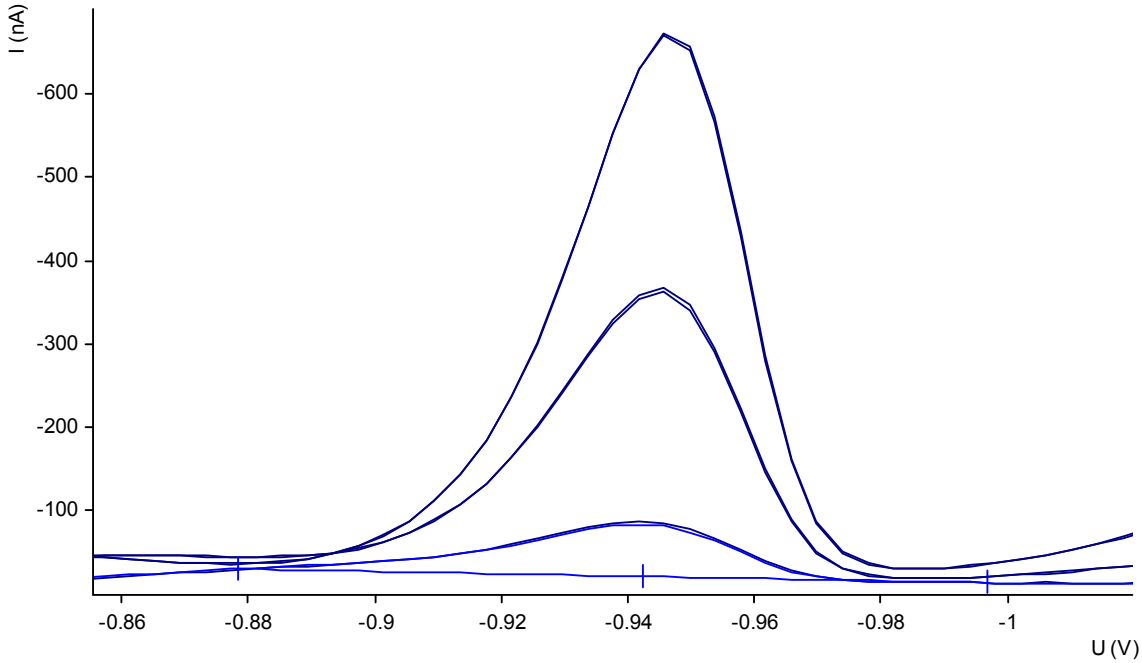
VA Application Note V–92

# Nickel in white wine after UV digestion




For the determination of nickel in white wine, UV digestion is required to mineralize the sample. The determination is done by adsorptive stripping voltammetry (AdSV) at the HMDE in ammonia buffer with dimethylglyoxime (DMG).

## Results

| Ni in white wine |
| --- |
| 660 µg/L |

Metrohm

# Method description

### Sample

White wine

### Instruments

797 VA Computrace & 909 UV Digester

### Sample preparation

3 mL ultrapure water, 0.3 mL white 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 samples are irradiated at 90 °C for 120 min. After 60 min another 1 mL $H_2O_2$ is added. For the voltammetric determination of nickel 4 mL ultrapure water are added to the digested solution.

### Parameters 909 UV Digester

| | |
|---|---|
| Temperature | 90 °C |
| Irradiation time | 120 min |

### Electrodes

| | |
|---|---|
| Multi-Mode Electrode pro<br>Non-silanized capillaries | 6.1246.120<br>6.1226.030 |
| Ag/AgCl/KCl (3 mol/L) reference electrode. Bridge electrolyte c(KCl) = 3 mol/L | 6.0728.020<br>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% |
| $NH_3$ | 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

| | |
|---|---|
| Ammonia buffer | c($NH_3$) = 3 mol/L<br>+ c(HCl) = 1 mol/L |
| DMG solution | c(DMG) = 0.1 mol/L in water |

### Analysis

| | |
|---|---|
| Measuring solution | 1 mL digested sample solution<br>+ 10 mL ultrapure water<br>+ 0.5 mL ammonia buffer<br>+ 0.1 mL DMG solution<br>→ pH adjusted to 9.3 with HCl |

### Parameters 797 VA Computrace

| | |
|---|---|
| Working electrode | HMDE |
| Stirrer speed | 2000 rpm |
| Mode | DP |
| Purge time | 300 s |
| Deposition potential | -0.7 V |
| Deposition time | 30 s |
| Equilibration time | 5 s |
| Pulse amplitude | 0.05 V |
| Start potential | -0.7 V |
| End potential | -1.25 V |
| Voltage step | 0.004 V |
| Voltage step time | 0.3 s |
| Sweep rate | 0.0133 V/s |
| Peak potential Ni | -0.94 V |