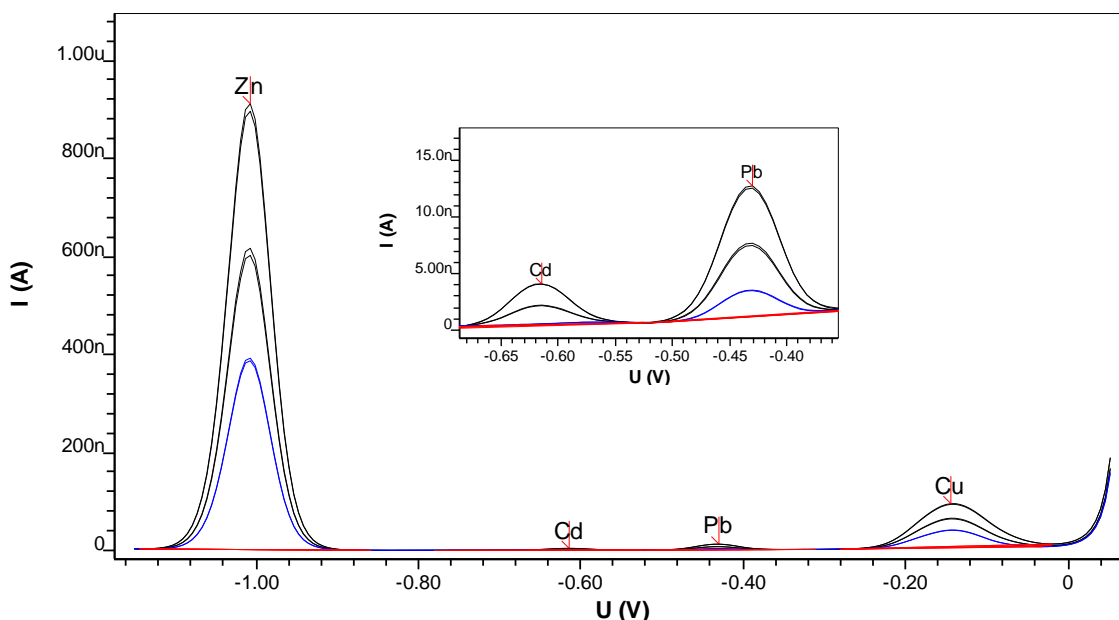


Zinc, cadmium, lead, and copper in red wine after UV digestion



Zinc, cadmium, lead, and copper can be determined in red wine after UV digestion by anodic stripping voltammetry.

Results

Zn	763 μ g/L
Cd	< LOD
Pb	11.7 μ g/L
Cu	180 μ g/L

Method description

Sample

Red wine

Instruments

797 VA Computrace & 909 UV Digester



Sample preparation

3 mL ultrapure water, 1 mL red wine, 10 μL HCl, and 2 mL H_2O_2 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 Pt1000 temperature sensor has to be placed in position 6 of the sample holder. The samples are irradiated at 90 °C for 120 min. After 60 min, additional 0.5 mL H_2O_2 are added to each sample solution.

Parameters 909 UV Digester

Temperature	90 °C
Irradiation time	120 min

Electrodes

Multi-Mode Electrode pro	6.1246.120
Silanized capillaries	6.1226.050
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_2O_2	Hydrogen peroxide solution, for trace analysis*, w(H_2O_2) = 30%
CH_3COOH	Acetic acid, for trace analysis*

NH_3	Ammonia solution, for trace analysis*, w(NH_3) = 25%
KCl	Potassium chloride, , for trace analysis*

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

Solutions

Supporting electrolyte	Ammonium acetate buffer pH 4.6 c(CH_3COOH) = 2 mol/L c(NH_3) = 1 mol/L
KCl solution	c(KCl) = 3 mol/L

Analysis

Measuring solution	10 mL digested sample solution + 1 mL KCl solution + 1 mL supporting electrolyte
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Parameters 797 VA Computrace

Working electrode	HMDE
Stirrer speed	2000 rpm
Mode	DP
Purge time	300 s
Deposition potential	-1.15 V
Deposition time	90 s
Equilibration time	10 s
Start potential	-1.15 V
End potential	0.05 V
Pulse amplitude	0.05 V
Pulse time	0.04 s
Voltage step	0.006 V
Voltage step time	0.1 s
Sweep rate	0.06 V/s
Peak potential Zn	-1.0 V
Peak potential Cd	-0.6 V
Peak potential Pb	-0.45 V
Peak potential Cu	-0.15 V

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