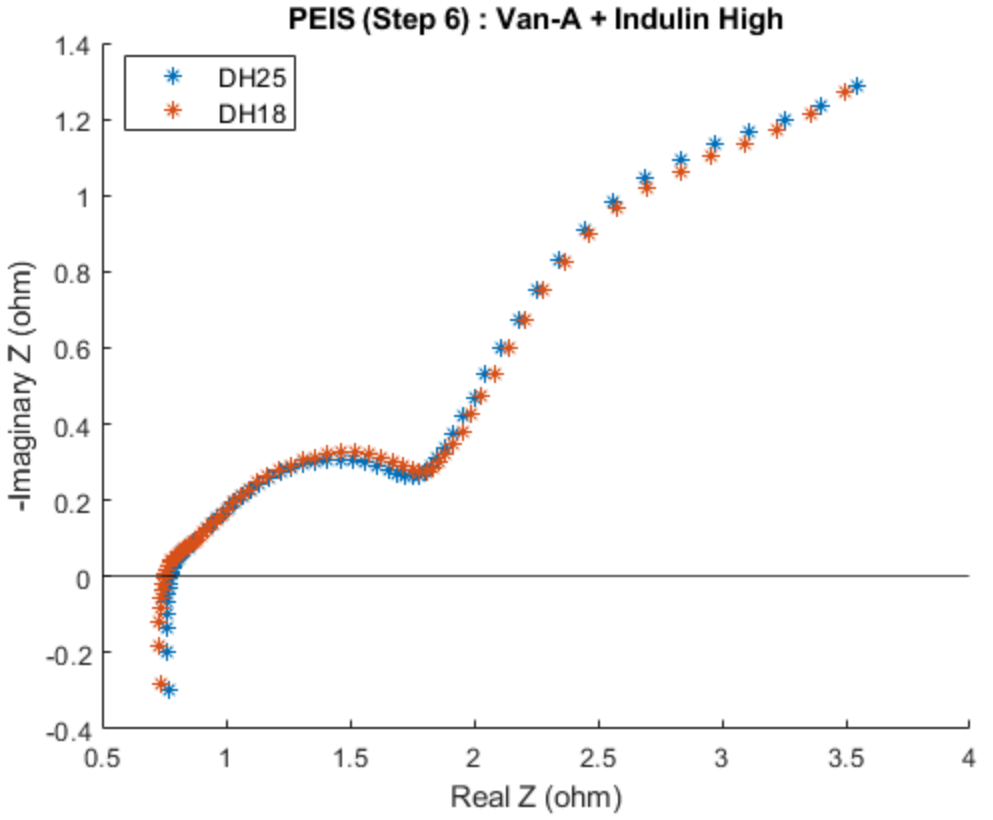

PEIS (Step 6) : Van-HT Low
AL06
AL09
-Imaginary Z (ohm)
Real Z (ohm)
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
0.5
1
1.5
2
2.5
3
3.5

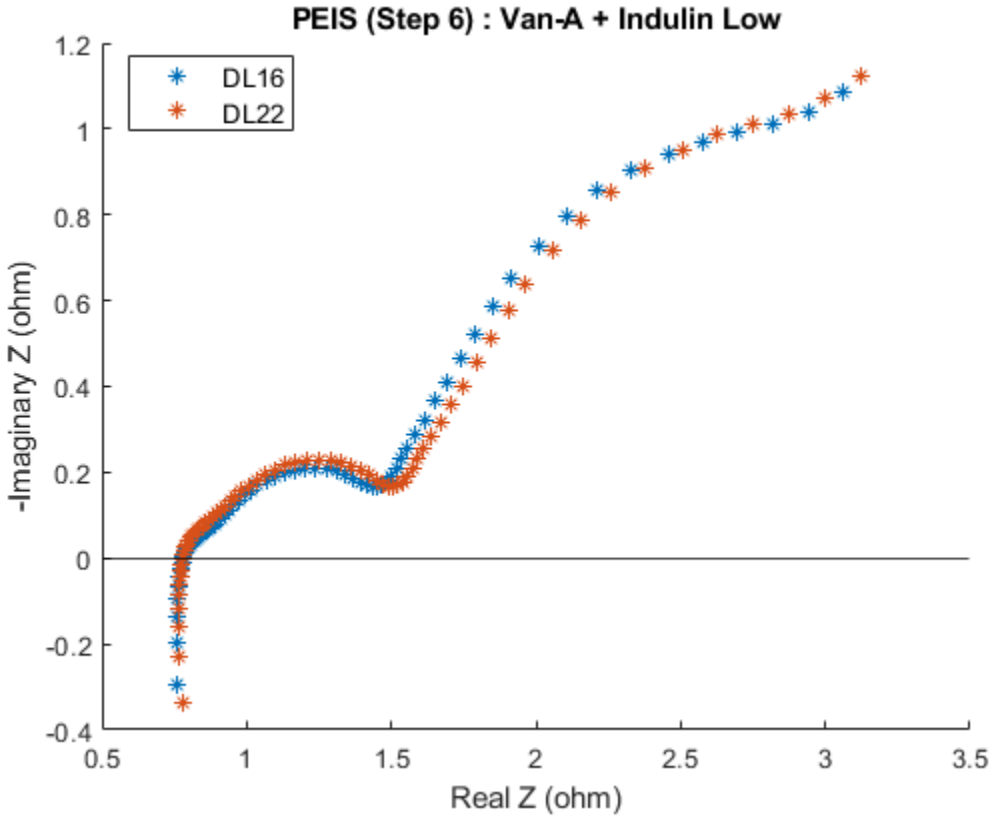

PEIS (Step 6) : Van-A High
BH12
BH24
-Imaginary Z (ohm)
Real Z (ohm)
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
0.5
1
1.5
2
2.5
3
3.5
4

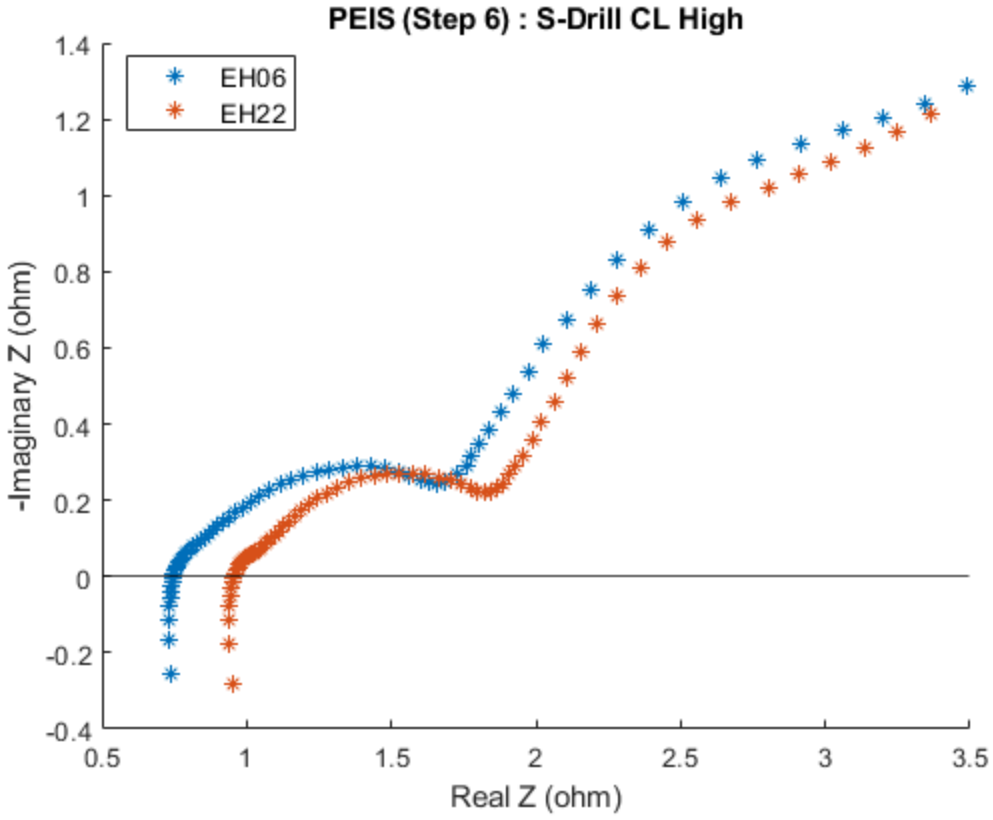

PEIS (Step 6) : Van-A Low
BL18
BL14
-Imaginary Z (ohm)
Real Z (ohm)
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
0.5
1
1.5
2
2.5
3
3.5

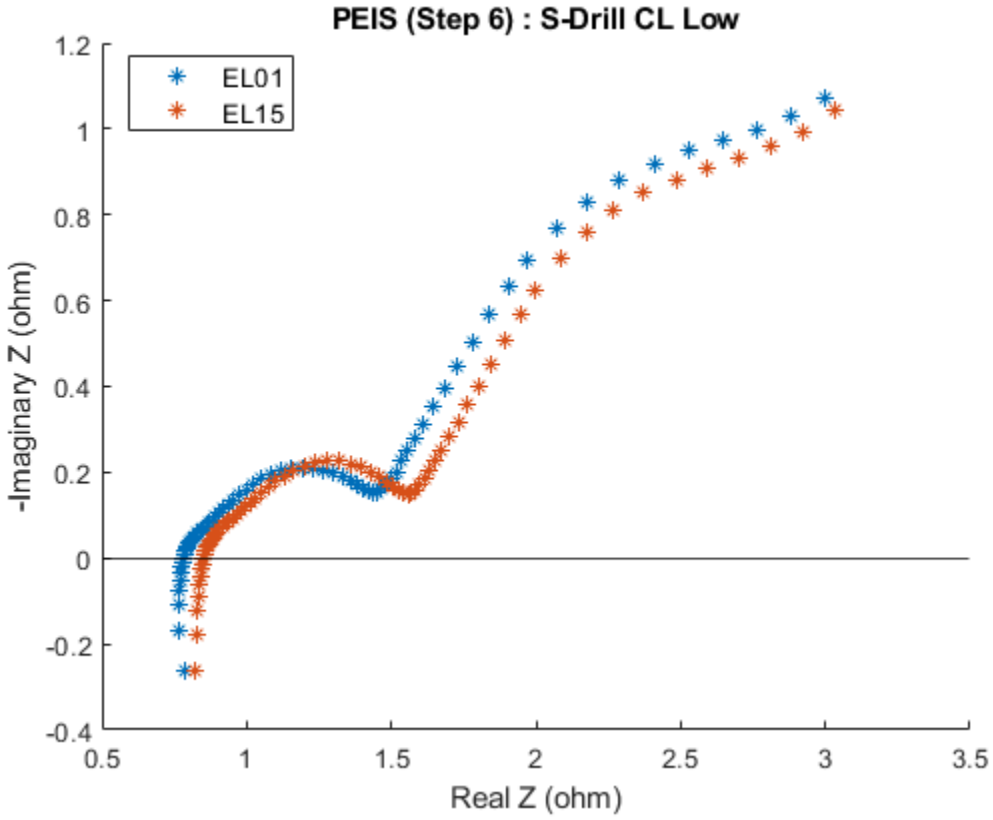

PEIS (Step 6) : Van-DCA High
CH01
CH14
-Imaginary Z (ohm)
Real Z (ohm)
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
0.5
1
1.5
2
2.5
3
3.5
4

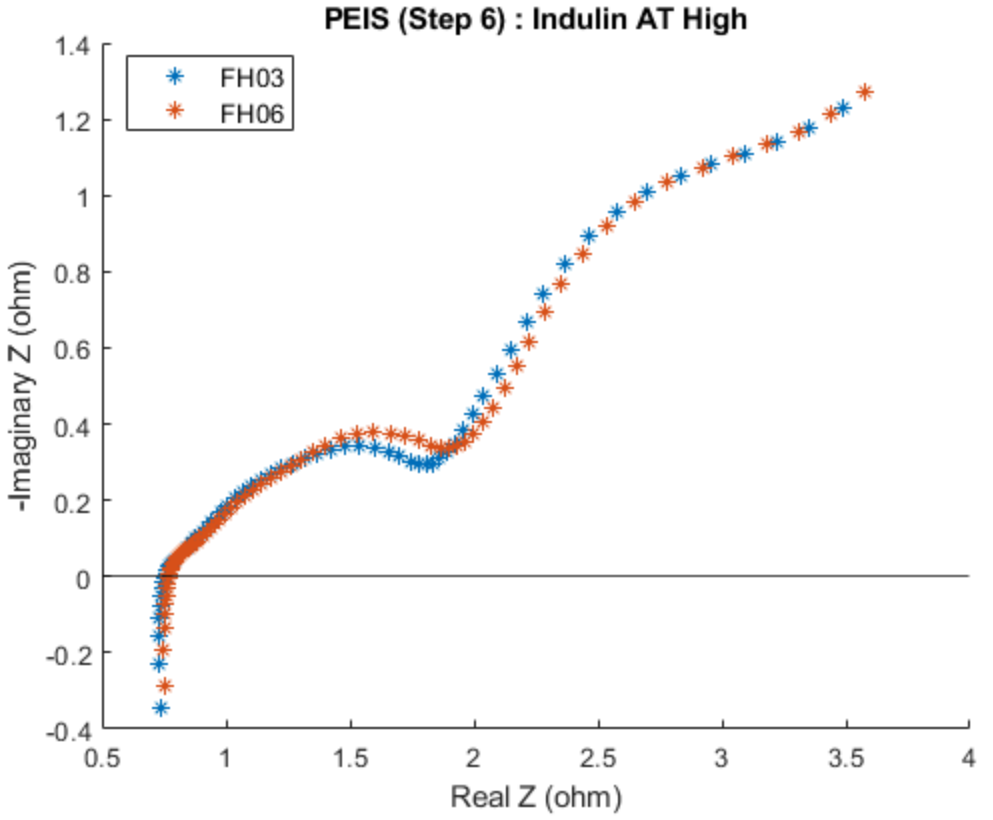

PEIS (Step 6) : Van-DCA Low
CL23
CL11
-Imaginary Z (ohm)
Real Z (ohm)
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
0.5
1
1.5
2
2.5
3

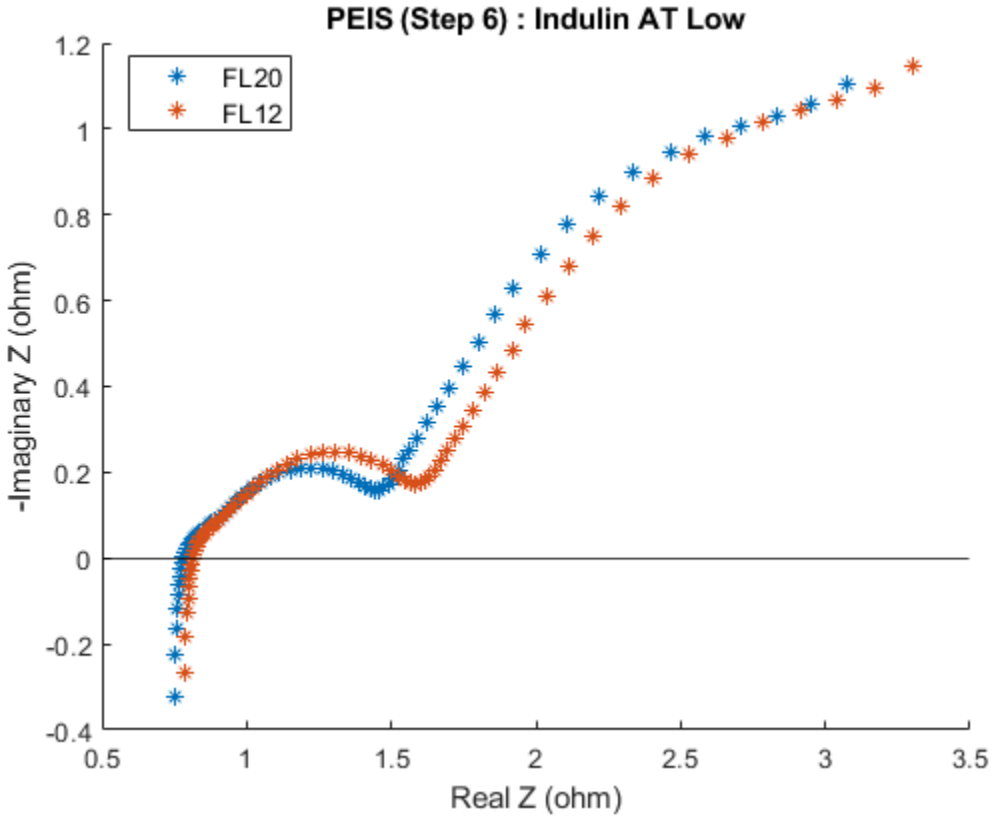

PEIS (Step 6) : Van-A + Indulin High
DH25
DH18
-Imaginary Z (ohm)
Real Z (ohm)
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
0.5
1
1.5
2
2.5
3
3.5
4


PEIS (Step 6) : Van-A + Indulin Low
DL16
DL22
-Imaginary Z (ohm)
Real Z (ohm)
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
0.5
1
1.5
2
2.5
3
3.5

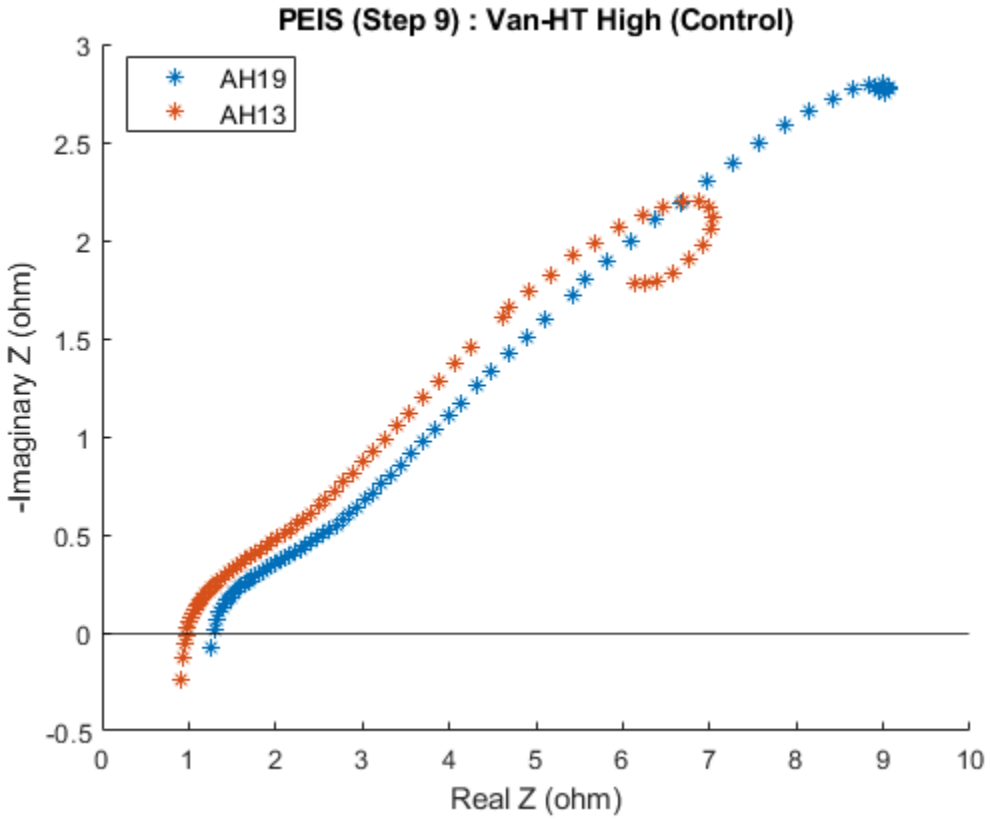

PEIS (Step 6) : S-Drill CL High
EH06
EH22
-Imaginary Z (ohm)
Real Z (ohm)
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
0.5
1
1.5
2
2.5
3
3.5

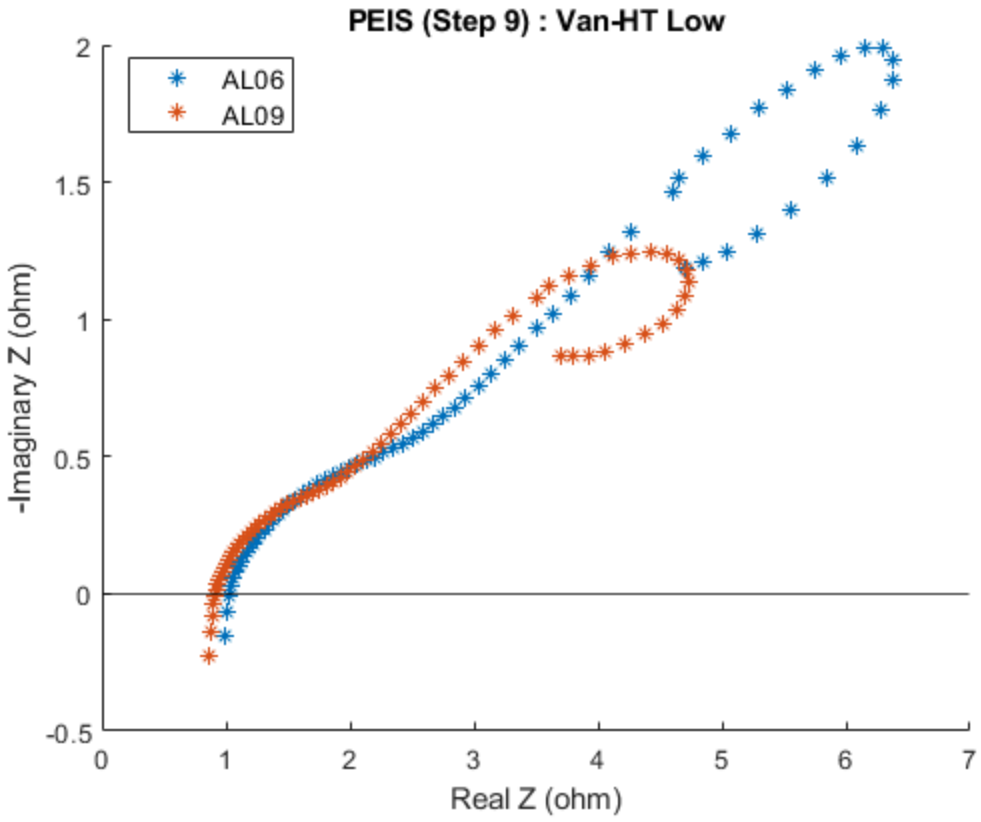

PEIS (Step 6) : S-Drill CL Low
EL01
EL15
-Imaginary Z (ohm)
Real Z (ohm)
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
0.5
1
1.5
2
2.5
3
3.5

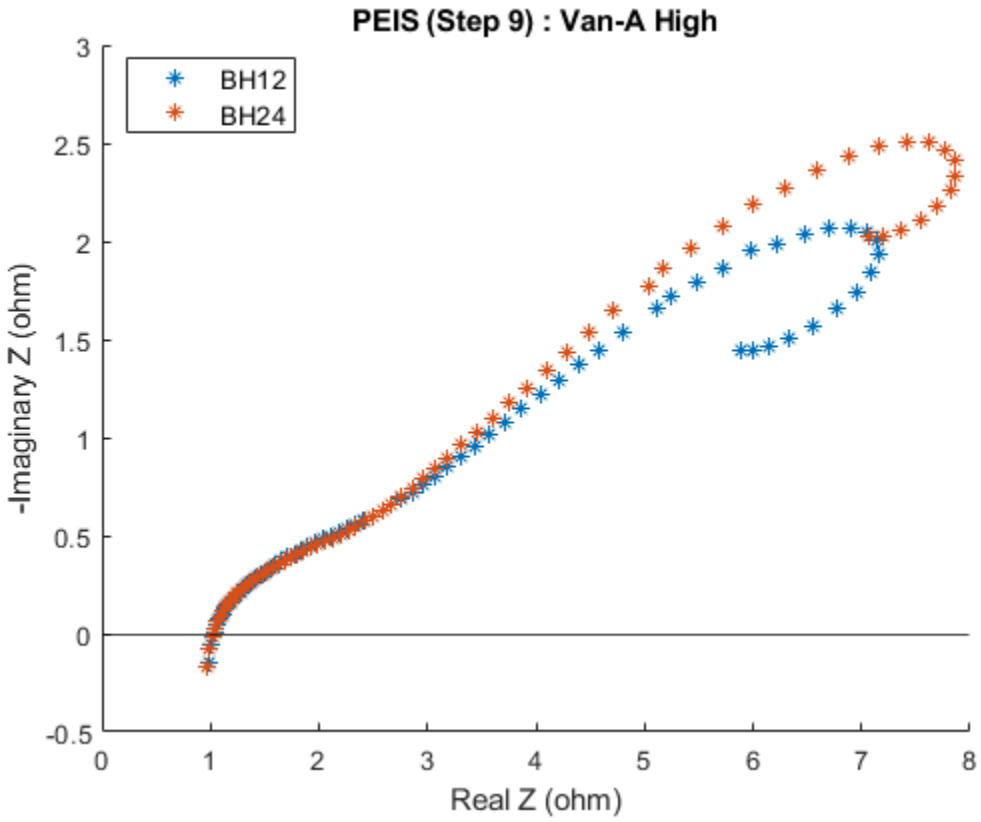

PEIS (Step 6) : Indulin AT High
FH03
FH06
-Imaginary Z (ohm)
Real Z (ohm)
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
0.5
1
1.5
2
2.5
3
3.5
4

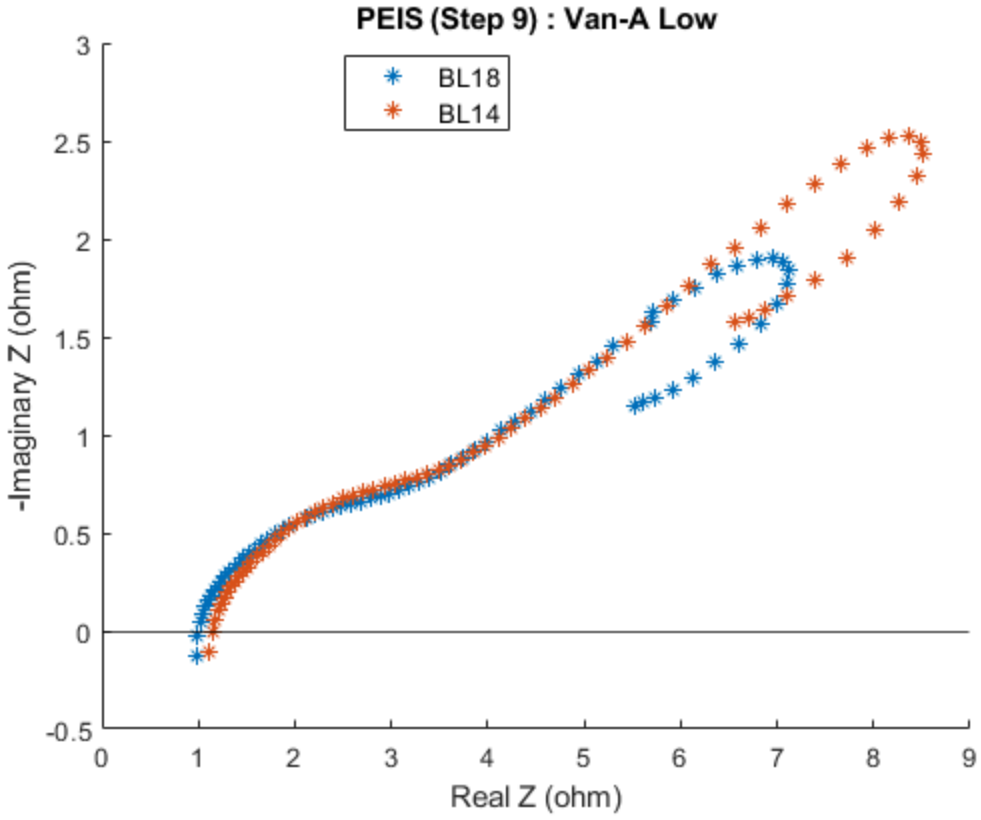

PEIS (Step 6) : Indulin AT Low
FL20
FL12
-Imaginary Z (ohm)
Real Z (ohm)
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
0.5
1
1.5
2
2.5
3
3.5

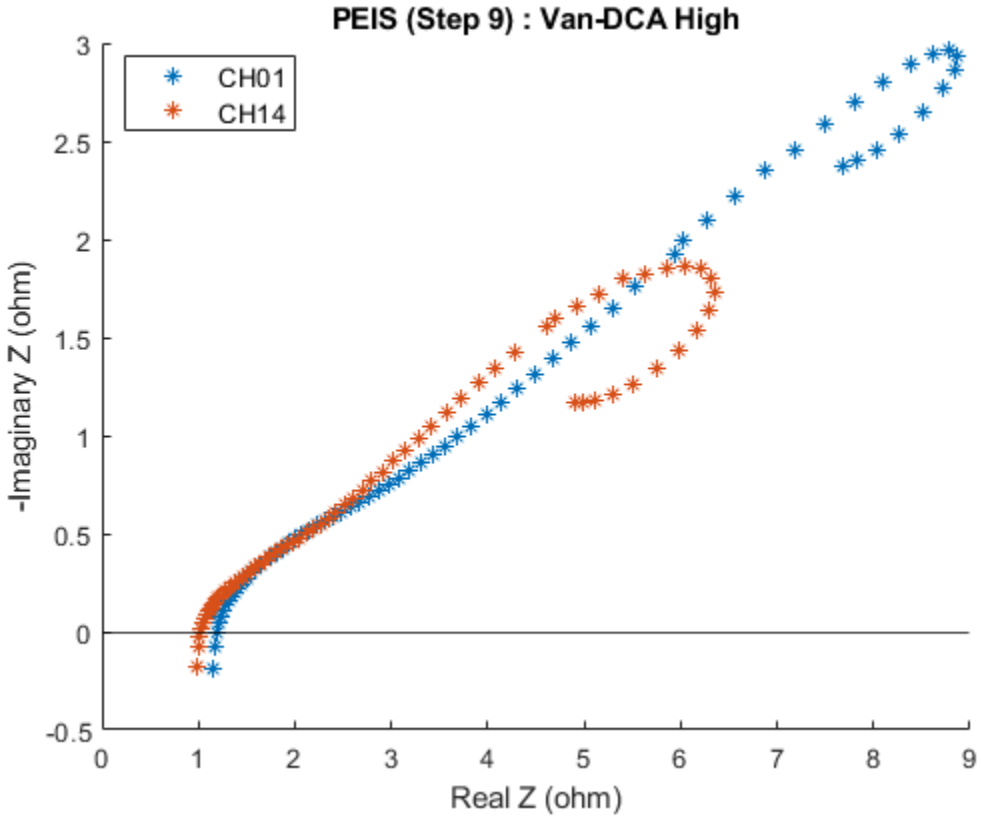
9. PEIS (Default view)

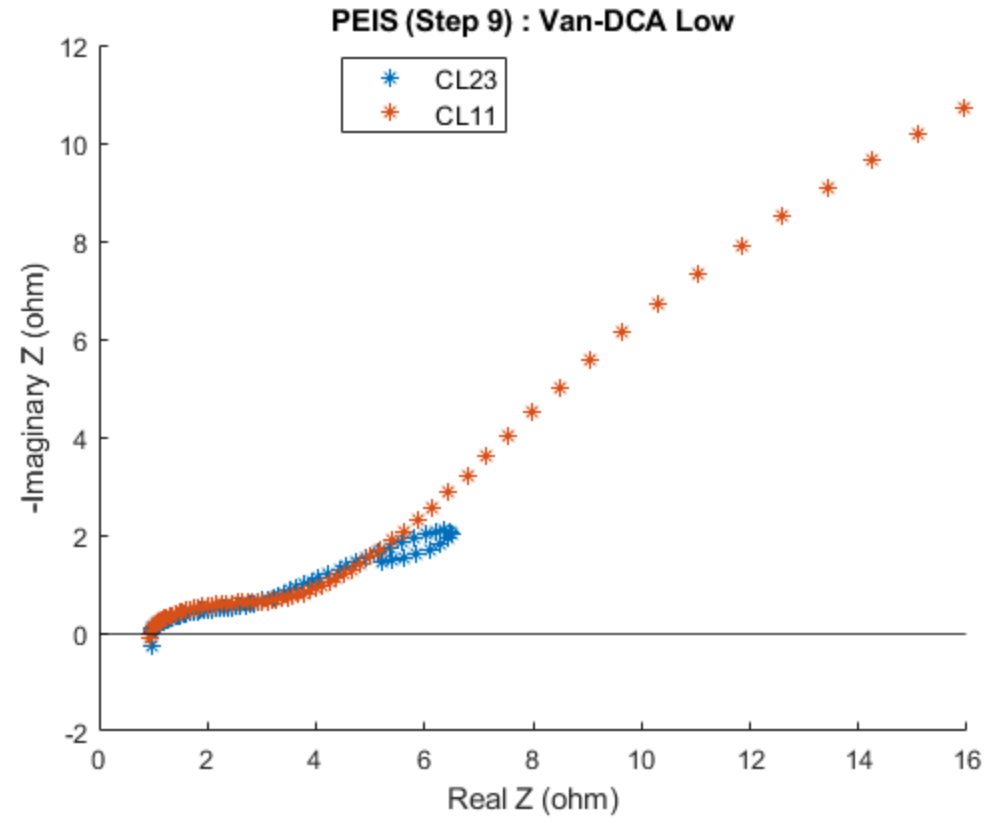


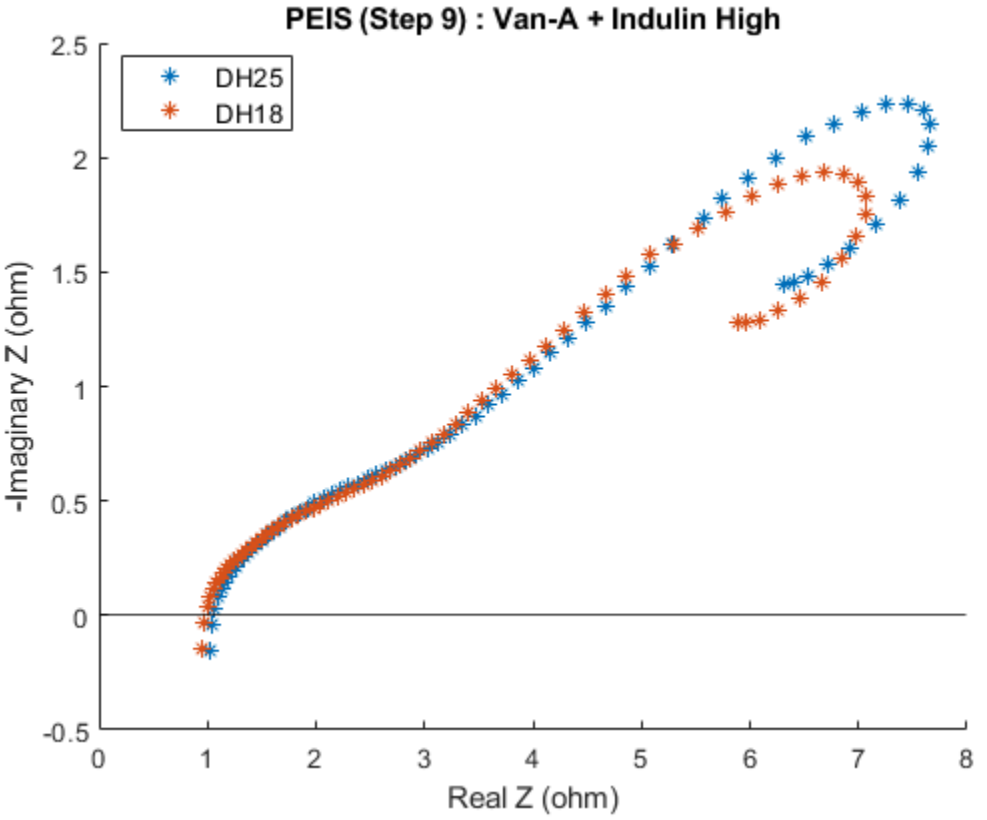

PEIS (Step 9) : Van-HT Low
AL06
AL09
-Imaginary Z (ohm)
Real Z (ohm)
2
1.5
1
0.5
0
-0.5
0
1
2
3
4
5
6
7

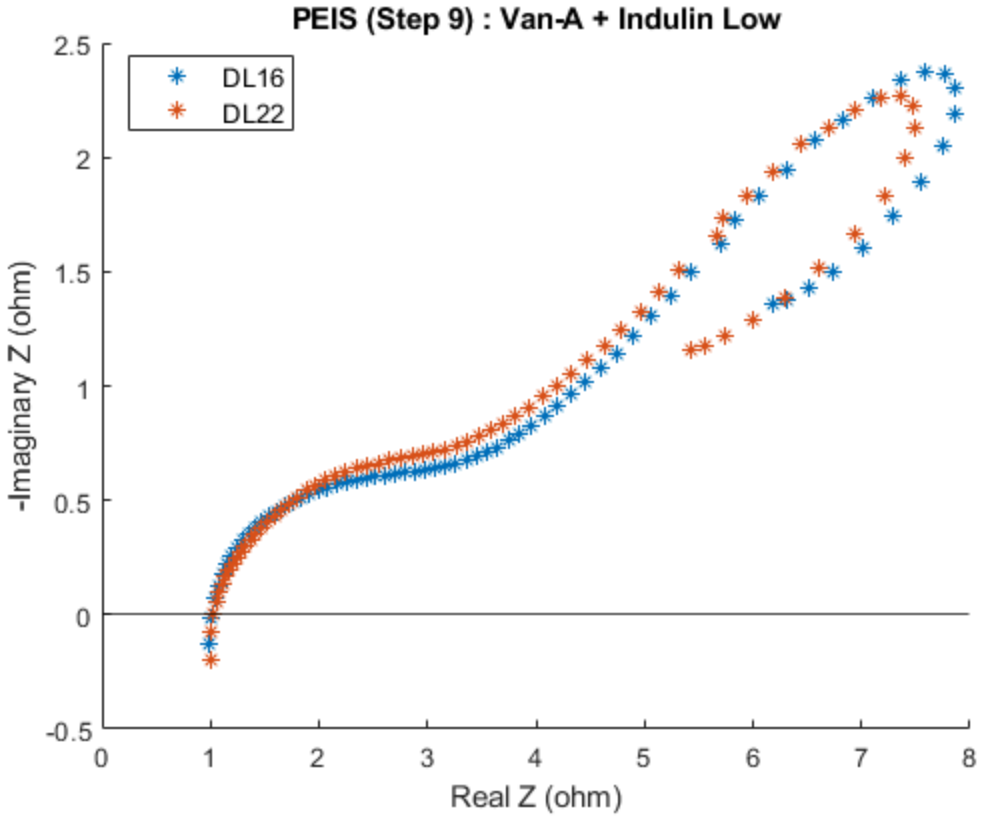

PEIS (Step 9) : Van-A High
BH12
BH24
-Imaginary Z (ohm)
Real Z (ohm)
3
2.5
2
1.5
1
0.5
0
-0.5
0
1
2
3
4
5
6
7
8

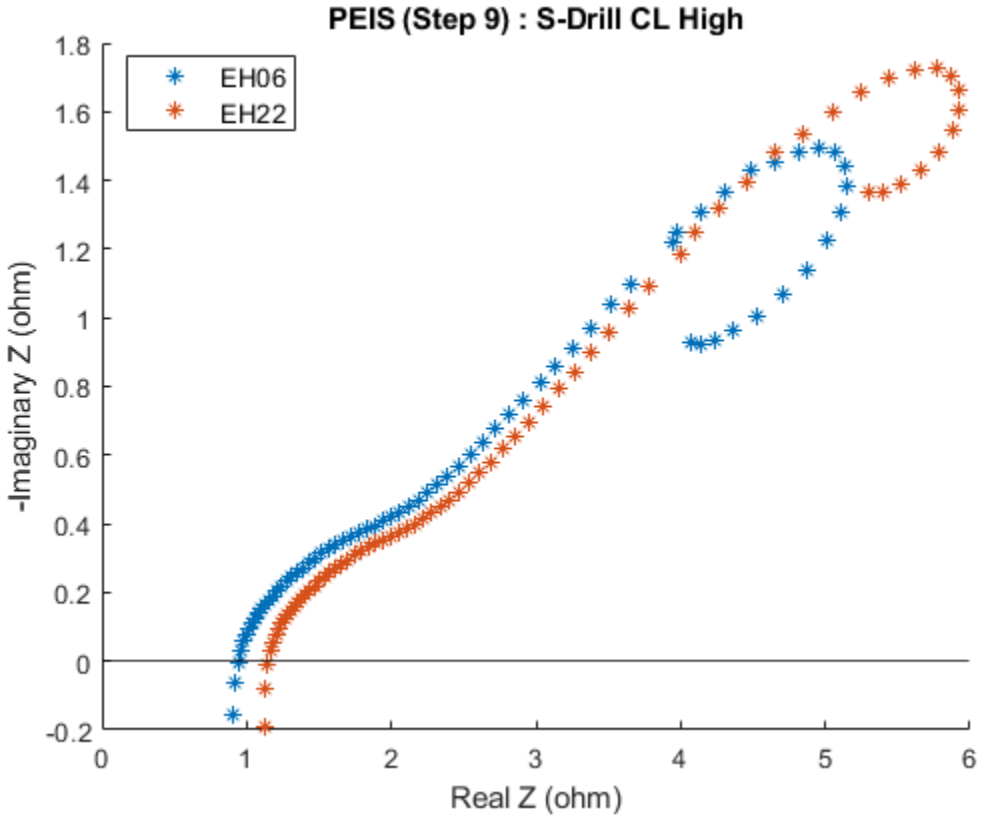

PEIS (Step 9) : Van-A Low
BL18
BL14
-Imaginary Z (ohm)
Real Z (ohm)
3
2.5
2
1.5
1
0.5
0
-0.5
0
1
2
3
4
5
6
7
8
9

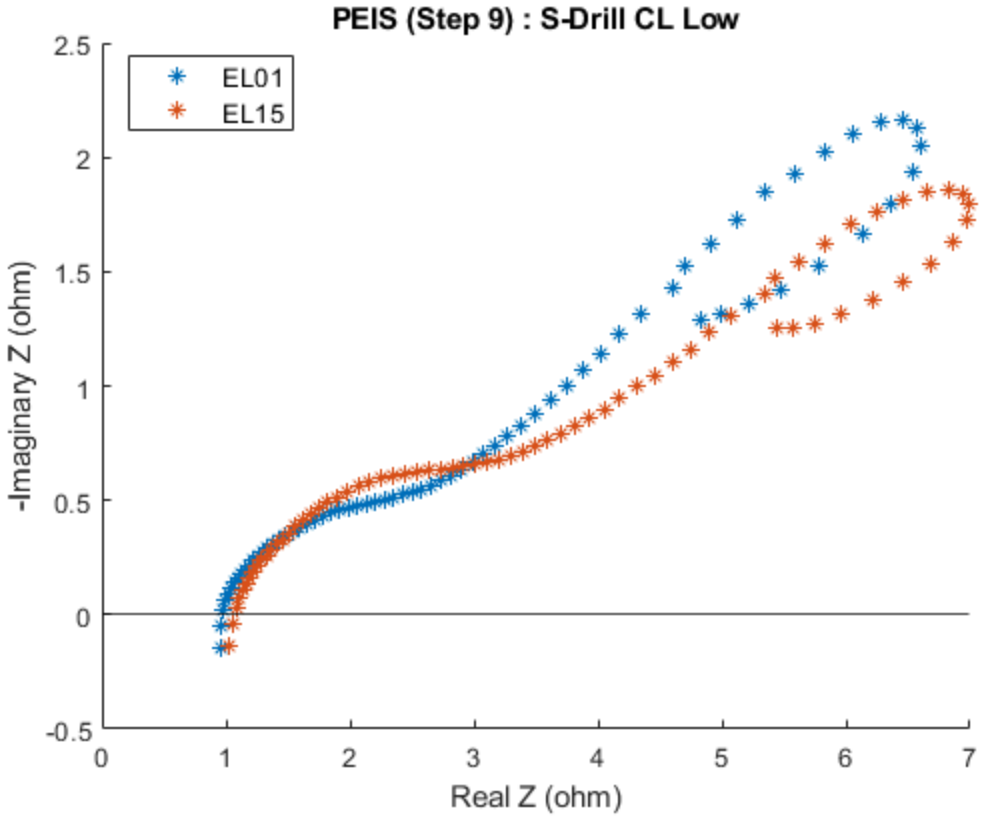

PEIS (Step 9) : Van-DCA High
CH01
CH14
-Imaginary Z (ohm)
Real Z (ohm)
3
2.5
2
1.5
1
0.5
0
-0.5
0
1
2
3
4
5
6
7
8
9

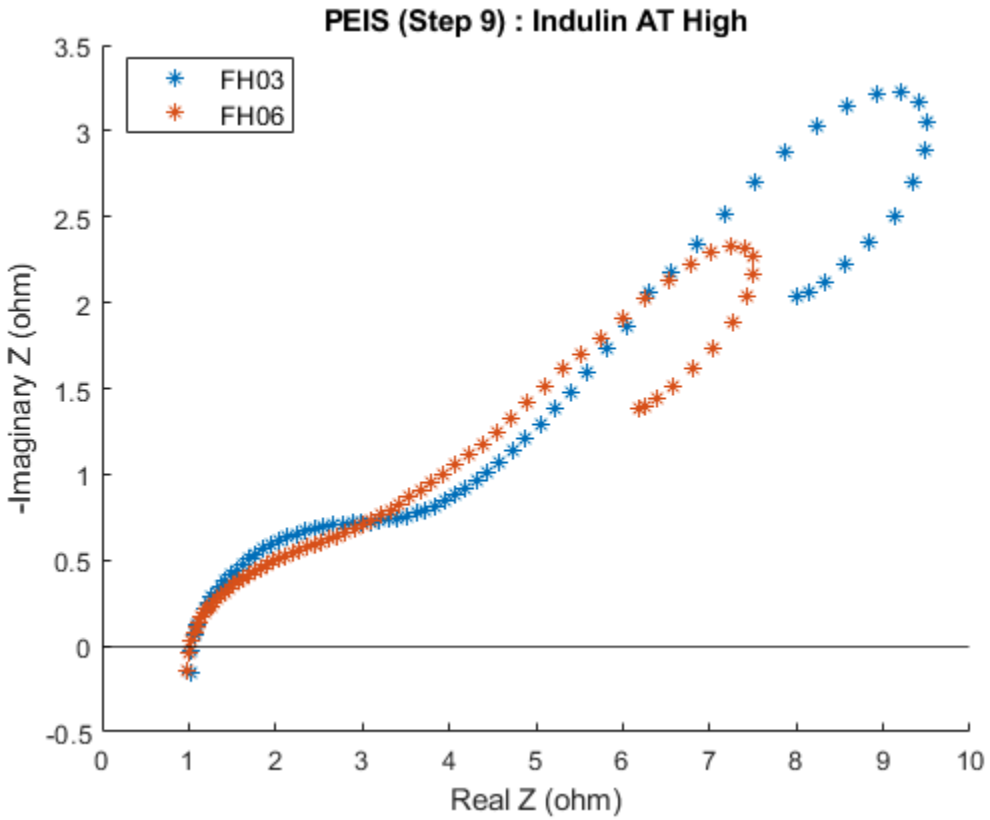

PEIS (Step 9) : Van-DCA Low
CL23
CL11
-Imaginary Z (ohm)
Real Z (ohm)
12
10
8
6
4
2
0
-2
0
2
4
6
8
10
12
14
16

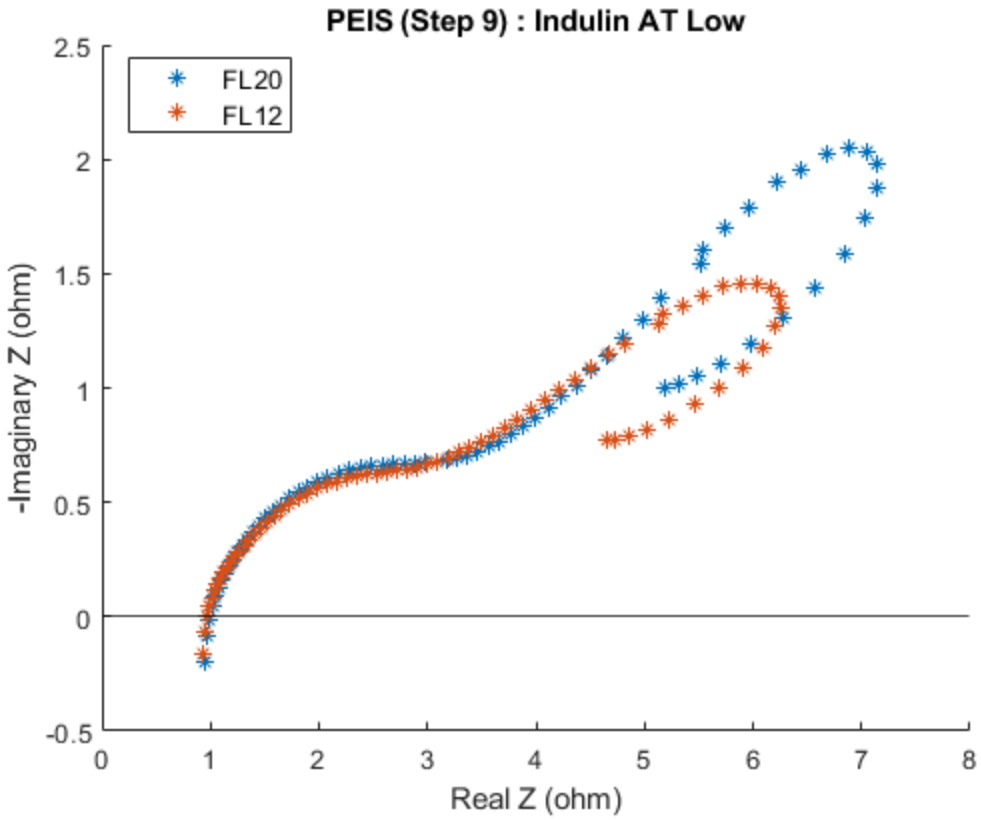

PEIS (Step 9) : Van-A + Indulin High
DH25
DH18
-Imaginary Z (ohm)
Real Z (ohm)
2.5
2
1.5
1
0.5
0
-0.5
0
1
2
3
4
5
6
7
8


PEIS (Step 9) : Van-A + Indulin Low
DL16
DL22
-Imaginary Z (ohm)
Real Z (ohm)
2.5
2
1.5
1
0.5
0
-0.5
0
1
2
3
4
5
6
7
8

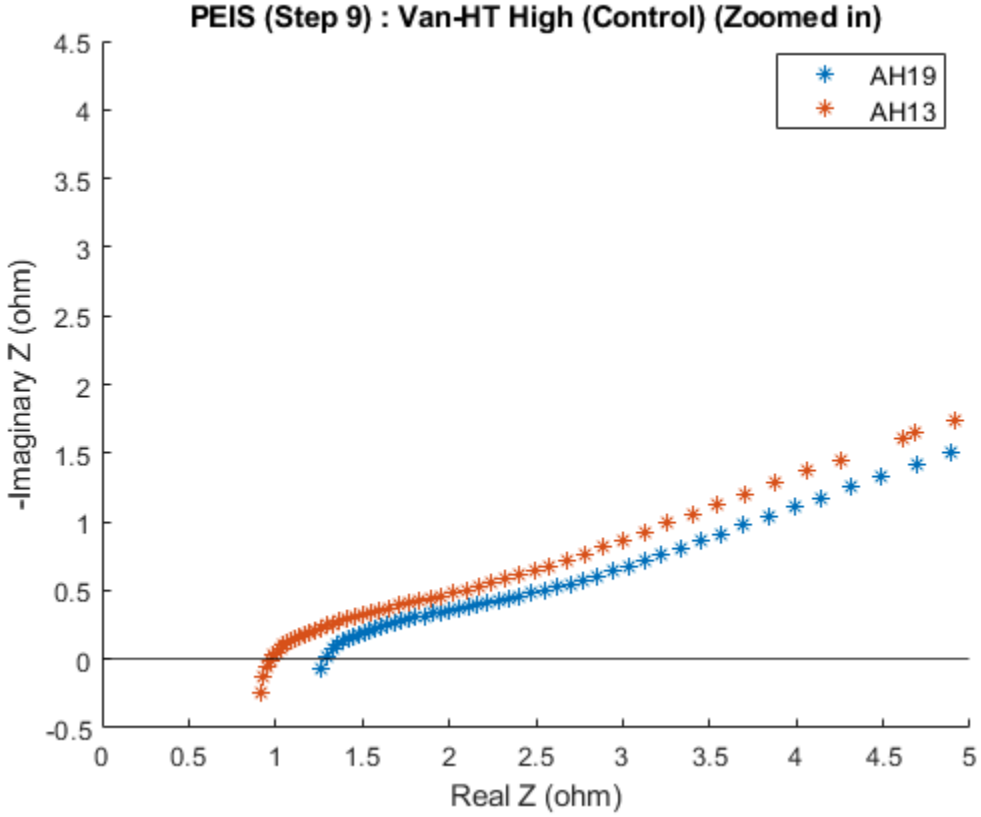

PEIS (Step 9) : S-Drill CL High
EH06
EH22
-Imaginary Z (ohm)
Real Z (ohm)
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
0
1
2
3
4
5
6

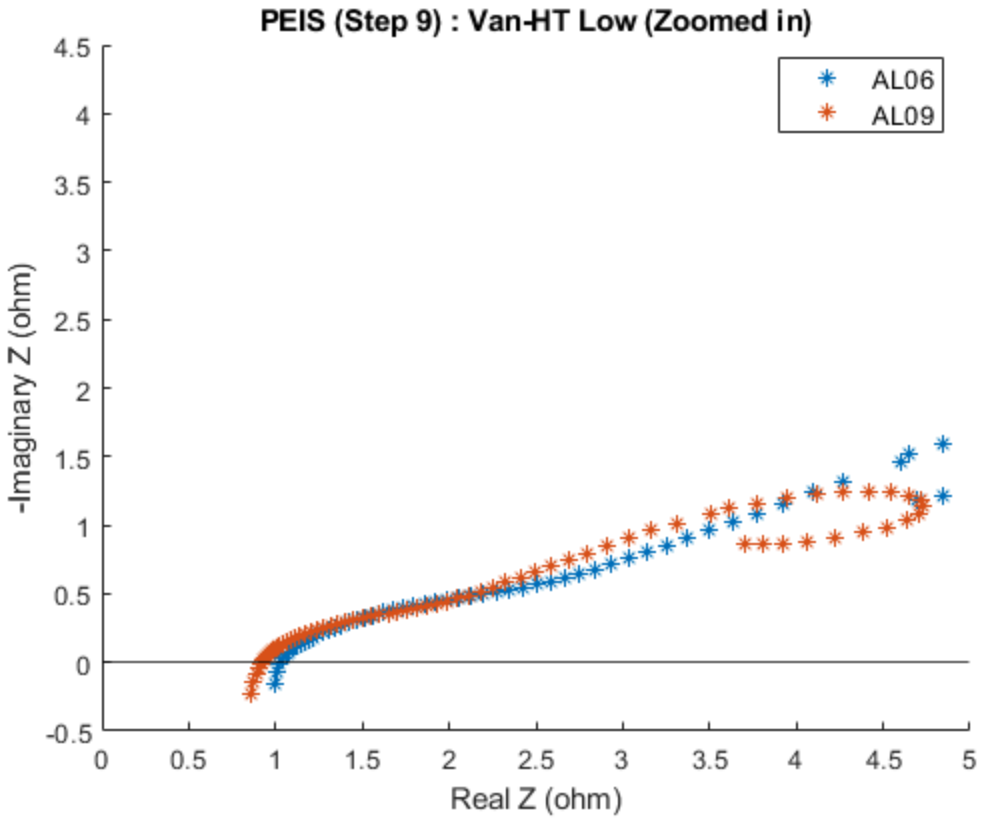

PEIS (Step 9) : S-Drill CL Low
EL01
EL15
-Imaginary Z (ohm)
Real Z (ohm)
2.5
2
1.5
1
0.5
0
-0.5
0
1
2
3
4
5
6
7

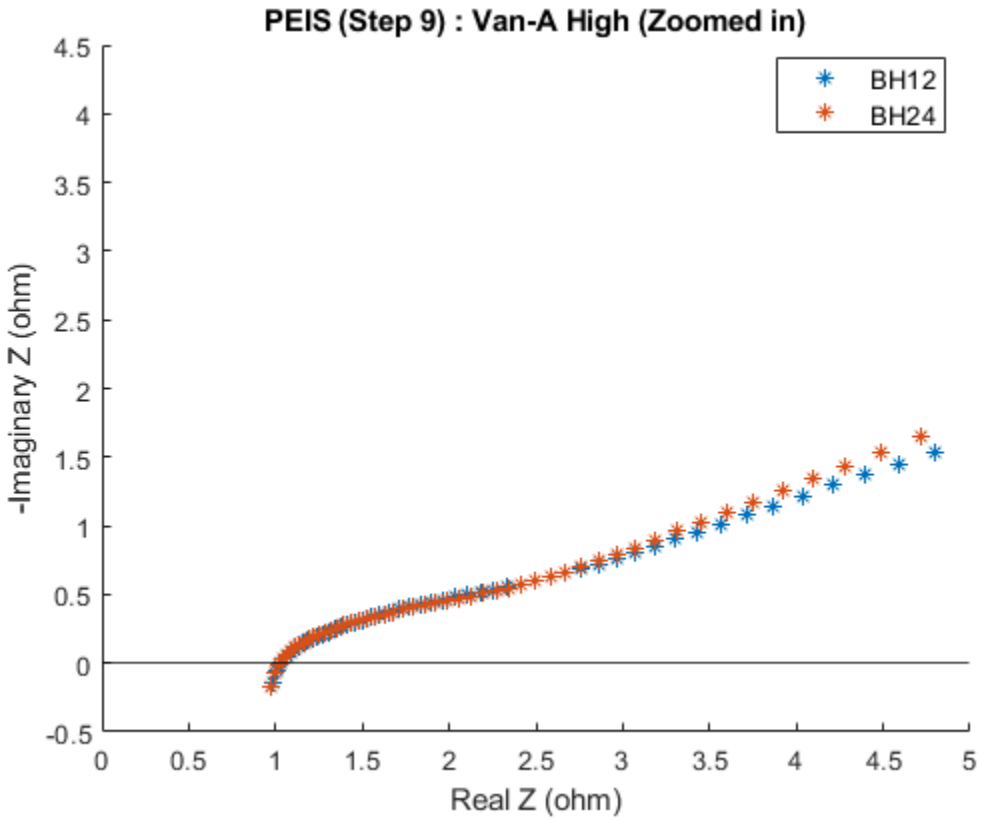

PEIS (Step 9) : Indulin AT High
FH03
FH06
-Imaginary Z (ohm)
Real Z (ohm)
3.5
3
2.5
2
1.5
1
0.5
0
-0.5
0
1
2
3
4
5
6
7
8
9
10

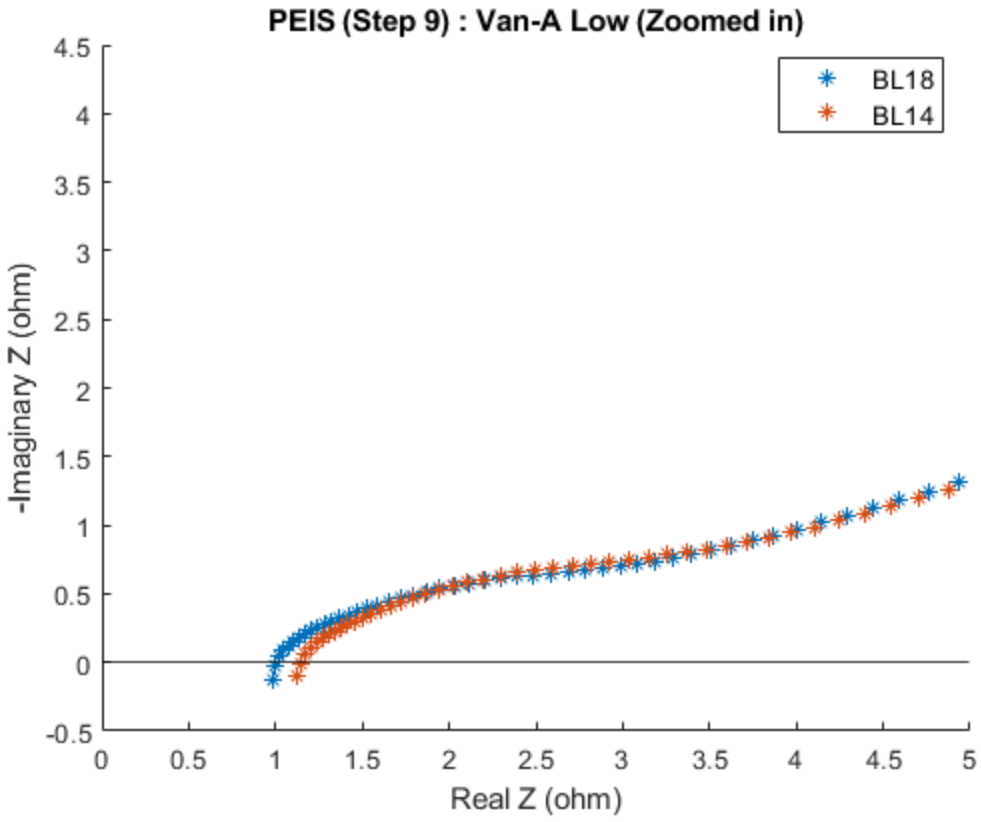

PEIS (Step 9) : Indulin AT Low
FL20
FL12
-Imaginary Z (ohm)
Real Z (ohm)
2.5
2
1.5
1
0.5
0
-0.5
0
1
2
3
4
5
6
7
8

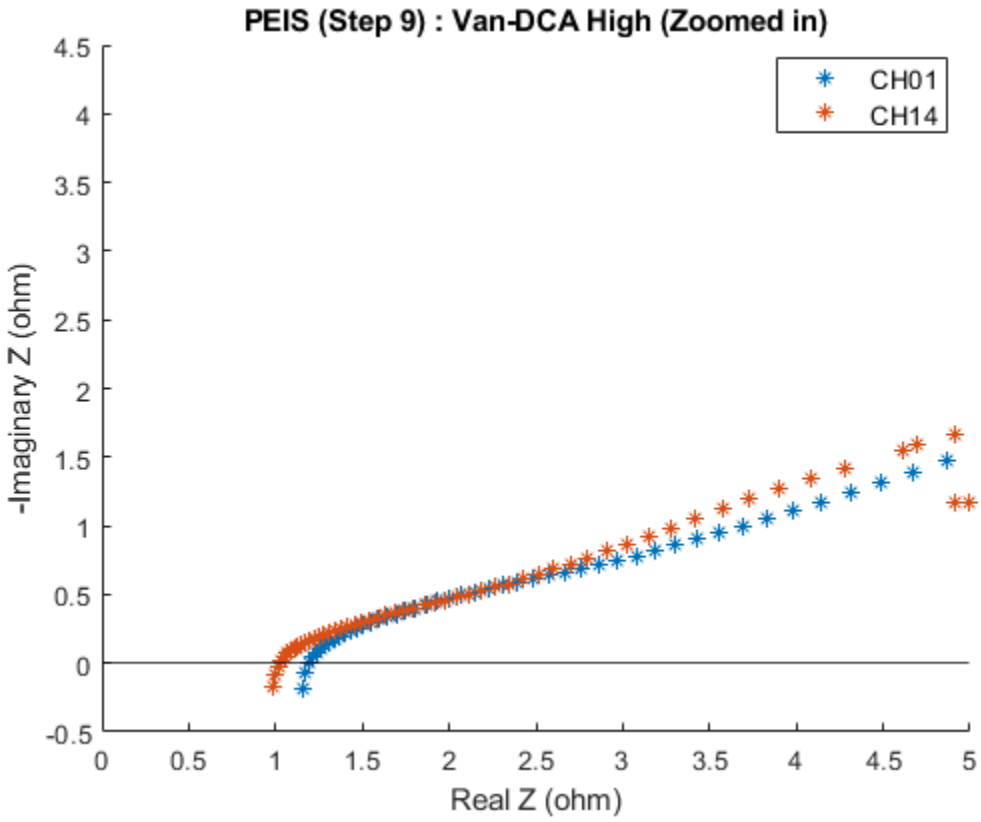
9. PEIS (Zoomed View)

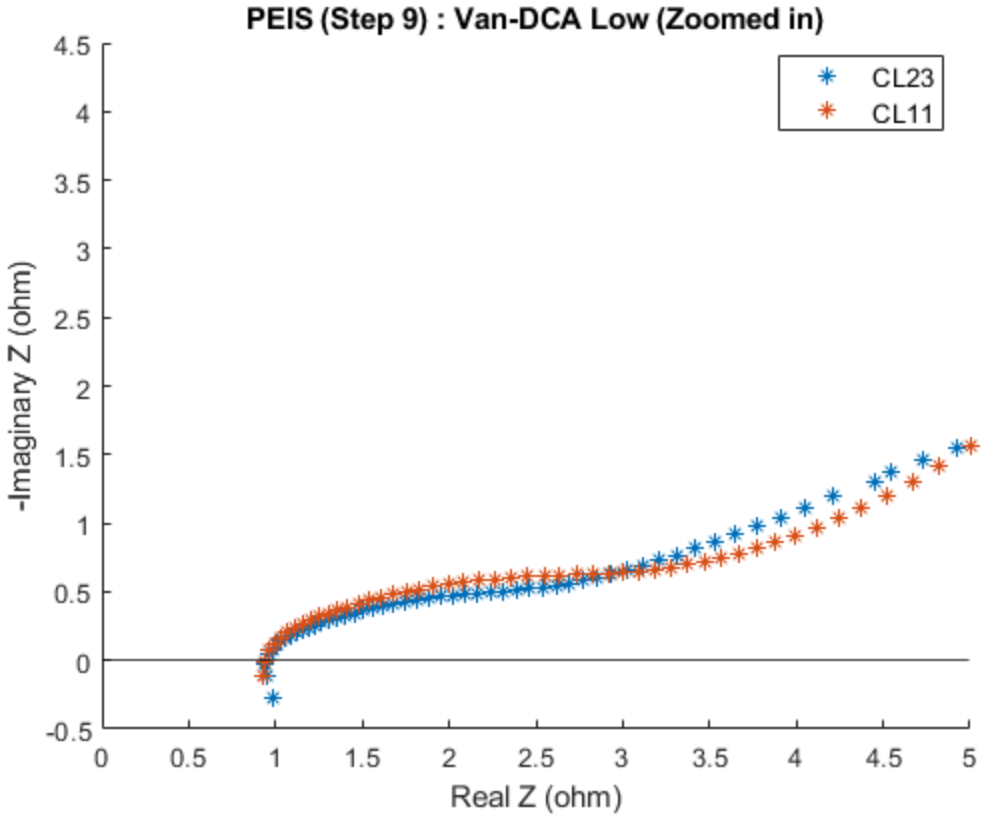


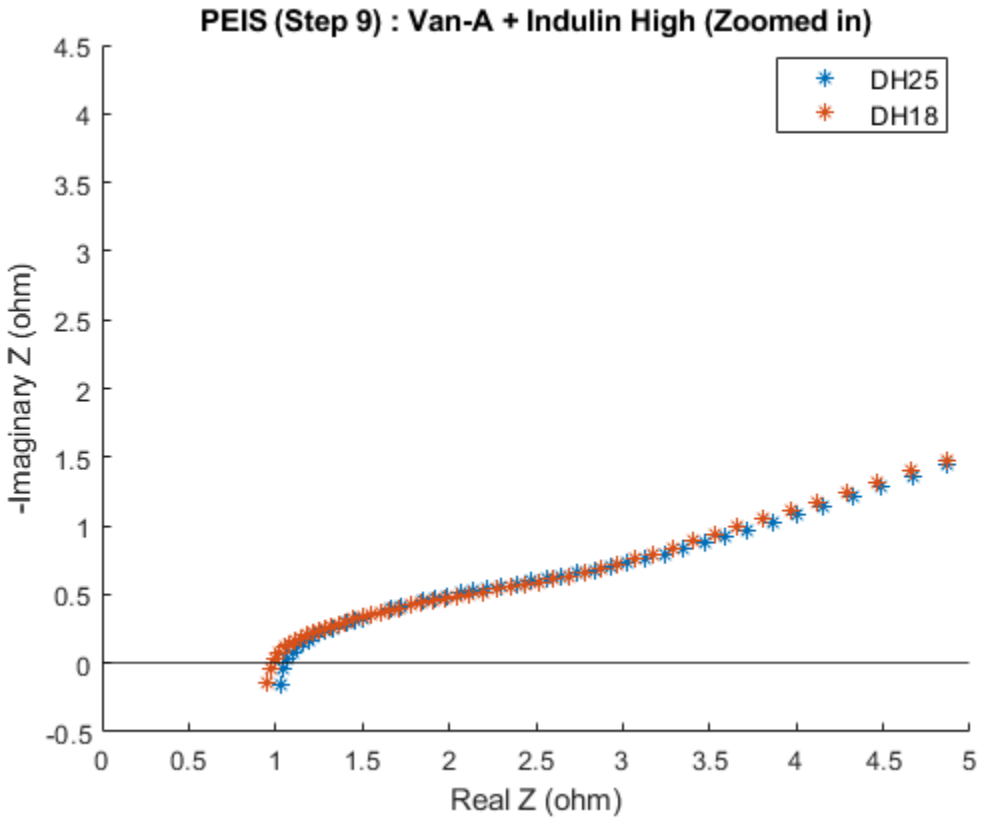

PEIS (Step 9) : Van-HT Low (Zoomed in)
AL06
AL09
-Imaginary Z (ohm)
Real Z (ohm)
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
-0.5
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5

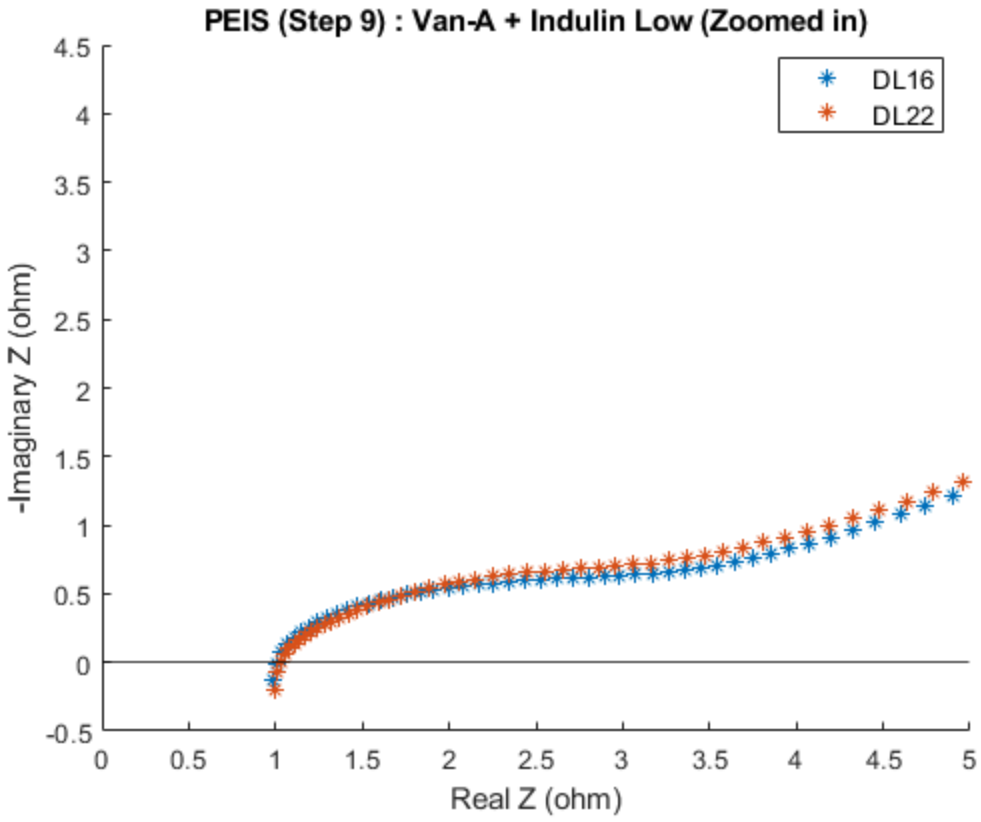

PEIS (Step 9) : Van-A High (Zoomed in)
BH12
BH24
-Imaginary Z (ohm)
Real Z (ohm)
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
-0.5
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5

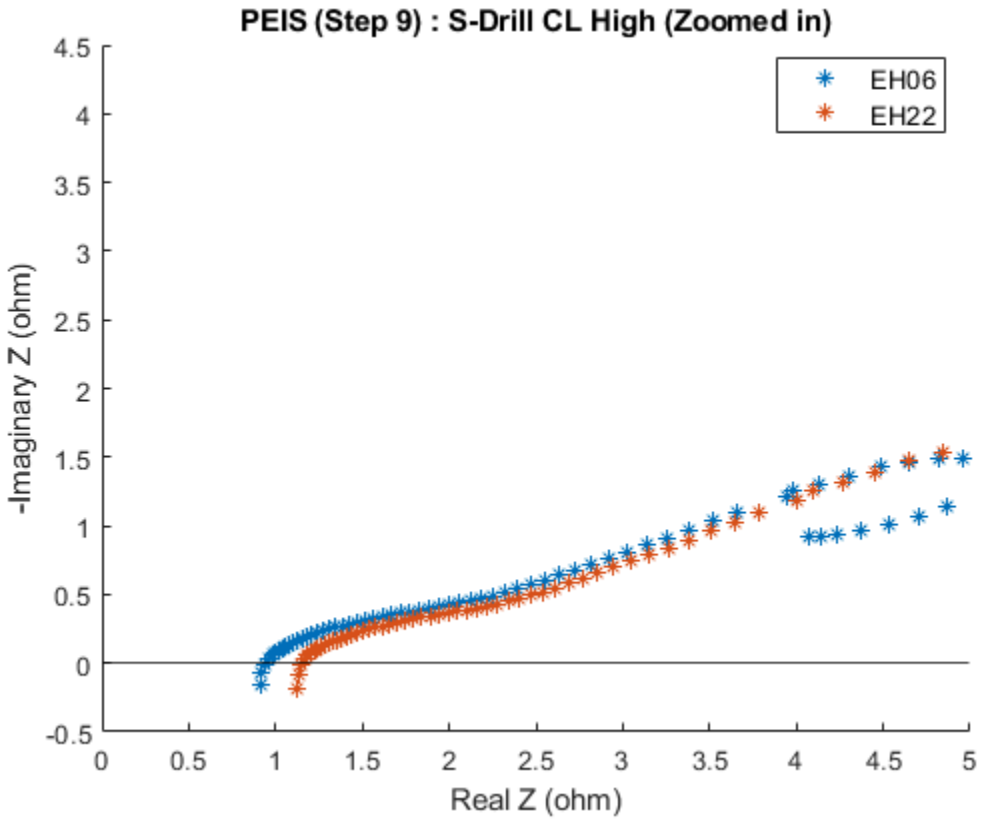

PEIS (Step 9) : Van-A Low (Zoomed in)
BL18
BL14
-Imaginary Z (ohm)
Real Z (ohm)
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
-0.5
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5

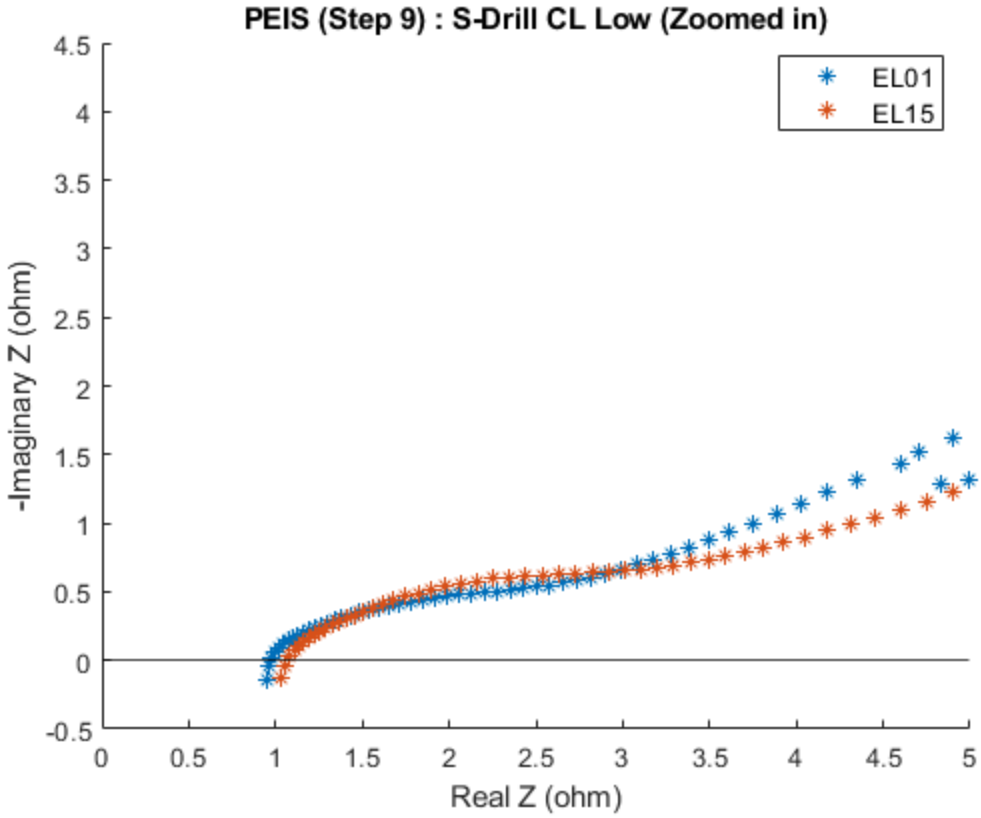

PEIS (Step 9) : Van-DCA High (Zoomed in)
CH01
CH14
-Imaginary Z (ohm)
Real Z (ohm)
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
-0.5
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5

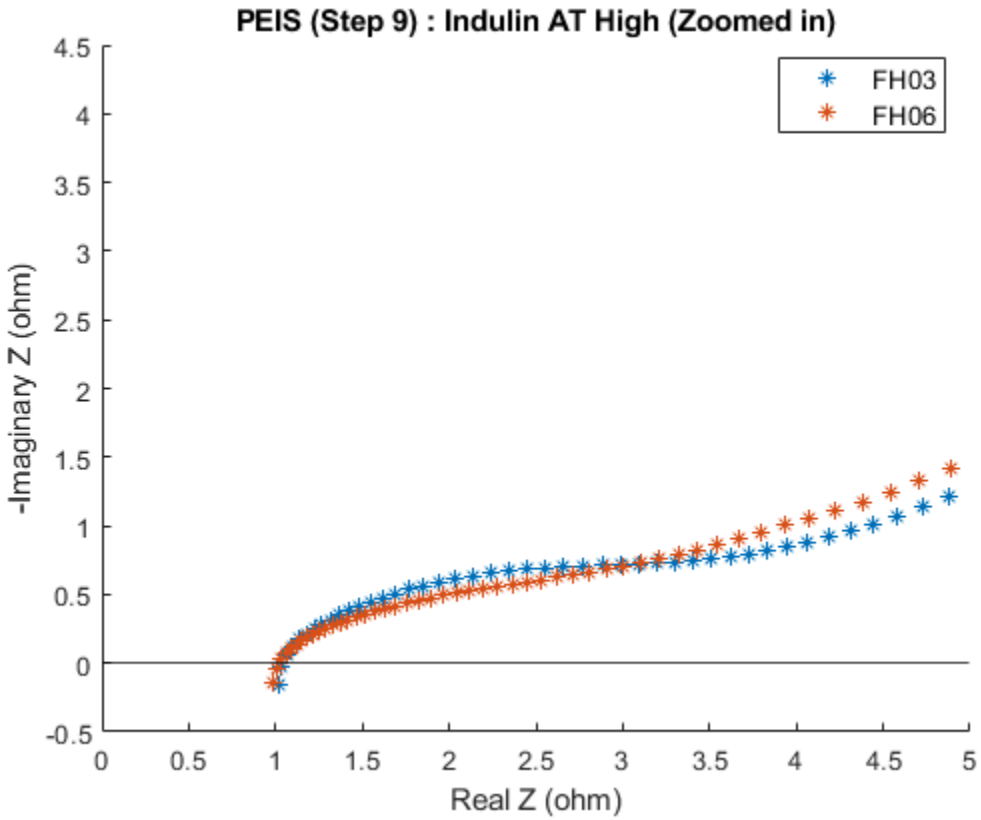

PEIS (Step 9) : Van-DCA Low (Zoomed in)
CL23
CL11
-Imaginary Z (ohm)
Real Z (ohm)
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
-0.5
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5

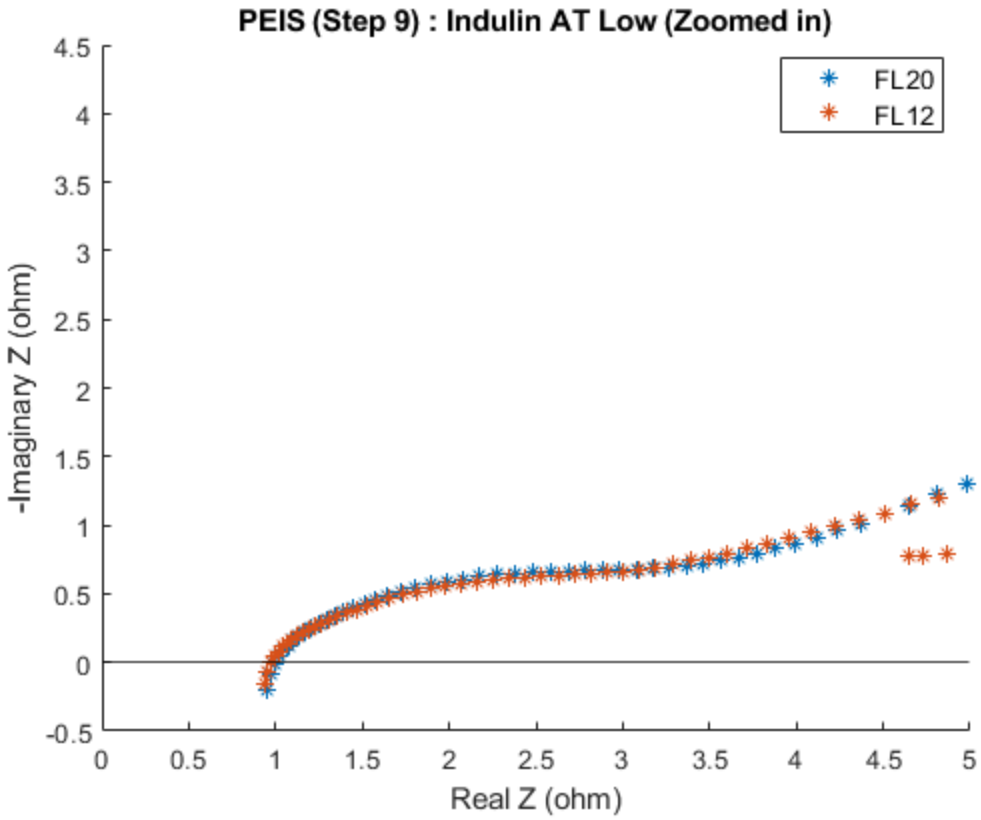

PEIS (Step 9) : Van-A + Indulin High (Zoomed in)
DH25
DH18
-Imaginary Z (ohm)
Real Z (ohm)
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
-0.5
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5


PEIS (Step 9) : Van-A + Indulin Low (Zoomed in)
DL16
DL22
-Imaginary Z (ohm)
Real Z (ohm)
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
-0.5
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5


PEIS (Step 9) : S-Drill CL High (Zoomed in)
EH06
EH22
-Imaginary Z (ohm)
Real Z (ohm)
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
-0.5
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5


PEIS (Step 9) : S-Drill CL Low (Zoomed in)
EL01
EL15
-Imaginary Z (ohm)
Real Z (ohm)
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
-0.5
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5

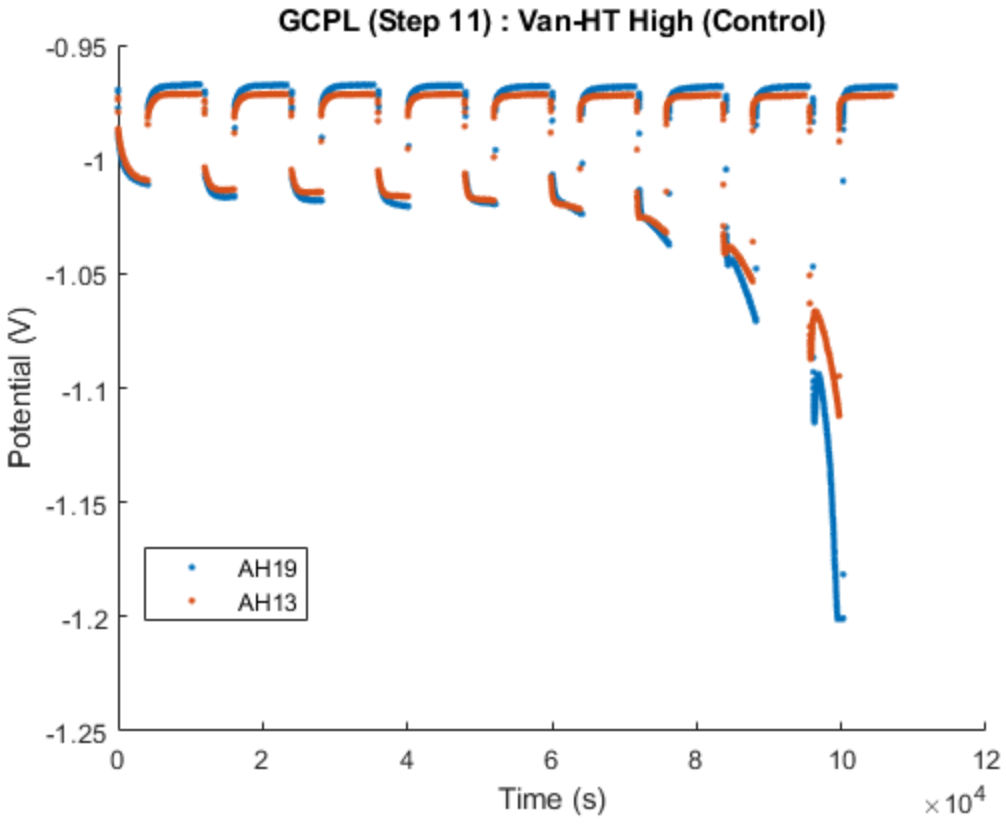

PEIS (Step 9) : Indulin AT High (Zoomed in)
FH03
FH06
-Imaginary Z (ohm)
Real Z (ohm)
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
-0.5
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5

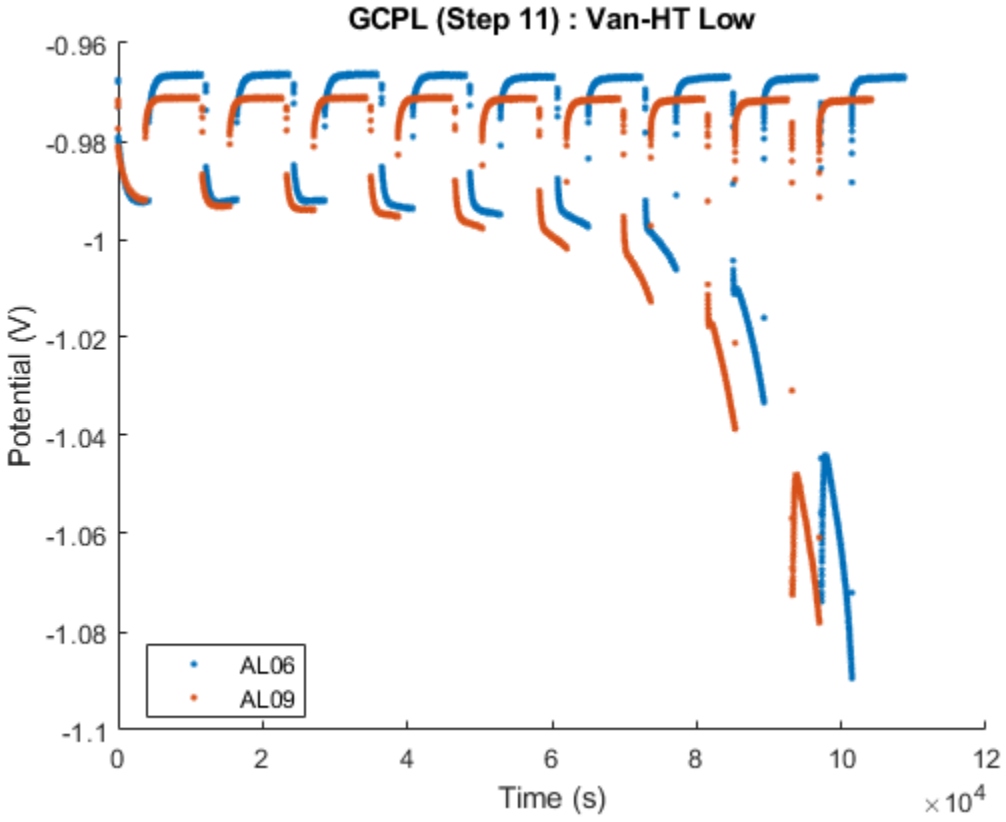


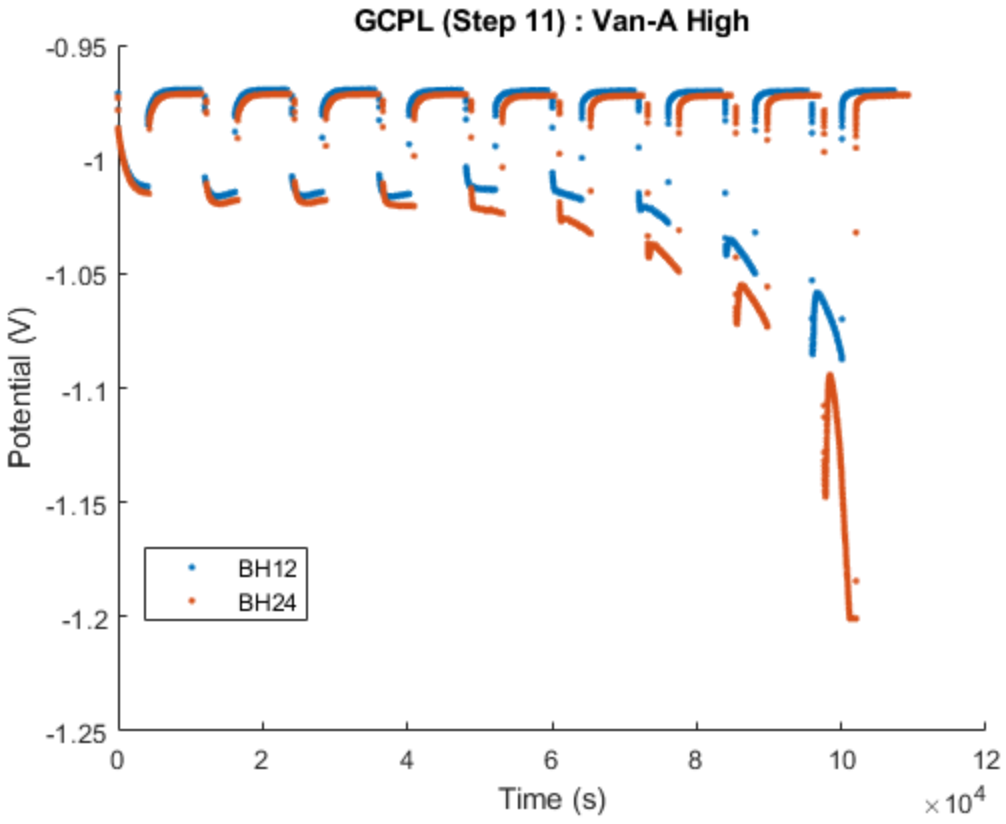
RUN GCPL PROCEDURE

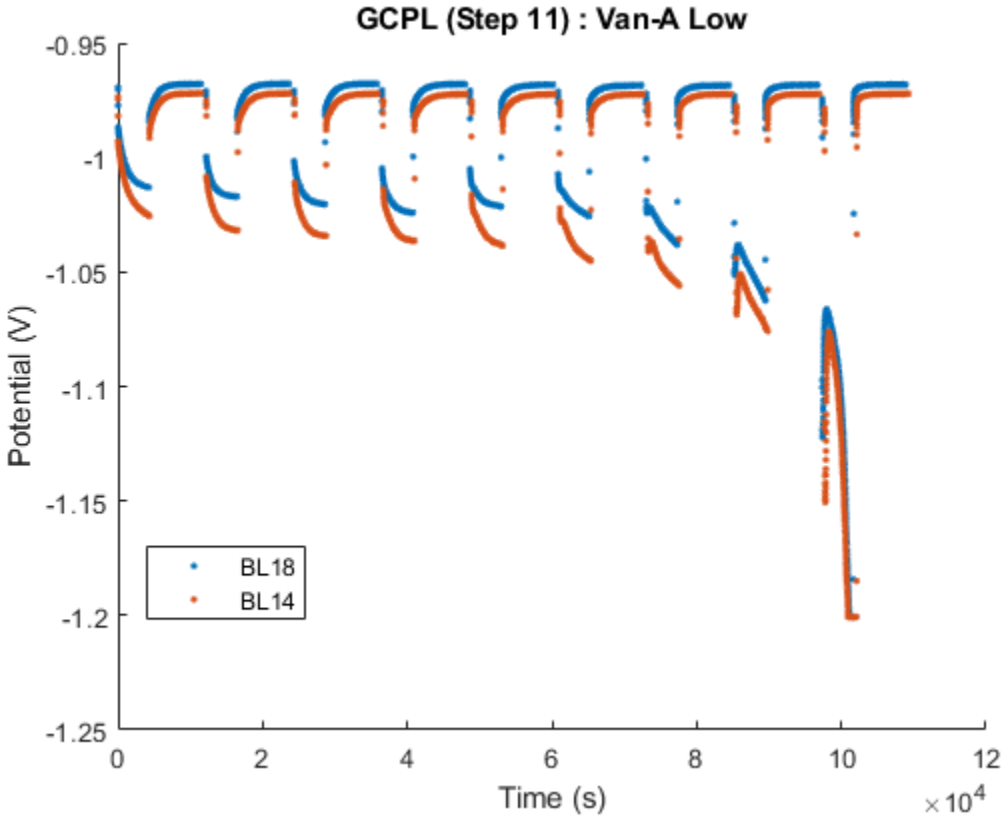
11. GCPL

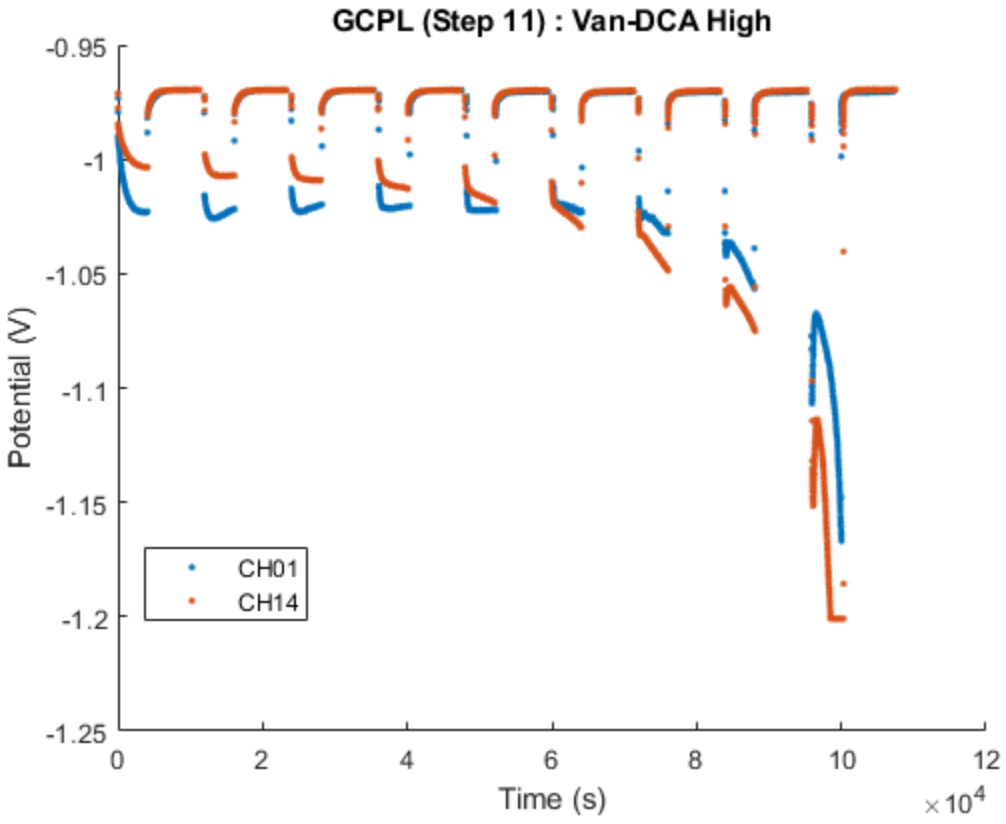
Define x and y variables

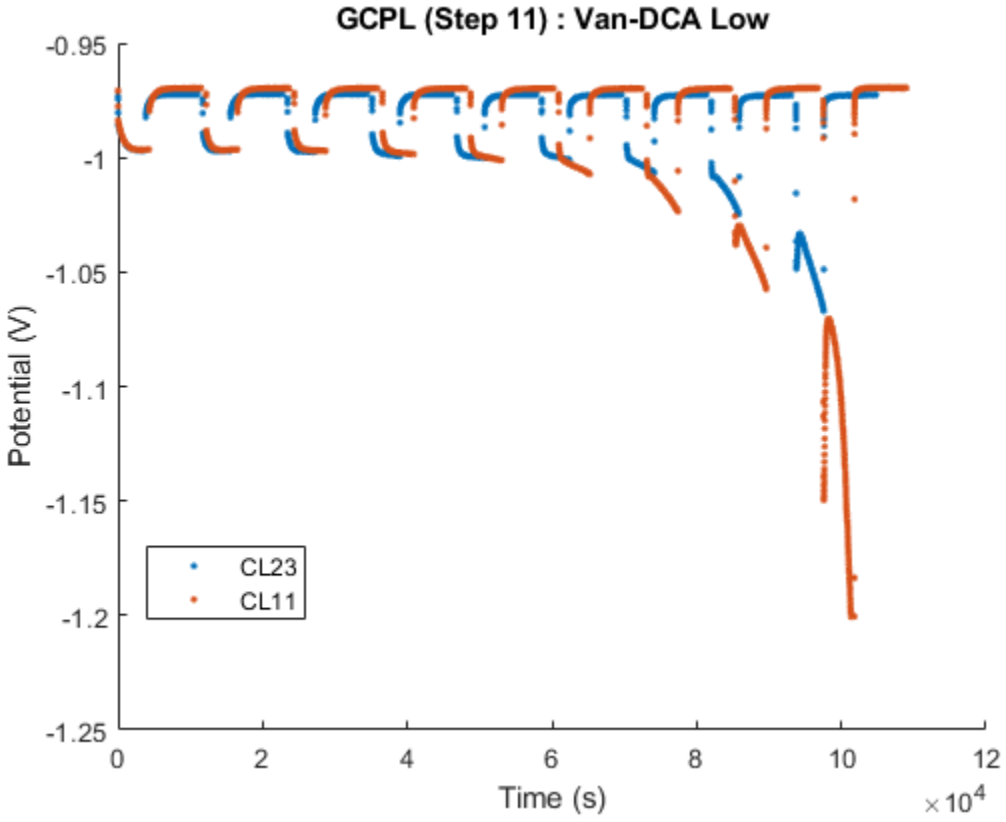

GCPL (Step 11) : Van-HT High (Control)
Potential (V)
Time (s)
×10^4
AH19
AH13

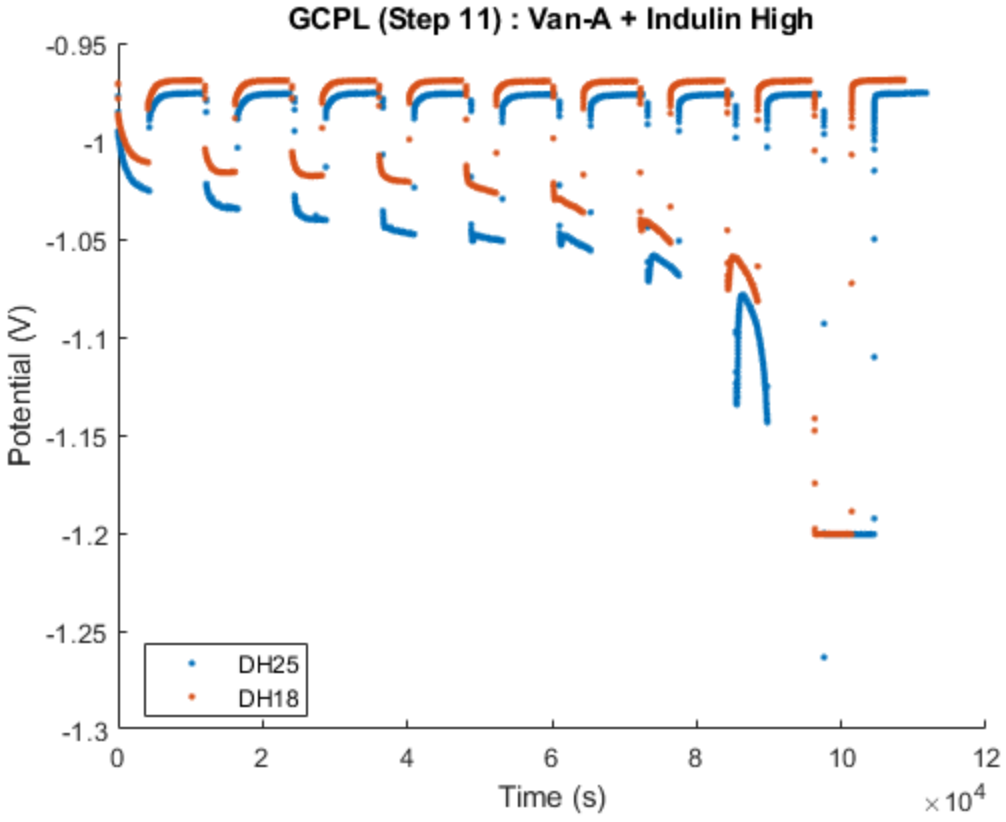

GCPL (Step 11) : Van-HT Low
Potential (V)
Time (s)
×10^4
AL06
AL09

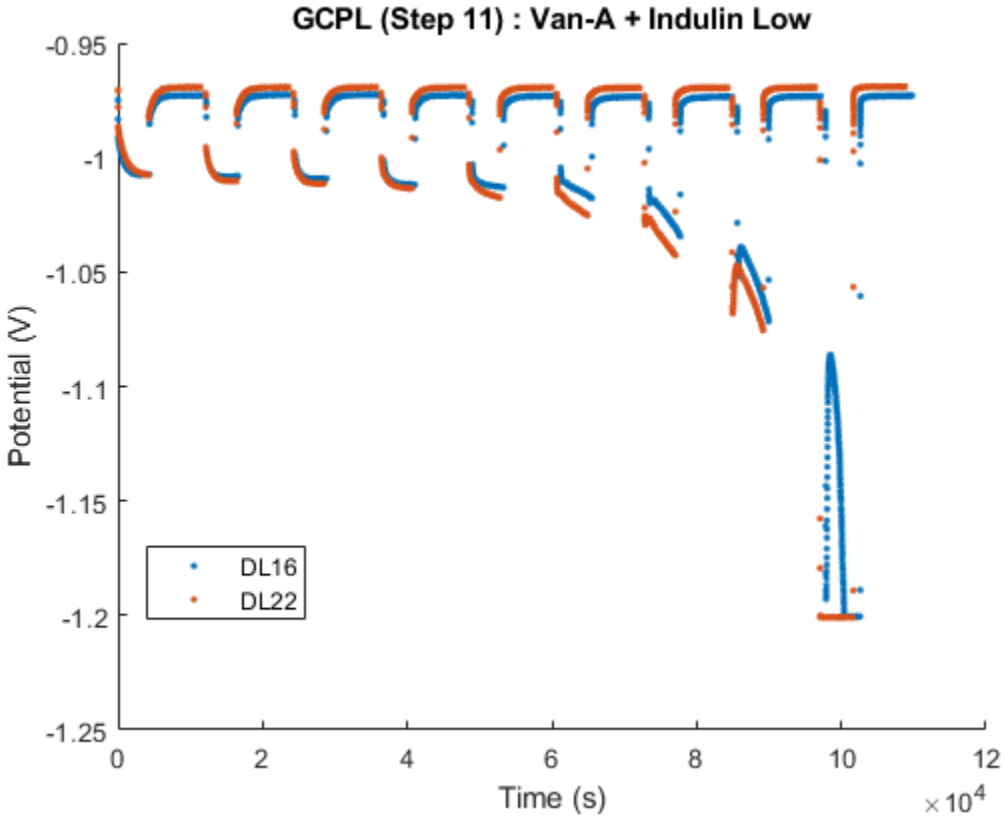

GCPL (Step 11) : Van-A High
Potential (V)
Time (s)
$\times 10^4$
BH12
BH24

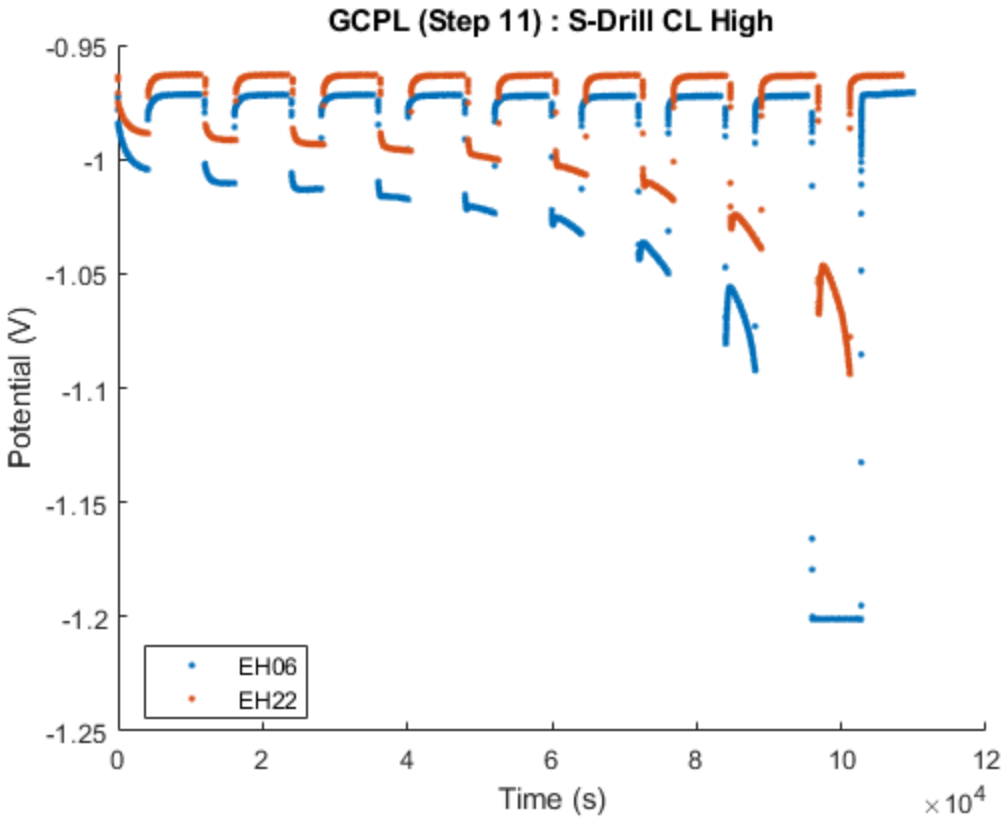

GCPL (Step 11) : Van-A Low
Potential (V)
Time (s)
$\times 10^4$
BL18
BL14

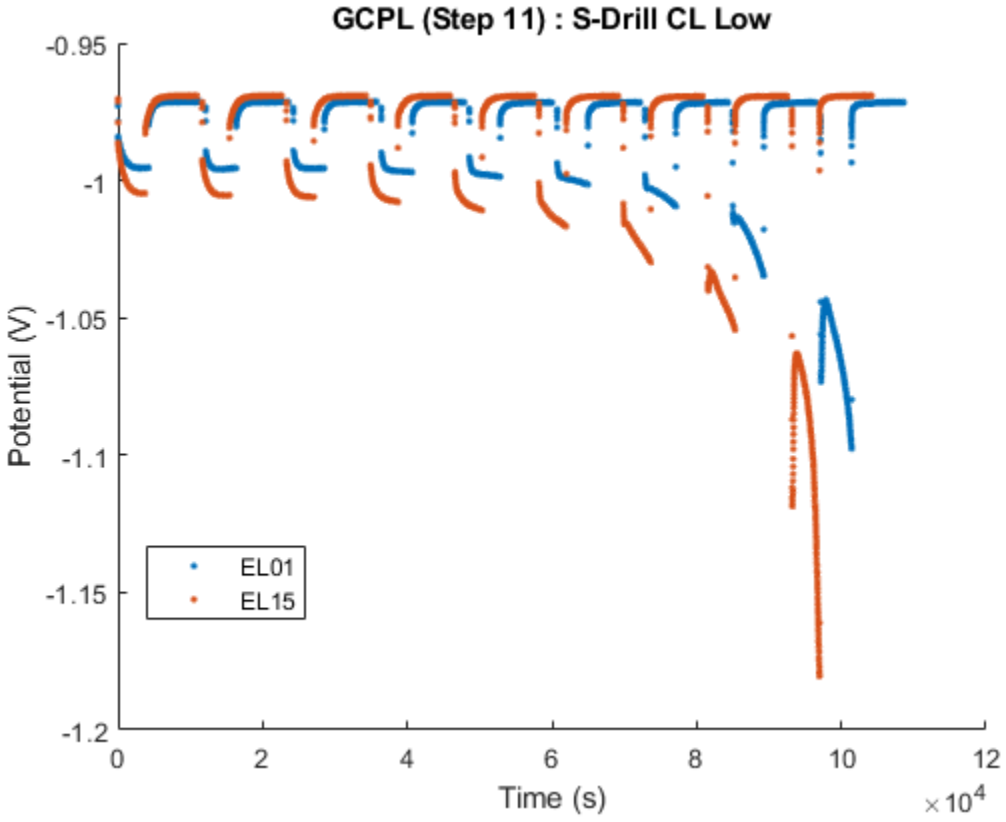

GCPL (Step 11) : Van-DCA High
Potential (V)
Time (s)
×10^4
CH01
CH14

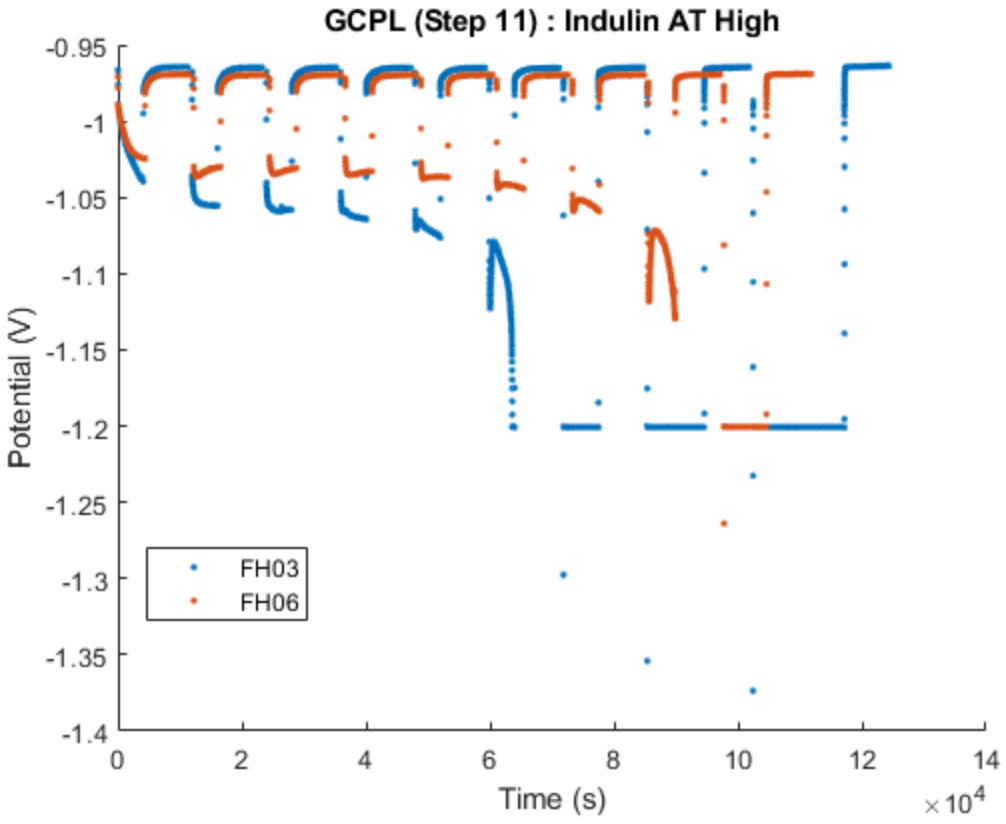

GCPL (Step 11) : Van-DCA Low
Potential (V)
Time (s)
×10^4
CL23
CL11

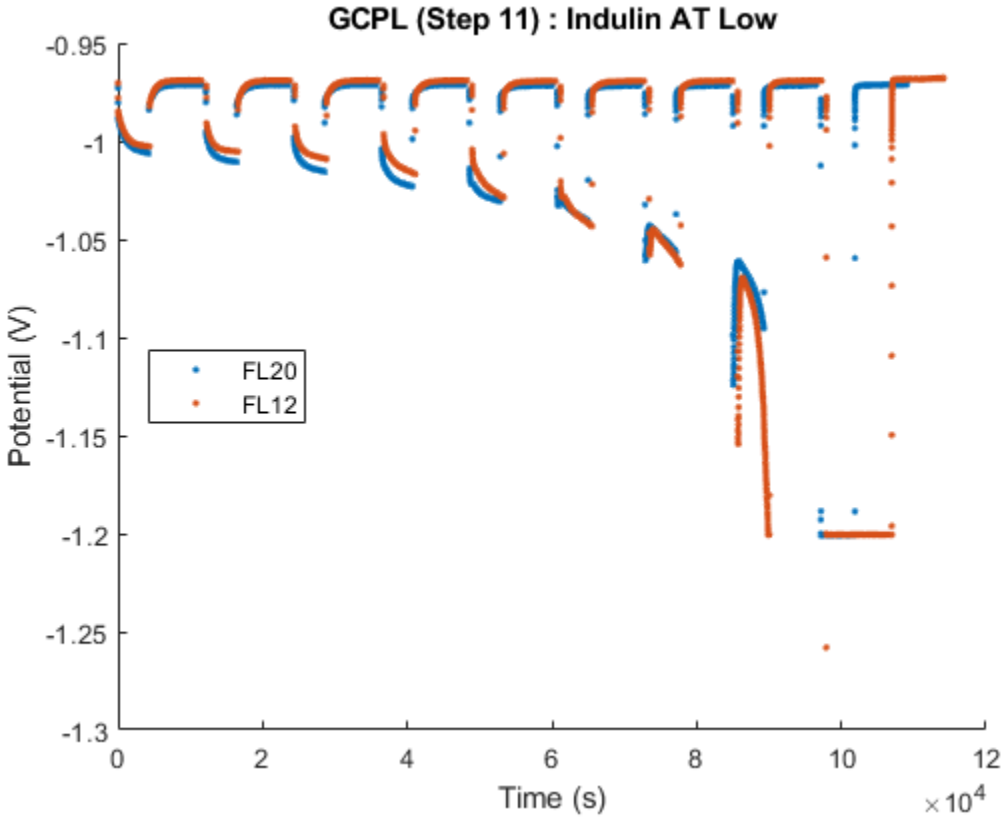

GCPL (Step 11) : Van-A + Indulin High
Potential (V)
Time (s)
×10^4
DH25
DH18


GCPL (Step 11) : Van-A + Indulin Low
Potential (V)
Time (s)
×10^4
DL16
DL22


GCPL (Step 11) : S-Drill CL High
Potential (V)
-0.95
-1
-1.05
-1.1
-1.15
-1.2
-1.25
0
2
4
6
8
10
12
Time (s)
×10^4
EH06
EH22


GCPL (Step 11) : S-Drill CL Low
Potential (V)
-0.95
-1
-1.05
-1.1
-1.15
-1.2
0
2
4
6
8
10
12
Time (s)
×10^4
EL01
EL15


GCPL (Step 11) : Indulin AT High
Potential (V)
Time (s)
×10^4
FH03
FH06


GCPL (Step 11) : Indulin AT Low
Potential (V)
Time (s)
×10^4
FL20
FL12

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