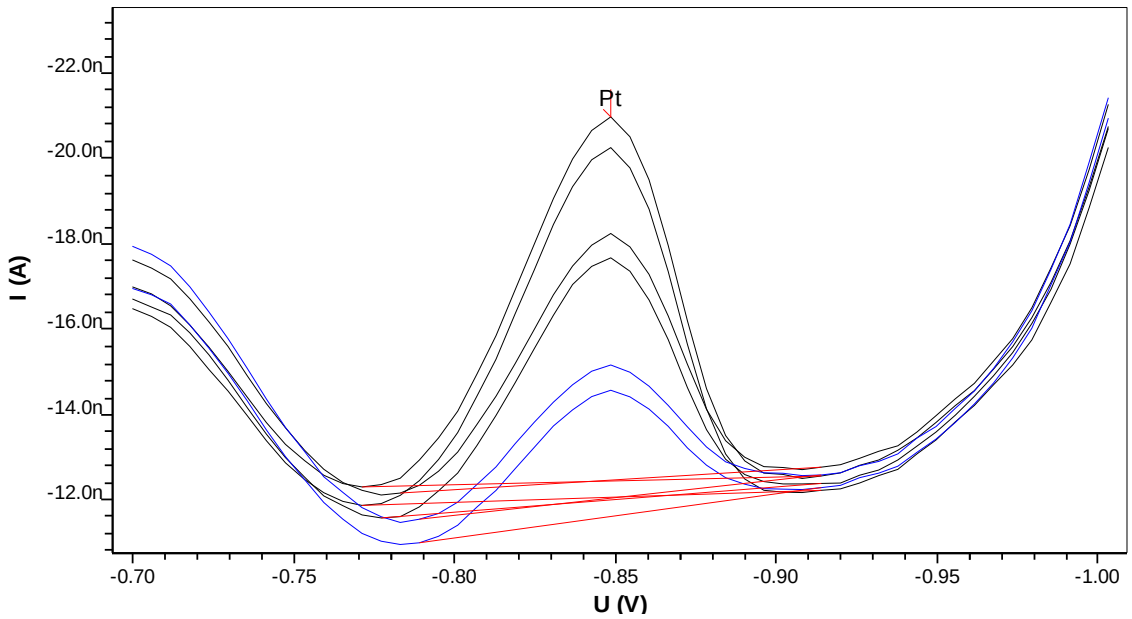
VA Application Note V–96

Platinum in urine after UV digestion



Platinum in urine can be determined by adsorptive stripping voltammetry (AdSV) after UV digestion of the sample.

Results

Pt in urine
4.3 ng/L

Metrohm

Method description

Sample

Human urine

Instruments

797 VA Computrace & 909 UV Digester

Sample preparation

8 mL ultrapure water, 2 mL urine, 250 µL HCl, and 100 µL 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 samples are irradiated at 95 °C for 180 min. After each 30 min, additional 100 µL H_2O_2 are added to each sample solution.

Parameters 909 UV Digester

Temperature	95 °C
Irradiation time	180 min

Electrodes

Multi-Mode Electrode pro Silanized capillaries	6.1246.120 6.1226.050
Ag/AgCl/KCl (3 mol/L) reference electrode. Bridge electrolyte c(KCl) = 3 mol/L	6.0728.020 6.1245.010
Glassy carbon rod Electrode holder	6.1247.000 6.1241.020

Reagents

HCl	Hydrochloric acid, for trace analysis*, w(HCl) = 30%
H_2O_2	Hydrogen peroxide solution, for trace analysis*, w(H_2O_2) = 30%
H_2SO_4	Sulfuric acid, for trace analysis*, ≥95%
HCHO	Formaldehyde solution, w(HCHO) = 37%
$N_2H_6SO_4$	Hydrazine sulfate, 99.999%

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

Solutions

Supporting electrolyte	$c(H_2SO_4) = 0.72$ mol/L $c(HCHO) = 6.7 \cdot 10^{-3}$ mol/L $c(N_2H_6SO_4) = 3 \cdot 10^{-3}$ mol/L

Analysis

Measuring solution	10.85 mL digested sample solution + 1.5 mL supporting electrolyte

Parameters 797 VA Computrace

Working electrode	HMDE
Stirrer speed	2000 rpm
Mode	DP
Purge time	300 s
Deposition potential	-0.7 V
Deposition time	90 s
Equilibration time	10 s
Start potential	-0.7 V
End potential	-1.0 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 Pt	-0.85 V

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