



Application Note AN-V-212

## 矿泉水中的汞

### Straightforward determination by voltammetry using a gold microwire electrode

Mercury and its compounds are toxic. The highest risk is posed by chronic poisoning with mercury compounds ingested with food. A significant part of the mercury present in the environment is of anthropogenic origin. Considerable sources are coal-fired power plants, steel, and nonferrous metal production, waste incineration plants, the chemical industry, or artisanal gold mining where the use of elemental mercury for the extraction of gold from the ore is still common. The guideline value for inorganic mercury in the World Health

Organization's «Guidelines Quality» for Drinking-water is set to 6 µg/L.

With a limit of detection (LOD) of 0.5 µg/L, anodic stripping voltammetry is a viable, less sophisticated alternative to atomic absorption spectroscopy (AAS). While AAS (and competing methods) can only be performed in a laboratory, anodic stripping voltammetry can be used conventionally in the laboratory or alternatively in the field with the 946 Portable VA Analyzer. The determination is carried out on the scTRACE Gold electrode.

## SAMPLE

Bottled mineral water, spiked

## EXPERIMENTAL

The scTRACE Gold is electrochemically activated and an ex situ mercury film is deposited prior to the first determination. In the next step, the water sample and the supporting electrolyte are pipetted into the measuring vessel. The determination is carried out with the 884 Professional VA or with the 946 Portable VA Analyzer using the parameters specified in **Table 1**. The concentration is determined by two additions of a standard addition solution.



**Figure 1.** 946 Portable VA Analyzer (scTRACE Gold version)



**Figure 2.** 884 Professional VA fully automated for VA

**Table 1.** Parameters

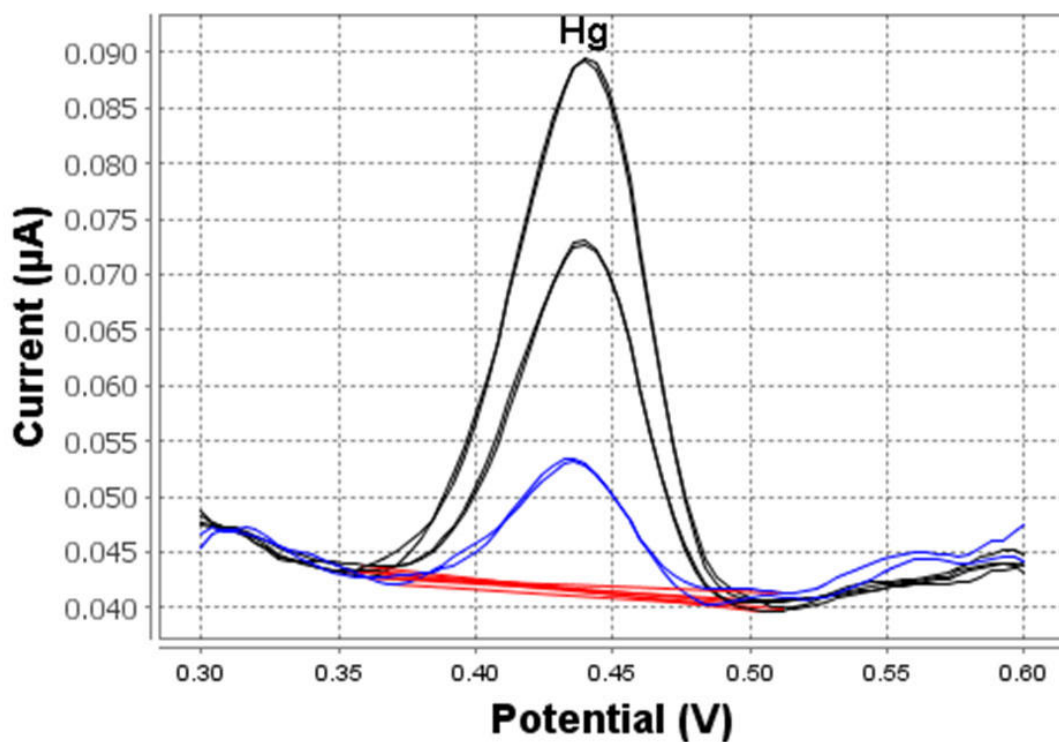
| Parameter            | Setting               |
|----------------------|-----------------------|
| Mode                 | DP-Differential pulse |
| Deposition potential | 0.3 V                 |
| Deposition time      | 90 s                  |
| Start potential      | 0.3 V                 |
| End potential        | 0.6 V                 |
| Peak potential As    | 0.44V                 |

## ELECTRODES

- scTRACE Gold

## RESULTS

The limit of detection of the method is approximately 0.5 µg/L.



**Figure 3.** Determination of mercury (946 Portable VA Analyzer; 90 s deposition time)

**Table 2.** Results of Hg analysis in spiked bottled mineral water

| Sample                | Hg (µg/L) |
|-----------------------|-----------|
| Bottled mineral water | 2.1       |

## REFERENCES

Application Bulletin 422: [Determination of mercury in water with the scTRACE Gold](#)

## CONTACT

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## CONFIGURATION



### (MME) 884 Professional VA manual

用于多模式电极 (MME) 的 884 Professional VA manual 是借助多模式电极 pro 或 scTRACE Gold 或铋液滴电极使用伏安法和极谱法进行痕量分析的入门仪器。此项已经证实的瑞士万通电极技术与恒电位/恒电位仪以及外接的灵活 viva 软件联用,在重金属测定领域中展现了新的前景。带有经认证的校准器的恒电位仪在每次测量之前均自动冲洗进行校准,确保可能的高精度。

通过此仪器也可使用旋转圆盘电极进行测定,例如借助«循环伏安溶出法»(CVS)、「循环脉冲伏安溶出法»(CPVS)和计时电位法(CP)测定电镀池中的有机添加剂。借助可更换的测量头,可在使用不同电极的各种应用之间实现快速切换。

使用 **viva** 软件进行控制、数据采集和评估。

用于 MME(多模式电极)的 884 Professional VA manual 供货时配备大量附件,包括用于多模式电极 pro 的测量头。电极组和 **viva** 许可证则须单独订购。



### VA scTRACE Gold Professional VA

整套电极组,用于测定砷或汞。包括用于 scTRACE Gold、scTRACE Gold、搅拌器和量杯的支架。



### 946 Portable VA Analyzer (scTRACE Gold)

用于测定重金属,如痕量砷,汞,铜,铅,锌,镍,钴,铁、铋或铈之类重金属的便携式金属分析器。scTRACE Gold 适用的仪器版本。该系统由恒电位仪和集成了搅拌器与可更换式电极的独立测量台构成。该设备用 Portable VA Analyzer 软件驱动。电源由 USB 接口和内置的可充电电池提供。设备装在手提箱内交付,包含所有必需的附件。