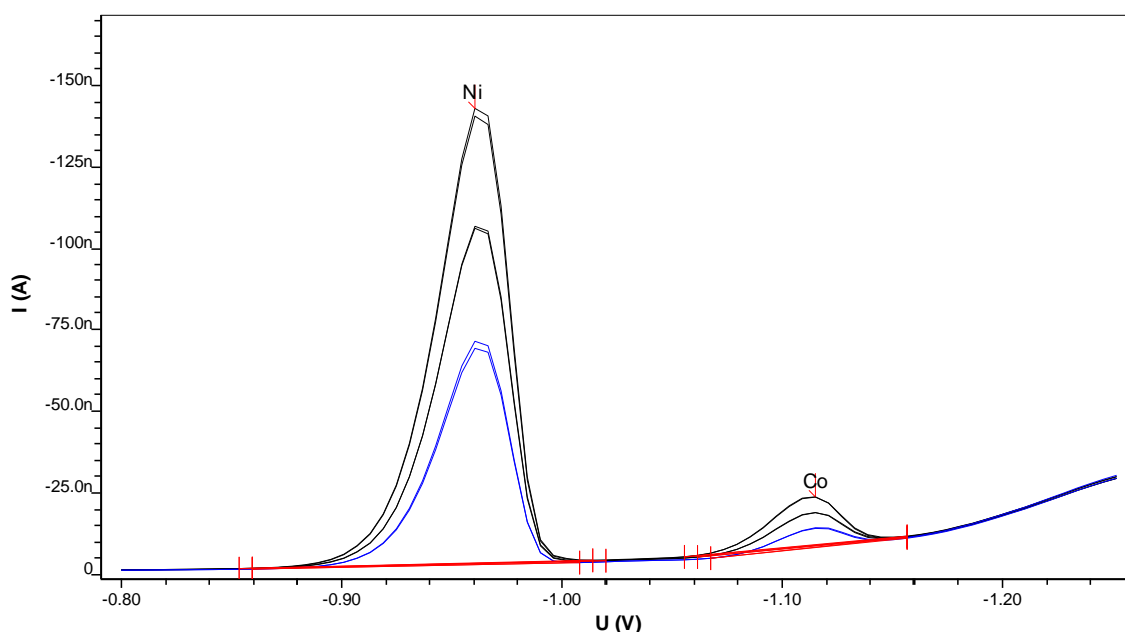


Nickel and cobalt in red wine after UV digestion



The determination of nickel and cobalt in red wine using adsorptive stripping voltammetry can be carried out after UV digestion of the sample.

Results

Ni	31.6 $\mu\text{g/L}$
Co	2.2 $\mu\text{g/L}$

Method description

Sample

Red wine

Instruments

797 VA Computrace & 909 UV Digester



Sample preparation

3 mL ultrapure water, 0.3 mL red wine, 10 μ L HCl, and 2 mL H₂O₂ are pipetted into the 12 mL quartz sample vessels. The sample holder with the 12 quartz sample vessels is placed in the 909 UV Digester. The samples are irradiated at 90 °C for 120 min. After 60 min, another 1 mL H₂O₂ is added. For the voltammetric determination of nickel and cobalt 4 mL ultrapure water are added to the digested solution.

Parameter 909 UV Digester

Temperature	90 °C
Irradiation time	120 min

Electrodes

Multi-Mode Electrode pro	6.1246.120
Non-silanized capillaries	6.1226.030
Ag/AgCl/KCl (3 mol/L) reference electrode. Bridge electrolyte c(KCl) = 3 mol/L	6.0728.020 6.1245.010
Separate Pt rod electrode	6.0343.000

Reagents

HCl	Hydrochloric acid, for trace analysis*, w(HCl) = 30%
H ₂ O ₂	Hydrogen peroxide solution, for trace analysis*, w(H ₂ O ₂) = 30%
NH ₄ Cl	Ammonium chloride, for trace

analysis*

NH ₃	Ammonia solution, for trace analysis*, w(NH ₃) = 25%
DMG	Dimethylglyoxime disodium salt octahydrate, 97%

*e.g., Merck suprapur®, Sigma-Aldrich TraceSelect® or equivalent.

Solutions

Supporting electrolyte	Ammonia buffer pH 9.8 c(HCl) = 1 mol/L c(NH ₃) = 3 mol/L
Complexing agent	DMG solution c(DMGN ₂) = 0.1 mol/L

Analysis

Measuring solution	10.31 mL sample + 0.5 mL supporting electrolyte + 0.1 mL complexing agent
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Parameters 797 VA Computrace

Working electrode	HMDE
Stirrer speed	2000 rpm
Mode	DP
Purge time	300 s
Deposition potential	-0.7 V
Deposition time	60 s
Equilibration time	10 s
Start potential	-0.8 V
End potential	-1.25 V
Pulse amplitude	0.05 V
Pulse time	0.04 s
Voltage step	0.006 V
Voltage step time	0.3 s
Sweep rate	0.02 V/s
Peak potential Ni	-0.97 V
Peak potential Co	-1.11 V

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