VA Application Note No. V - 131

Title:	**Determination of nickel and cobalt in sulfuric acid**

Summary:	The concentration of Ni and Co is determined by adsorptive stripping voltammetry at the HMDE with dimethylglyoxime (DMG) as complexing agent.

Sample:	Sulfuric acid
Sample preparation:	Dilution in water 1:50

Analysis of Ni^{2+} and Co^{2+}

Ammonia buffer pH 9.8
c(NH_4Cl) = 1 mol/L
c(NH_3) = 1 mol/L

DMG solution
c(DMG) = 0.1 mol/L in water
DMG: Dimethylglyoxime disodium salt

Measuring solution
5 mL water
+ 5 mL diluted sample
+ 500 µL ammonia buffer
+ 500 µL DMG solution
→ adjust pH to 9.5 with NH_3

Working electrode (WE)
MME (Multi Mode Electrode) 6.1246.020

Auxiliary electrode (AE)
Pt 6.0343.000

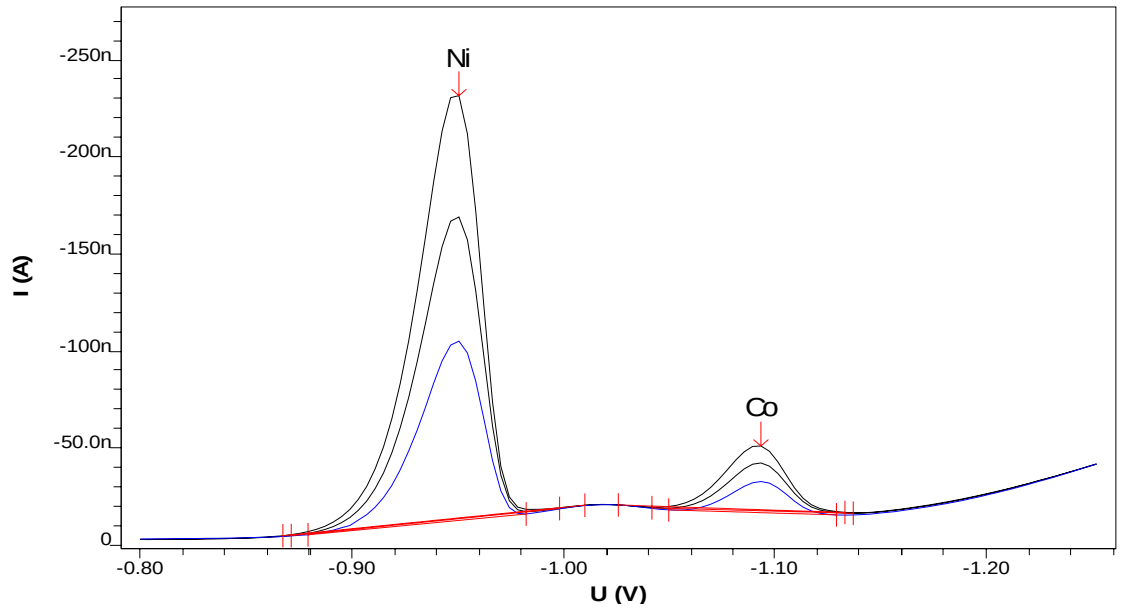
Reference electrode (RE)
Ag/AgCl/KCl (3 mol/L): 6.0728.020 + 6.1245.010

Parameters

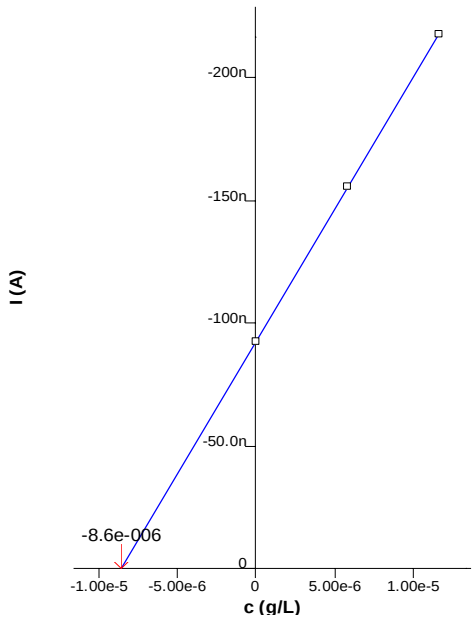
Working electrode	HMDE
Stirrer speed	2000 rpm
Mode	DP
Purge time	300 s
Deposition potential	-0.7
Deposition time	30 s
Equilibration time	10 s
Pulse amplitude	50 mV
Start potential	-0.8 V
End potential	-1.25 V
Voltage step	4 mV
Voltage step time	0.3 s
Sweep rate	13.3 mV/s
Peak potential Ni	-950 mV
Peak potential Co	-1250 mV

Results:	Ni	Co
	913 µg/L	47.3 µg/L

Determination of Ni and Co



Ni
c = 920.515 µg/L
+/- 3.321 µg/L (0.36%)



Co
c = 47.666 µg/L
+/- 0.461 µg/L (0.97%)