Copper

Function: Differential Pulse Stripping Voltammetry (DPS/a)

Start Potential (mV)	-300
End Potential (mV)	50
Current range	20.48
Scan Speed (mV/s)	20
Deposition time (s)	60
Deposition Pot. (mV)	-400
Number of cycles	3
Delay before sweep (s)	10
Purge and stir time (s)	300
Stirring speed (rpm)	300
Drop Size (a.u.)	60

Copper concentrated standard solution (1 g/l)
Dissolve 1 g of pure Cu in a minimum volume of 8 M HNO_3. Bring to volume in a 1 l volumetric flask with distilled water.

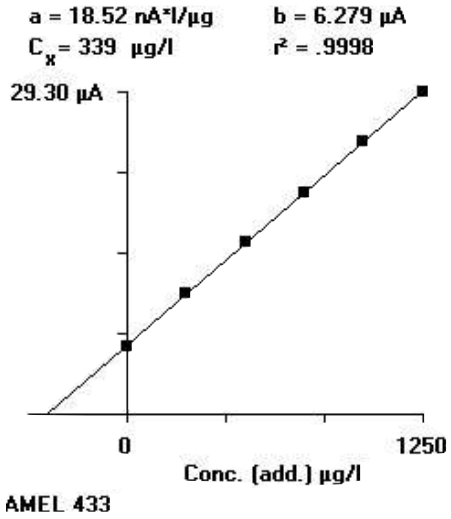
Supporting Electrolyte
1 M $H_2C_2O_4$ and 2 M HCl solution. Dissolve 90 g of $H_2C_2O_4$ (or 126 g of $H_2C_2O_4 \cdot H_2O$) and 167 ml of 37% HCl in 1 l of distilled water. Store in a polythene bottle.

Procedure
Add 1 ml of supporting electrolyte to 10 ml of neutralised sample.
Analyse seawater, high salt content sample avoiding the addition of the supporting electrolyte.
Samples at pH above 7 are to be neutralised before the addition of the supporting electrolyte.

Working standard solution (10 mg/l)
Dilute 1 ml of Cu concentrated standard solution in 100 ml of distilled water, in a volumetric flask.

Alternative supporting electrolytes
HCl or KCl or NaCl solution from 0.1 up to 1 M
0.1 M Acetate buffer pH 4.5 or 0.1 M citrate buffer a pH 3
0.1 M Tartrate buffer H 9 (when zinc has to be analysed in the same solution)

Analytical report
Analysis: wine Barbera
Sample Concentration = 339 µg/l
Method: 5 additions



Volumes Table

Solvent Volume	0 (ml)
Supporting Sol.	6 (ml)
Sample Volume	4 (ml)
Standard Conc.	10000 (µg/l)

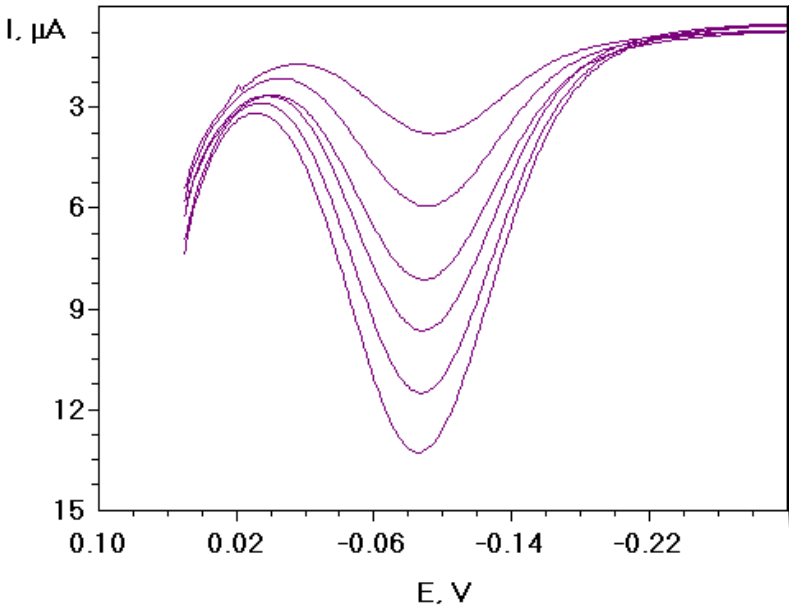
Height Table

#	Peak Pot.	Height
0	-96.8	2.464 µA
1	-93	4.346 µA
2	-91.5	6.114 µA
3	-89.3	7.848 µA
4	-87.8	9.573 µA
5	-86.9	11.16 µA

Regression Data

#	Add.Conc.	Height x dilution
0	0 µg/l	6.160 µA
1	250 "	10.98 µA
2	500 "	15.59 µA
3	750 "	20.21 µA
4	1000 "	24.89 µA
5	1250 "	29.30 µA

$y = ax + b$
$a = 18.52$ nA*l/µg
$b = 6.279$ µA
$r^2 = .9998$



Interferences

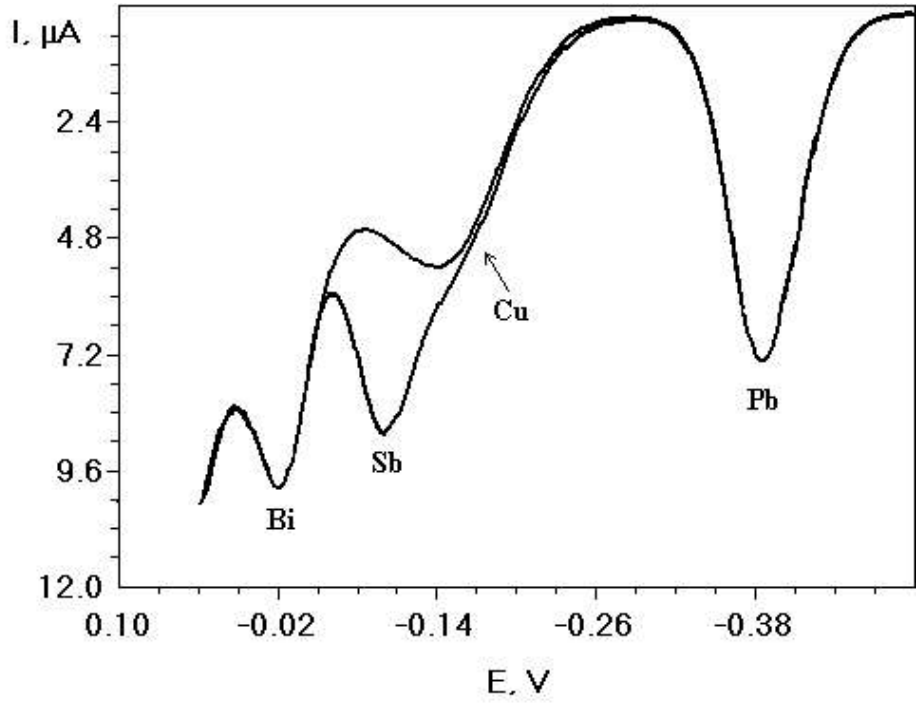


Fig. 1 - Pb, Cu, Sb e Bi in 0.6 M HCl
The antimony peak overlaps the copper peak.

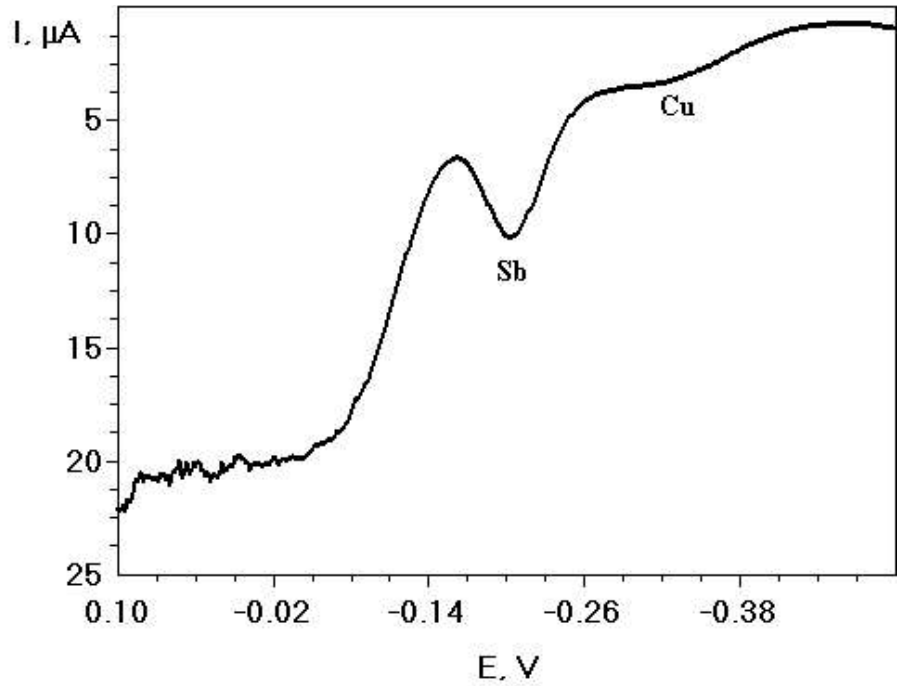


Fig. 2 - Pb, Cu, Sb e Bi in 12 M HCl
The Lead peak does not appear in the voltammogram because its potential is lower than usual. Also the copper peak shifts towards lower potential and does not interfere with the antimony discharge. The bismuth peak cannot be registered because the acid concentration is too high.