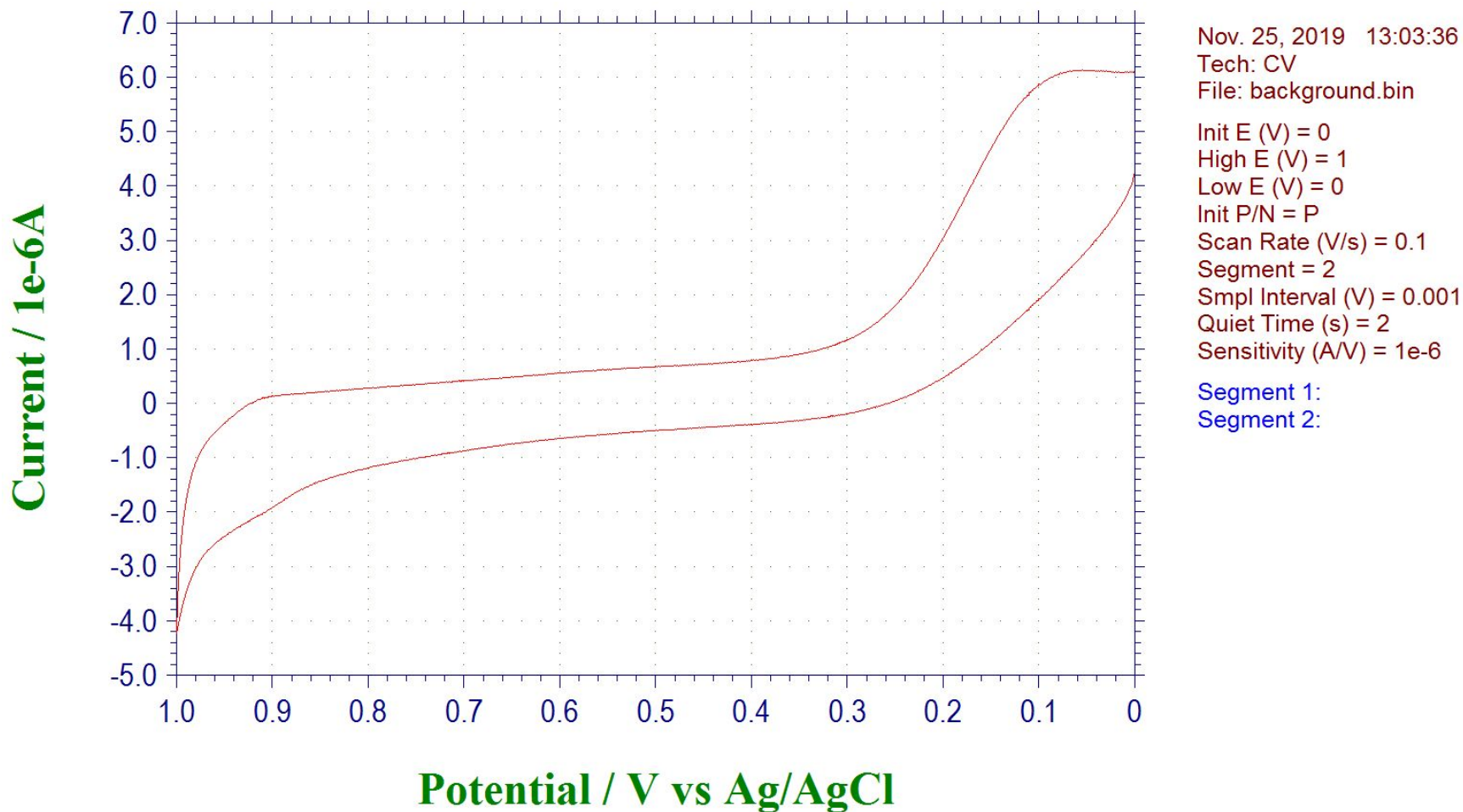


DATA SET FOR “ANALYSIS OF UNKNOWNNS USING CYCLIC VOLTAMMETRY” EXPERIMENT

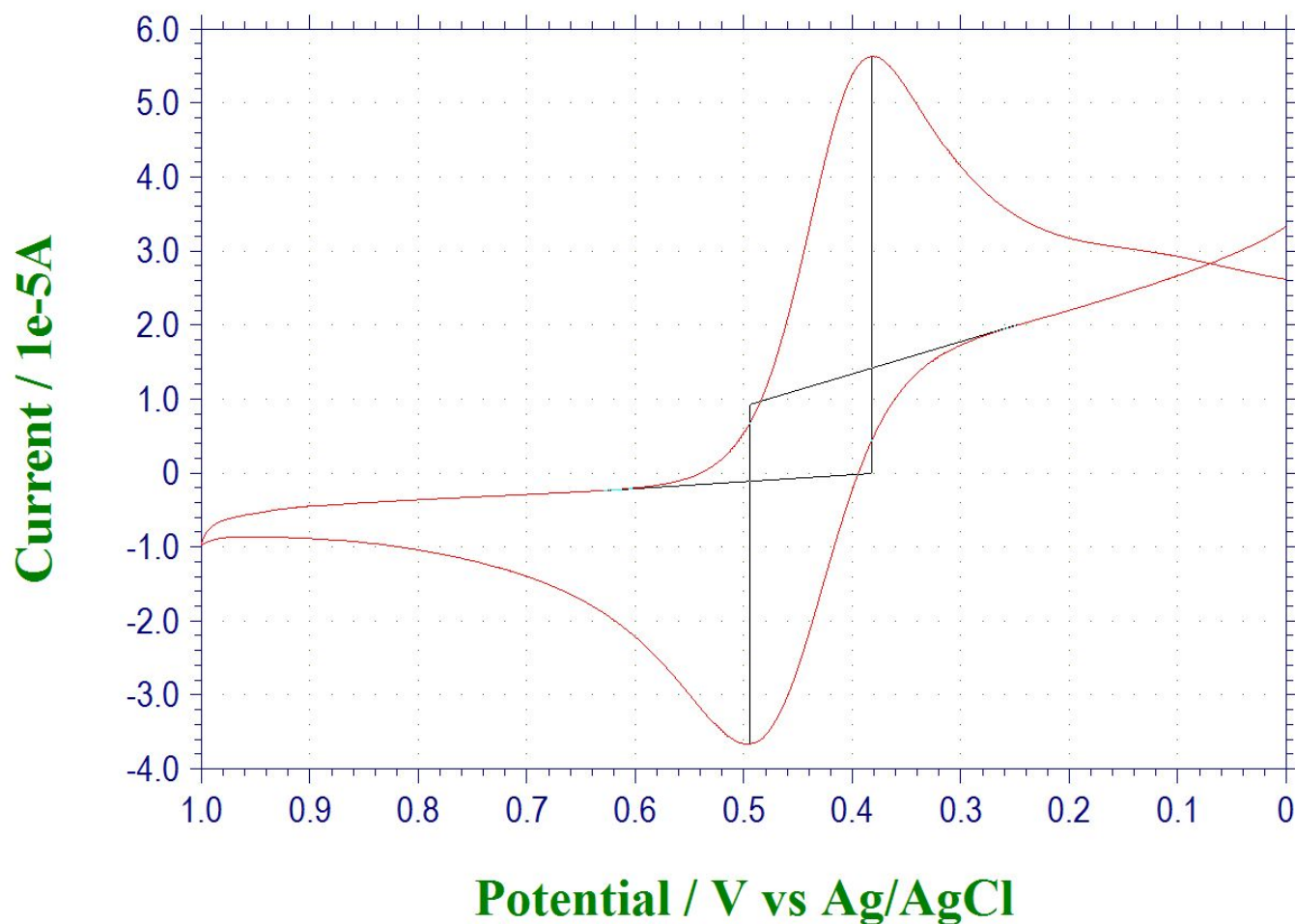
The data provided was collected using a [CH Instruments](#) 630A electrochemical analyzer, a [2 mm platinum working electrode](#), a [silver-silver chloride reference electrode](#), and a coiled platinum wire counter electrode. A sincere thanks to my former Instrumental Analysis students (M.H. Jones, C.H. Kerrison, and J.C. Wittosch) for collecting the data for this experiment. —D.T. Miles

BACKGROUND SCAN (1.0 M HYDROCHLORIC ACID = ELECTROLYTE)



DATA SET FOR "ANALYSIS OF UNKNOWNNS USING CYCLIC VOLTAMMETRY" EXPERIMENT

SOLUTION #1 (10 mM FeCl₃ in 1.0 M HCl)



Nov. 25, 2019 13:13:25

Tech: CV

File: iron1.bin

Init E (V) = 0

High E (V) = 1

Low E (V) = 0

Init P/N = P

Scan Rate (V/s) = 0.1

Segment = 2

Smpl Interval (V) = 0.001

Quiet Time (s) = 2

Sensitivity (A/V) = 1e-5

Segment 1:

Ep = 0.495V

ip = -4.600e-5A

Ah = -3.811e-5C

Segment 2:

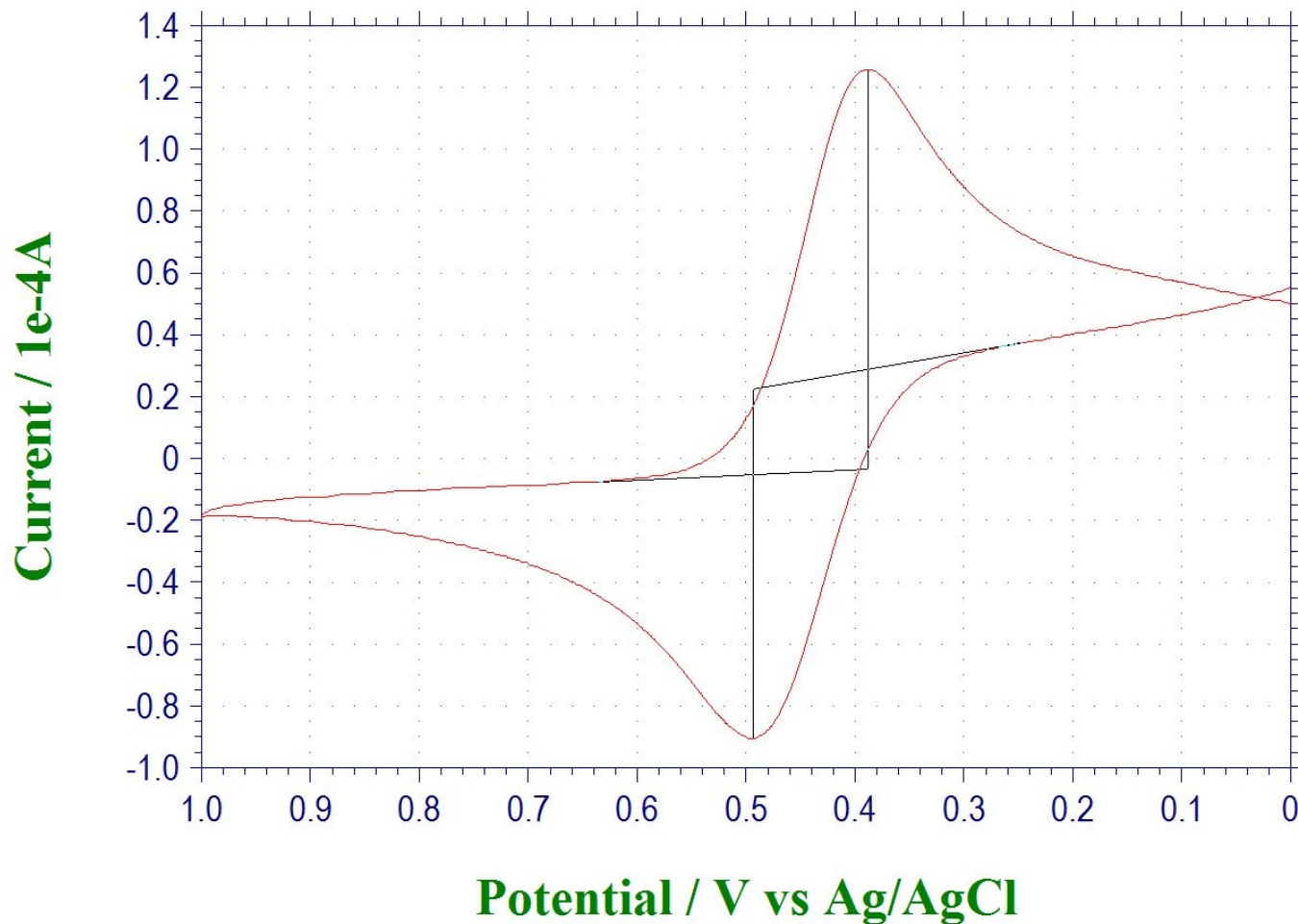
Ep = 0.382V

ip = 5.629e-5A

Ah = 4.066e-5C

DATA SET FOR "ANALYSIS OF UNKNOWN USING CYCLIC VOLTAMMETRY" EXPERIMENT

SOLUTION #2 (25 mM FeCl₃ in 1.0 M HCl)



Nov. 25, 2019 13:20:34

Tech: CV

File: iron2.bin

Init E (V) = 0

High E (V) = 1

Low E (V) = 0

Init P/N = P

Scan Rate (V/s) = 0.1

Segment = 2

Smpl Interval (V) = 0.001

Quiet Time (s) = 2

Sensitivity (A/V) = 1e-4

Segment 1:

Ep = 0.494V

ip = -1.130e-4A

Ah = -8.945e-5C

Segment 2:

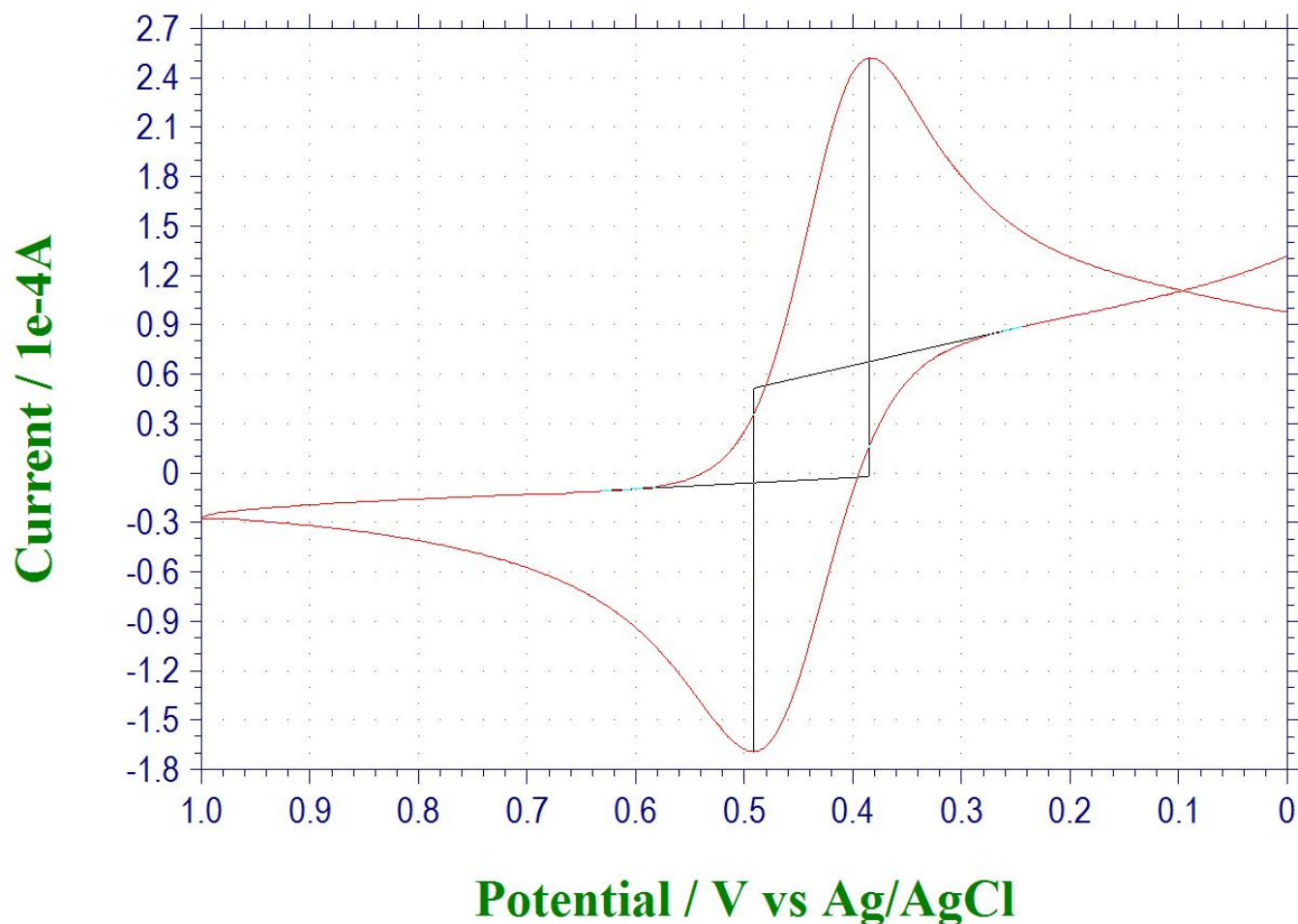
Ep = 0.388V

ip = 1.293e-4A

Ah = 9.373e-5C

DATA SET FOR "ANALYSIS OF UNKNOWN USING CYCLIC VOLTAMMETRY" EXPERIMENT

SOLUTION #3 (50 mM FeCl₃ in 1.0 M HCl)



Nov. 25, 2019 13:23:46

Tech: CV

File: iron3.bin

Init E (V) = 0

High E (V) = 1

Low E (V) = 0

Init P/N = P

Scan Rate (V/s) = 0.1

Segment = 2

Smpl Interval (V) = 0.001

Quiet Time (s) = 2

Sensitivity (A/V) = 1e-4

Segment 1:

Ep = 0.492V

ip = -2.209e-4A

Ah = -1.786e-4C

Segment 2:

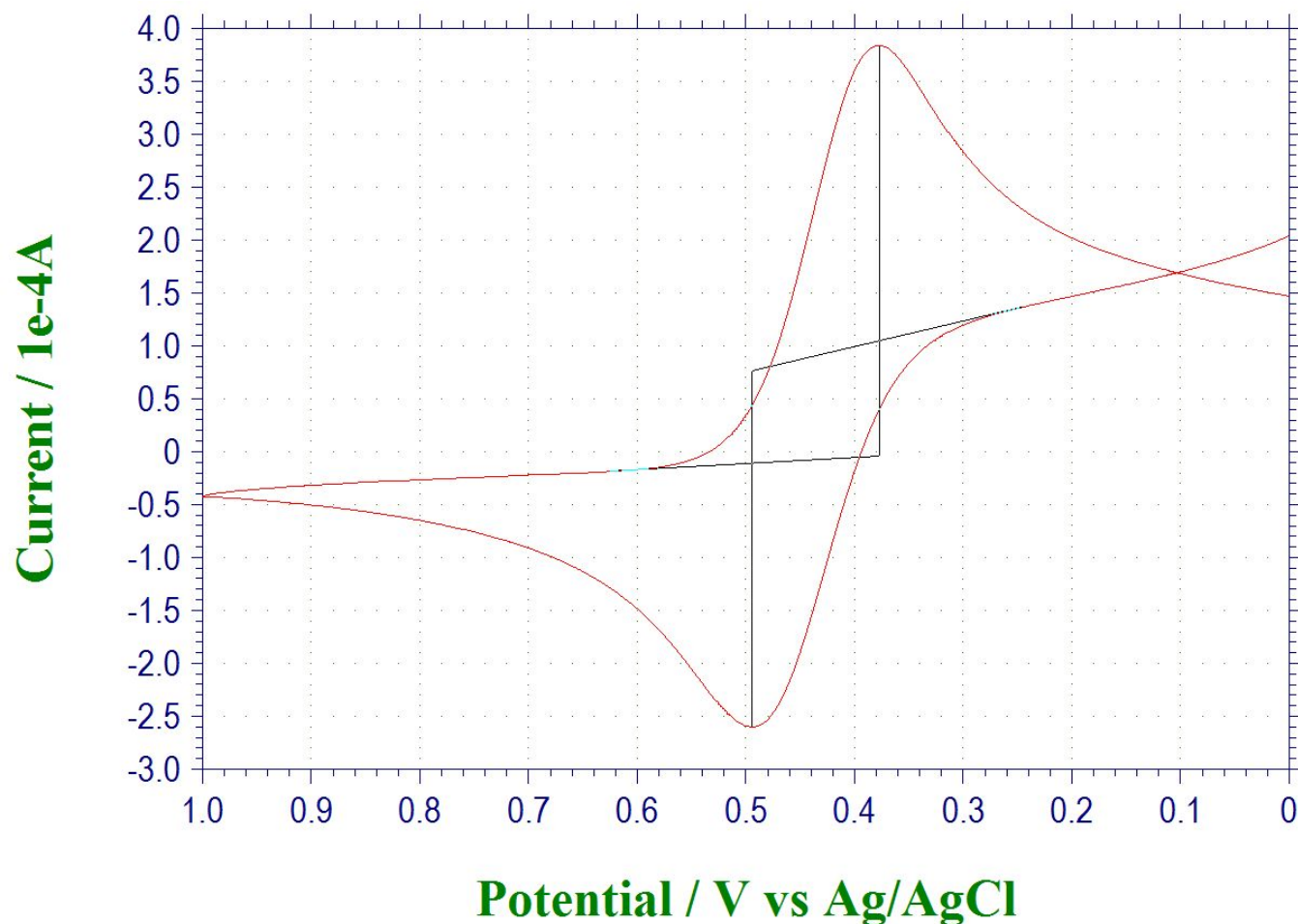
Ep = 0.385V

ip = 2.545e-4A

Ah = 1.815e-4C

DATA SET FOR "ANALYSIS OF UNKNOWN USING CYCLIC VOLTAMMETRY" EXPERIMENT

SOLUTION #4 (75 mM FeCl₃ in 1.0 M HCl)



Nov. 25, 2019 13:27:32

Tech: CV

File: iron4.bin

Init E (V) = 0

High E (V) = 1

Low E (V) = 0

Init P/N = P

Scan Rate (V/s) = 0.1

Segment = 2

Smpl Interval (V) = 0.001

Quiet Time (s) = 2

Sensitivity (A/V) = 1e-4

Segment 1:

Ep = 0.495V

ip = -3.363e-4A

Ah = -2.819e-4C

Segment 2:

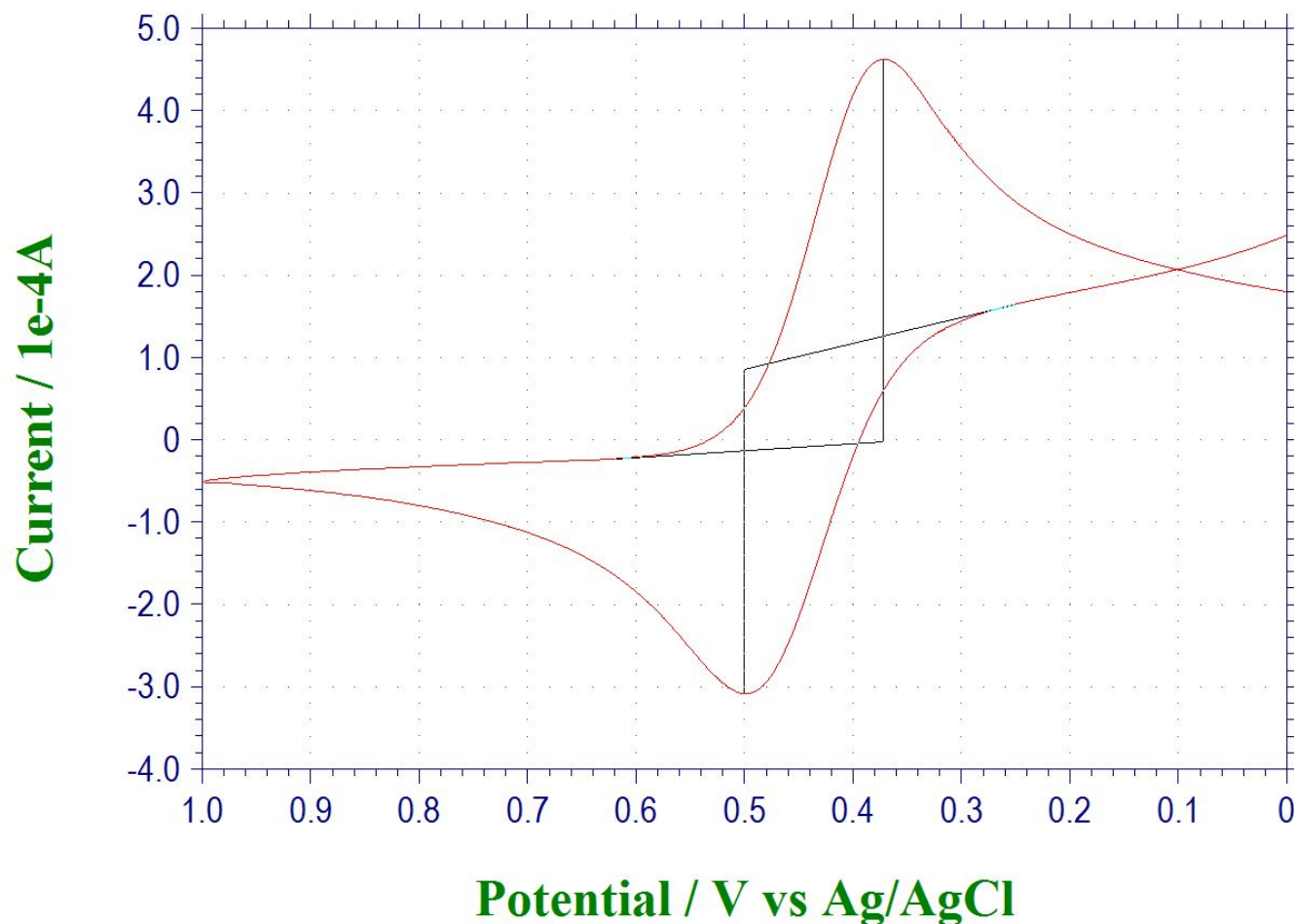
Ep = 0.377V

ip = 3.874e-4A

Ah = 2.945e-4C

DATA SET FOR "ANALYSIS OF UNKNOWN USING CYCLIC VOLTAMMETRY" EXPERIMENT

SOLUTION #5 (100 mM FeCl₃ in 1.0 M HCl)



Nov. 25, 2019 13:31:28

Tech: CV

File: iron5.bin

Init E (V) = 0

High E (V) = 1

Low E (V) = 0

Init P/N = P

Scan Rate (V/s) = 0.1

Segment = 2

Smpl Interval (V) = 0.001

Quiet Time (s) = 2

Sensitivity (A/V) = 1e-4

Segment 1:

Ep = 0.501V

ip = -3.935e-4A

Ah = -3.506e-4C

Segment 2:

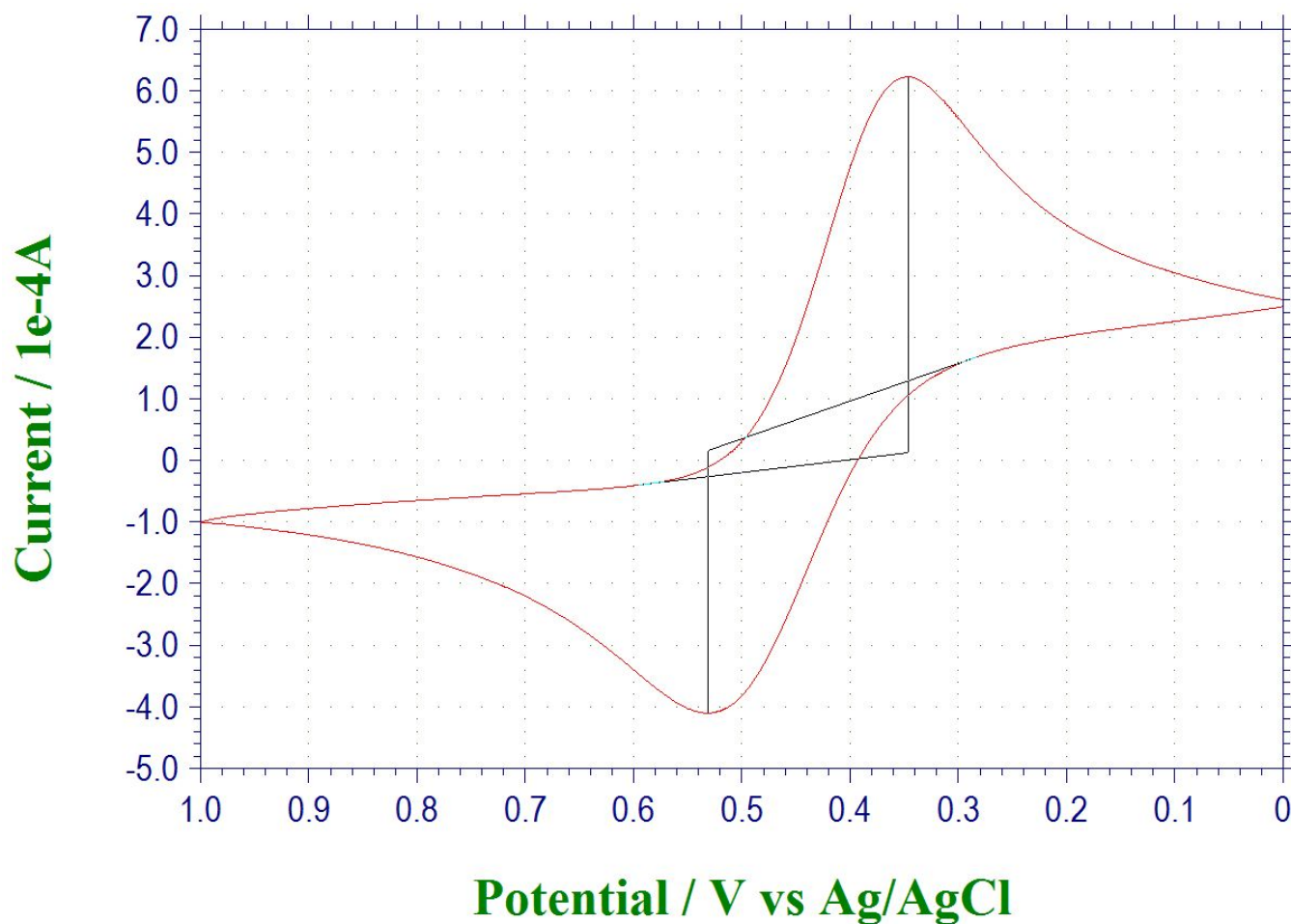
Ep = 0.372V

ip = 4.642e-4A

Ah = 3.612e-4C

DATA SET FOR "ANALYSIS OF UNKNOWN USING CYCLIC VOLTAMMETRY" EXPERIMENT

SCAN RATE = 0.225 V/s (Solution: 100 mM FeCl₃ in 1.0 M HCl)



Nov. 25, 2019 13:35:10

Tech: CV

File: scan1.bin

Init E (V) = 0

High E (V) = 1

Low E (V) = 0

Init P/N = P

Scan Rate (V/s) = 0.225

Segment = 2

Smpl Interval (V) = 0.001

Quiet Time (s) = 2

Sensitivity (A/V) = 1e-4

Segment 1:

Ep = 0.531V

ip = -4.263e-4A

Ah = -2.011e-4C

Segment 2:

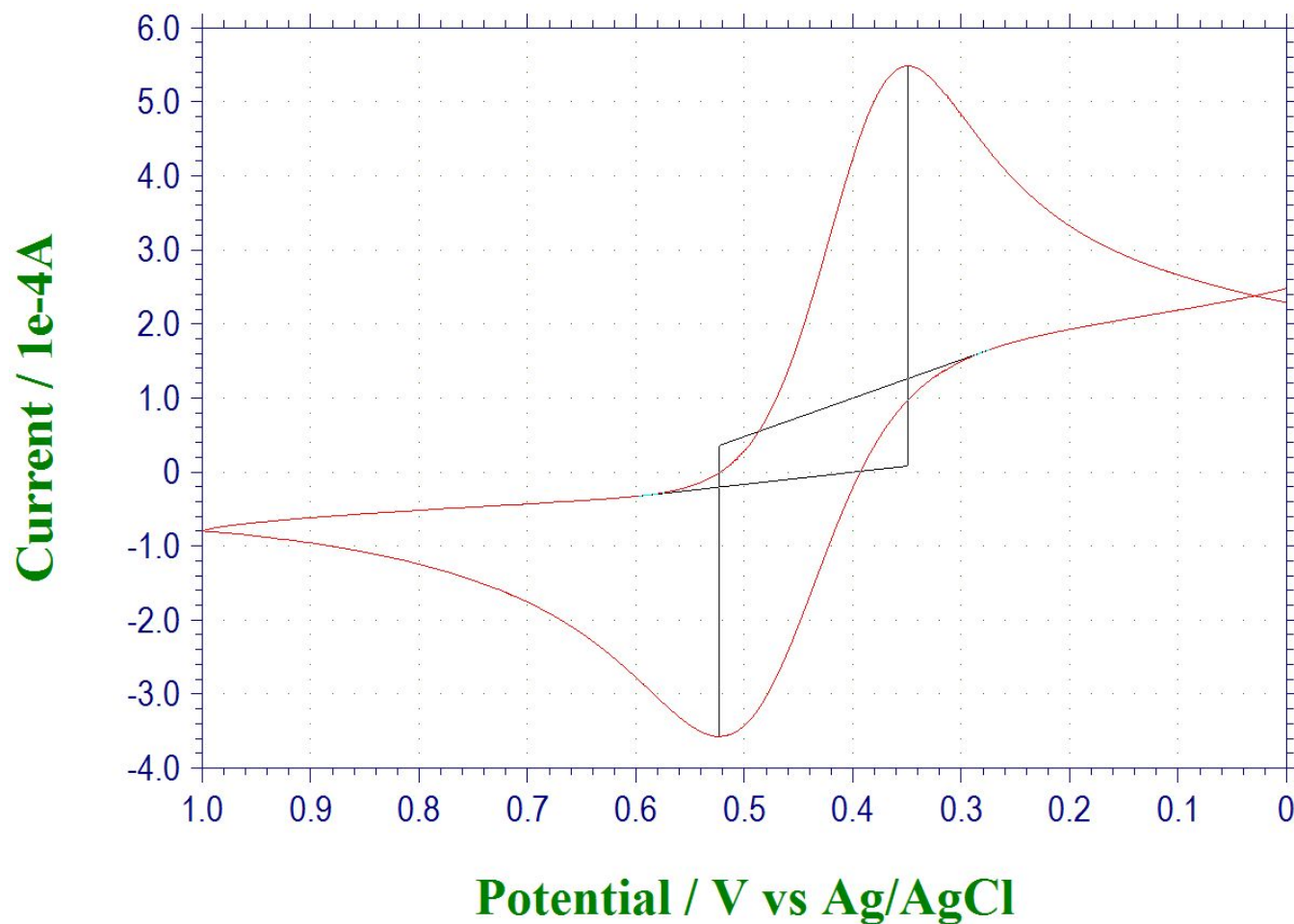
Ep = 0.346V

ip = 6.098e-4A

Ah = 2.443e-4C

DATA SET FOR "ANALYSIS OF UNKNOWNNS USING CYCLIC VOLTAMMETRY" EXPERIMENT

SCAN RATE = 0.170 V/s (Solution: 100 mM FeCl₃ in 1.0 M HCl)



Nov. 25, 2019 13:40:59

Tech: CV

File: scan2.bin

Init E (V) = 0

High E (V) = 1

Low E (V) = 0

Init P/N = P

Scan Rate (V/s) = 0.17

Segment = 2

Smpl Interval (V) = 0.001

Quiet Time (s) = 2

Sensitivity (A/V) = 1e-4

Segment 1:

Ep = 0.524V

ip = -3.937e-4A

Ah = -2.415e-4C

Segment 2:

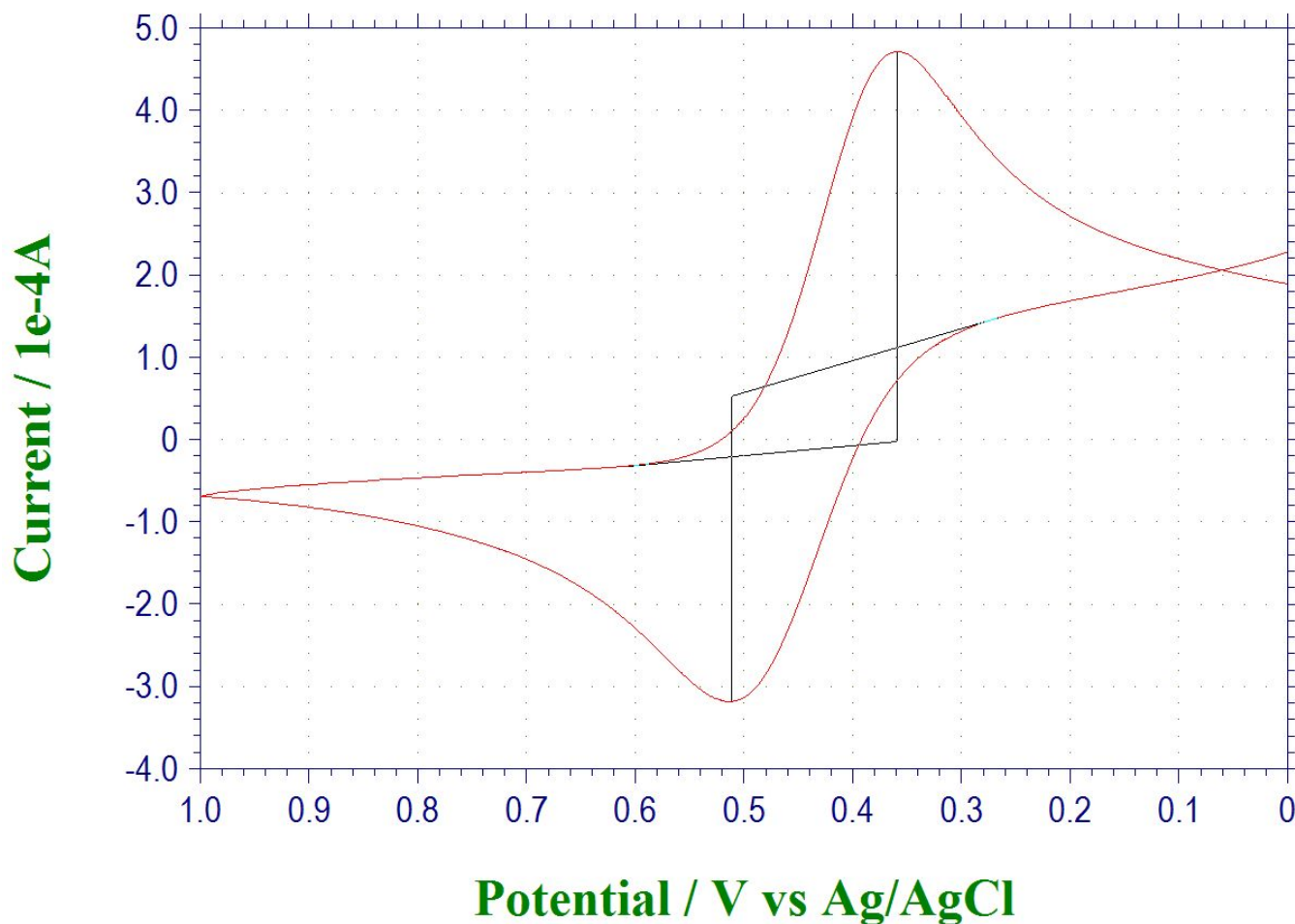
Ep = 0.349V

ip = 5.403e-4A

Ah = 2.787e-4C

DATA SET FOR "ANALYSIS OF UNKNOWNNS USING CYCLIC VOLTAMMETRY" EXPERIMENT

SCAN RATE = 0.120 V/s (Solution: 100 mM FeCl₃ in 1.0 M HCl)



Nov. 25, 2019 13:42:53

Tech: CV

File: scan3.bin

Init E (V) = 0

High E (V) = 1

Low E (V) = 0

Init P/N = P

Scan Rate (V/s) = 0.12

Segment = 2

Smpl Interval (V) = 0.001

Quiet Time (s) = 2

Sensitivity (A/V) = 1e-4

Segment 1:

Ep = 0.512V

ip = -3.707e-4A

Ah = -2.936e-4C

Segment 2:

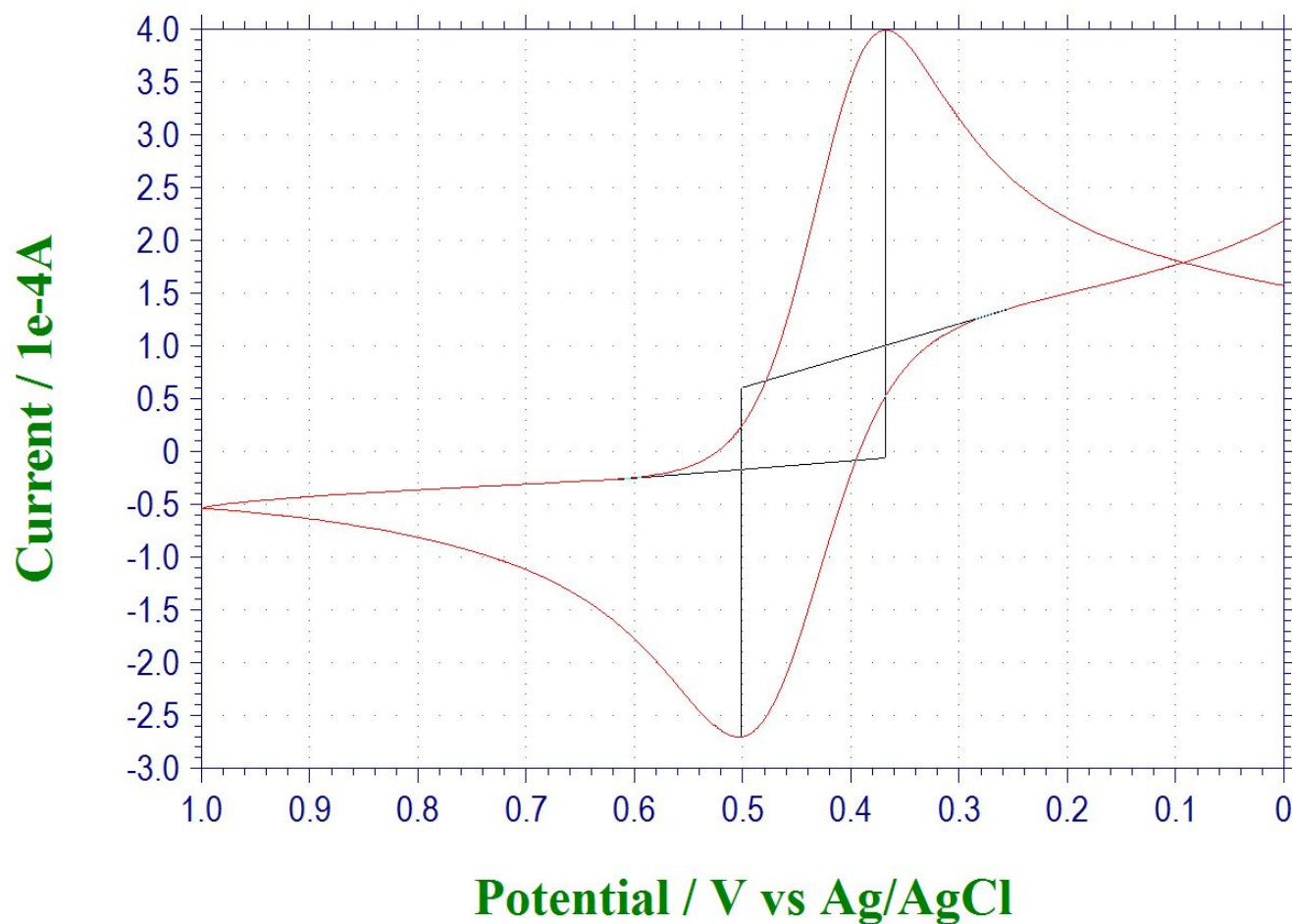
Ep = 0.359V

ip = 4.740e-4A

Ah = 3.296e-4C

DATA SET FOR “ANALYSIS OF UNKNOWNNS USING CYCLIC VOLTAMMETRY” EXPERIMENT

SCAN RATE = 0.080 V/s (Solution: 100 mM FeCl₃ in 1.0 M HCl)



Nov. 25, 2019 13:44:41
Tech: CV
File: scan4.bin

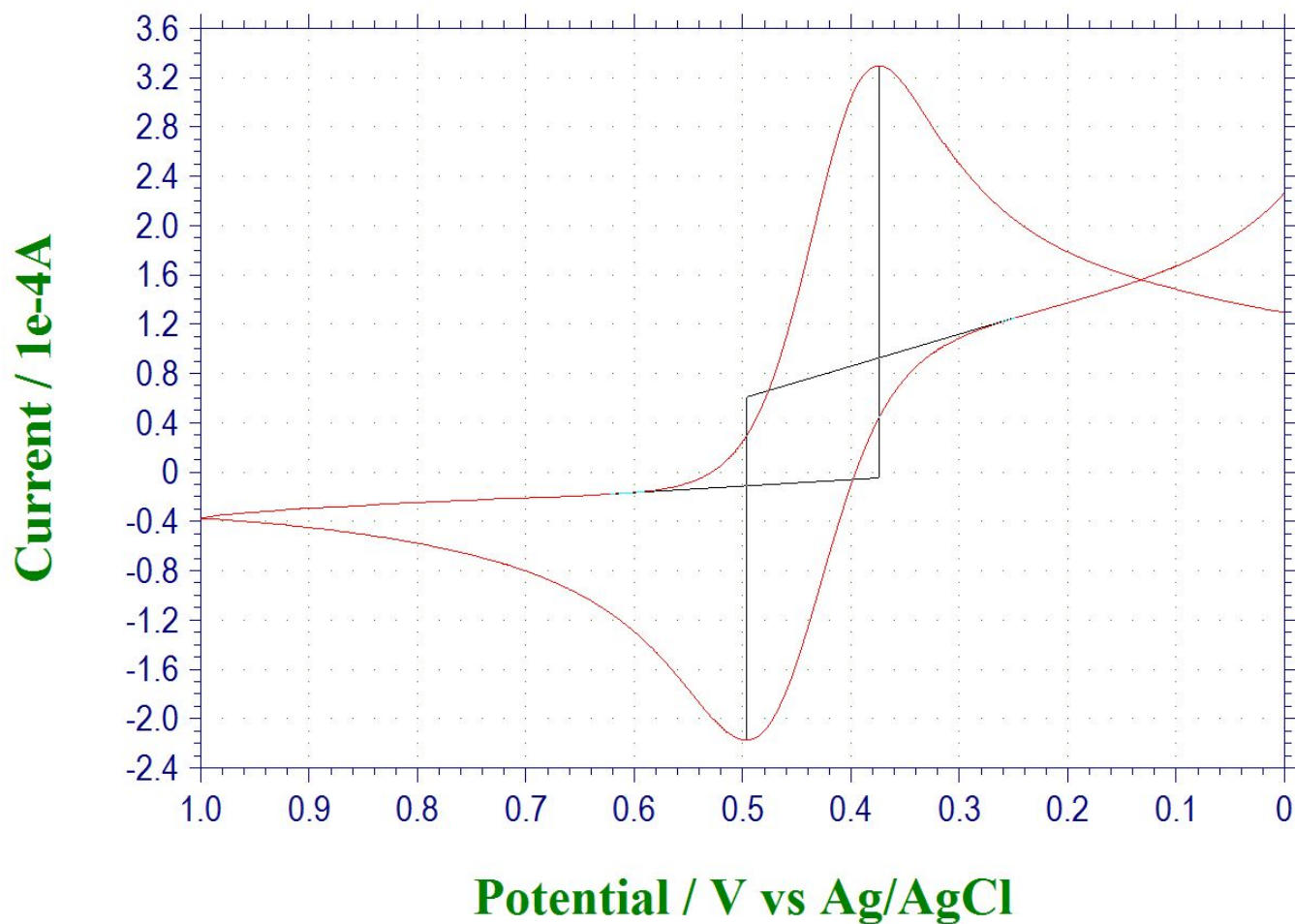
Init E (V) = 0
High E (V) = 1
Low E (V) = 0
Init P/N = P
Scan Rate (V/s) = 0.08
Segment = 2
Smpl Interval (V) = 0.001
Quiet Time (s) = 2
Sensitivity (A/V) = 1e-4

Segment 1:
Ep = 0.502V
ip = -3.304e-4A
Ah = -3.651e-4C

Segment 2:
Ep = 0.368V
ip = 4.050e-4A
Ah = 4.017e-4C

DATA SET FOR "ANALYSIS OF UNKNOWNNS USING CYCLIC VOLTAMMETRY" EXPERIMENT

SCAN RATE = 0.050 V/s (Solution: 100 mM FeCl₃ in 1.0 M HCl)



Nov. 25, 2019 13:47:05
Tech: CV
File: scan5.bin

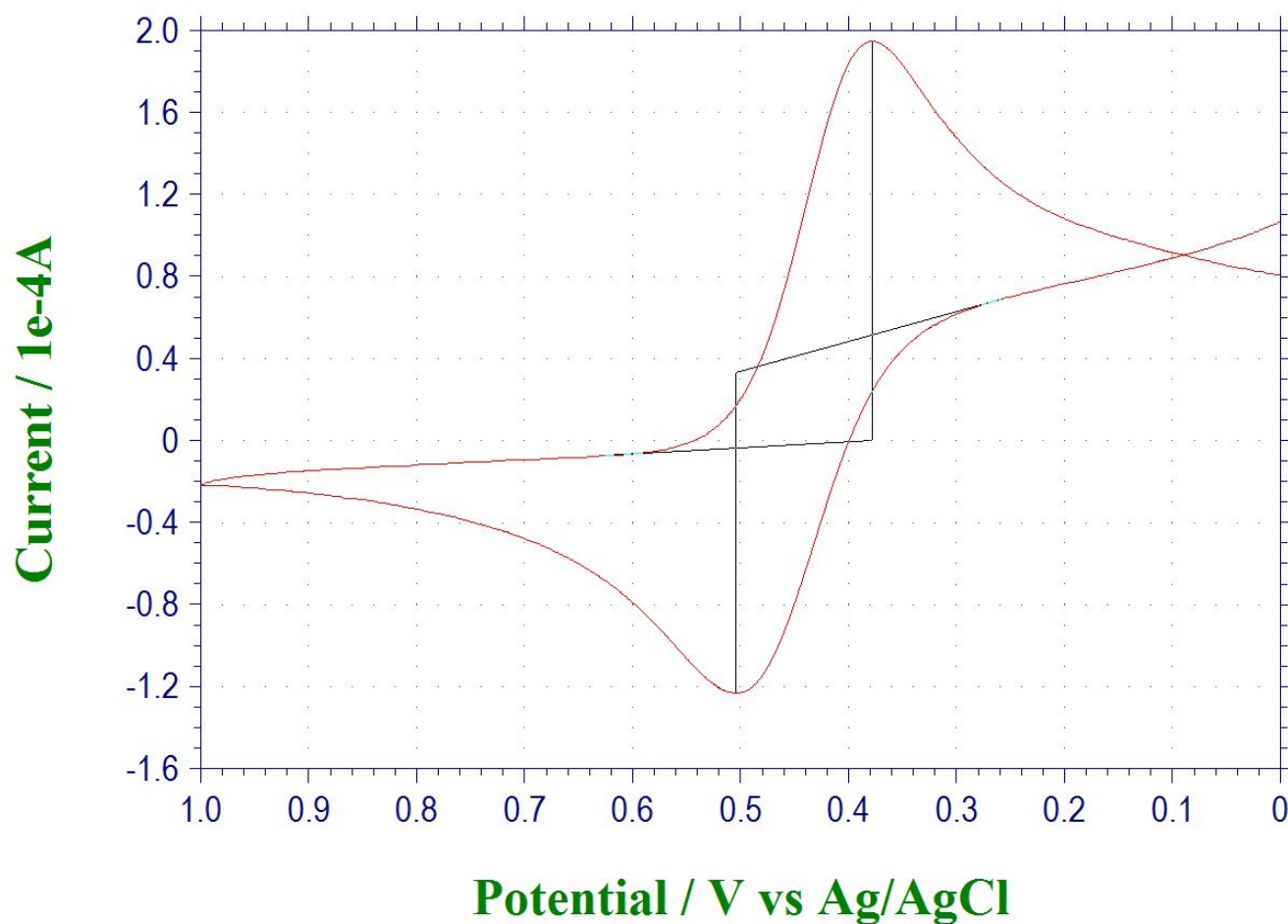
Init E (V) = 0
High E (V) = 1
Low E (V) = 0
Init P/N = P
Scan Rate (V/s) = 0.05
Segment = 2
Smpl Interval (V) = 0.001
Quiet Time (s) = 2
Sensitivity (A/V) = 1e-4

Segment 1:
Ep = 0.497V
ip = -2.780e-4A
Ah = -4.749e-4C

Segment 2:
Ep = 0.374V
ip = 3.347e-4A
Ah = 5.118e-4C

DATA SET FOR “ANALYSIS OF UNKNOWNNS USING CYCLIC VOLTAMMETRY” EXPERIMENT

UNKNOWN SOLUTION (XX mM FeCl₃ in 1.0 M HCl)



Nov. 25, 2019 13:51:43

Tech: CV

File: unknownB.bin

Init E (V) = 0

High E (V) = 1

Low E (V) = 0

Init P/N = P

Scan Rate (V/s) = 0.1

Segment = 2

Smpl Interval (V) = 0.001

Quiet Time (s) = 2

Sensitivity (A/V) = 1e-4

Segment 1:

Ep = 0.505V

ip = -1.567e-4A

Ah = -1.392e-4C

Segment 2:

Ep = 0.378V

ip = 1.947e-4A

Ah = 1.487e-4C