Cyanide

Function: Differential Pulse Voltammetry (DPV/a)

Start Potential (mV)	0
End Potential (mV)	-600
Current range	1,024 μA
Scan Speed (mV/s)	20
Number of cycles	3
Delay before sweep (s)	5
Purge and stir time (s)	300
Stirring speed (rpm)	300
Drop Size (a.u.)	60

Cyanide concentrated standard solution (1 g/l)
Dissolve 3 g of KOH in a minimum volume of distilled water, add 0.2503 g of KCN and bring to volume in a 100 ml volumetric flask with distilled water. (MM_{KCN} = 65.12 MM_{CN} = 26.02)

Supporting electrolyte
0.1 M borate buffer, pH 9.75
Dissolve 5.1 g of H_3BO_3 in 800 ml of distilled water, add 2 g of NaOH, check if pH is 9.75 and bring to volume in 1 l volumetric flask with distilled water.

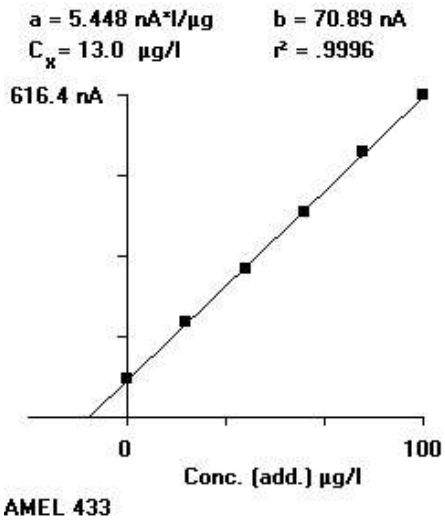
Procedure
High cyanide content sample (plating bath)
Add to 10 ml of supporting electrolyte a sample volume in way to obtain a solution containing 0.1 – 0.5 mg/l of CN^-.
Low cyanide content sample
Add to 10 ml of sample 60 mg of H_3BO_3, add 10 % NaOH or 10% CH_3COOH al 10% until pH 9.75.

Working standard solution (100 mg/l)
Dilute 1+9 the concentrated standard solution in distilled water, at the moment of the analysis.

Working standard solution (1 mg/l)
Dilute 1+999 the concentrated standard solution in distilled water, at the moment of the analysis.

Warnings
Remember that the pH in the solutions containing cyanide must be always above 7!
Anyway operate under a hood.
Destroy solutions containing cyanide after the analysis by adding persulphate at pH 8 and let standing them for 15 days.

Analytical Report
Analysis: waste water
Sample Concentration = 13.0 µg/l
Method: 5 additions



Volumes Table

Solvent Volume	0 (ml)
Supporting Sol.	0.1 (ml)
Sample Volume	10 (ml)
Standard Conc.	10000 (µg/l)

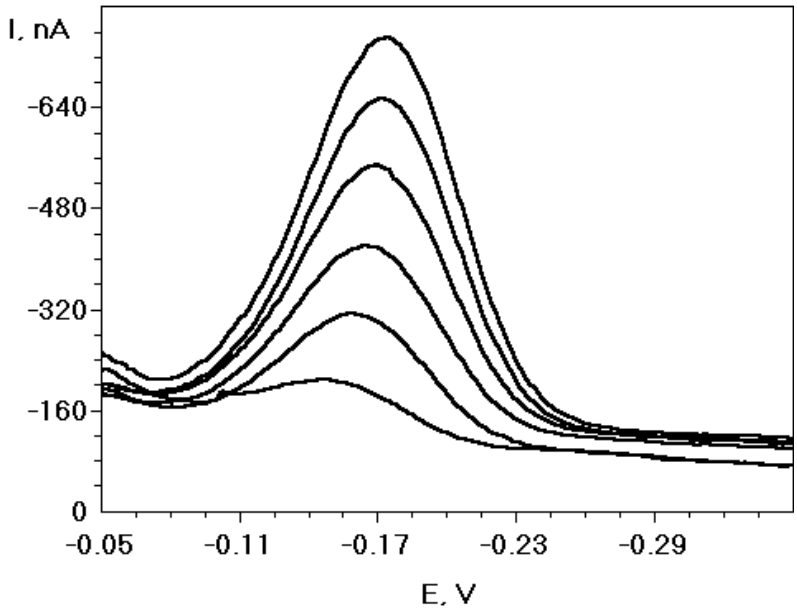
Height Table

#	Peak Pot.	Height
0	-152.6	71.24 nA
1	-160.1	181.0 nA
2	-164.6	280.1 nA
3	-170.6	387.4 nA
4	-173.6	501.4 nA
5	-173.6	604.3 nA

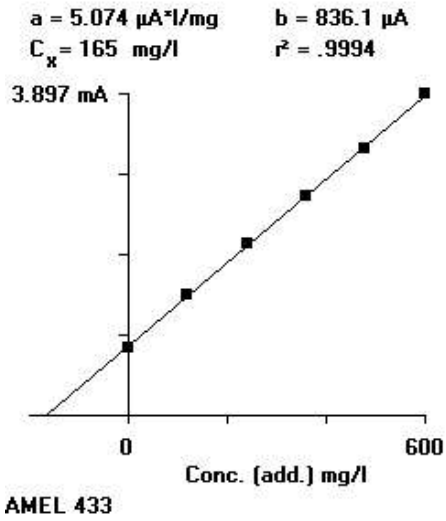
Regression Data

#	Add.Conc.	Height x dilution
0	0 µg/l	71.96 nA
1	20.0 "	183.2 nA
2	40.0 "	284.1 nA
3	60.0 "	393.7 nA
4	80.0 "	510.5 nA
5	100 "	616.4 nA

y = ax + b
a = 5.448 nA*l/µg
b = 70.89 nA
r^2= .9996



Analytical Report
Analysis: gold bath
Sample Concentration = 165 mg/l
Conc. in the original sample: 16.5 g/l (d= 100)
Method: 5 additions



Volumes Table

Solvent Volume	0 (ml)
Supporting Sol.	10.18 (ml)
Sample (d=100) Vol.	0.025 (ml)
Standard Conc.	100 (mg/l)

Height Table

#	Peak Pot.	Height
0	-187.6	1.999 µA
1	-198.1	3.553 µA
2	-204.1	5.088 µA
3	-207.1	6.452 µA
4	-210.1	7.831 µA
5	-212.5	9.408 µA

Regression Data

#	Add.Conc.	Height x dilution
0	0 mg/l	816.3 µA
1	120 "	1.455 mA
2	240 "	2.089 mA
3	360 "	2.657 mA
4	480 "	3.235 mA
5	600 "	3.897 mA

y = ax + b
a = 5.074 µA*l/mg
b = 836.1 µA
r^2= .9994