



Application Note AN-V-215

Zinc in drinking water

Straightforward determination over a wide concentration range with the scTRACE Gold

At zinc concentrations above 3 mg/L, the quality of drinking water deteriorates, and an undesirable astringent taste is detectable. No health-based guideline value is required for zinc as it is an essential trace element for humans. The United States Environmental Protection Agency (US EPA) has set a maximum concentration of 5 mg/L as the limit value of Zn in drinking water.

The anodic stripping voltammetric method with an overall determination time of less than 10 minutes is fast, very sensitive, and can be applied for a wide range of concentrations. Without applying any deposition time, the limit of

detection is around 1 µg/L. This value can be lowered further when the deposition time is increased. When a reductive determination is carried out, the linear range of the method can be extended to 1.5 mg/L. The excellent performance of the method is due to the unique design and architecture of the scTRACE Gold electrode. This sensor does not require extensive maintenance such as mechanical polishing. Measurements can be performed in the laboratory or alternatively in the field. This method is suited for manual and automated systems.

SAMPLE

Drinking water, mineral water

EXPERIMENTAL

The water sample and the supporting electrolyte are pipetted into the measuring vessel. The determination of zinc 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 zinc standard addition solution.

The scTRACE Gold is electrochemically activated prior to the first determination.



Figure 1. 946 Portable VA Analyzer



Figure 2. 884 Professional VA fully automated for VA analysis

Table 1. Parameters

Parameter	Setting
Mode (884) Mode (946)	DP – Differential Pulse SQW – Square wave
Start potential	-1.05 V
End potential	-0.45 V
Peak potential Zn	0.06 V

ELECTRODES

- scTRACE Gold

RESULTS

Without deposition time, this method is suitable for the determination of zinc in water samples in

concentrations from $\beta(\text{Zn}) = 1\text{--}50 \mu\text{g/L}$.

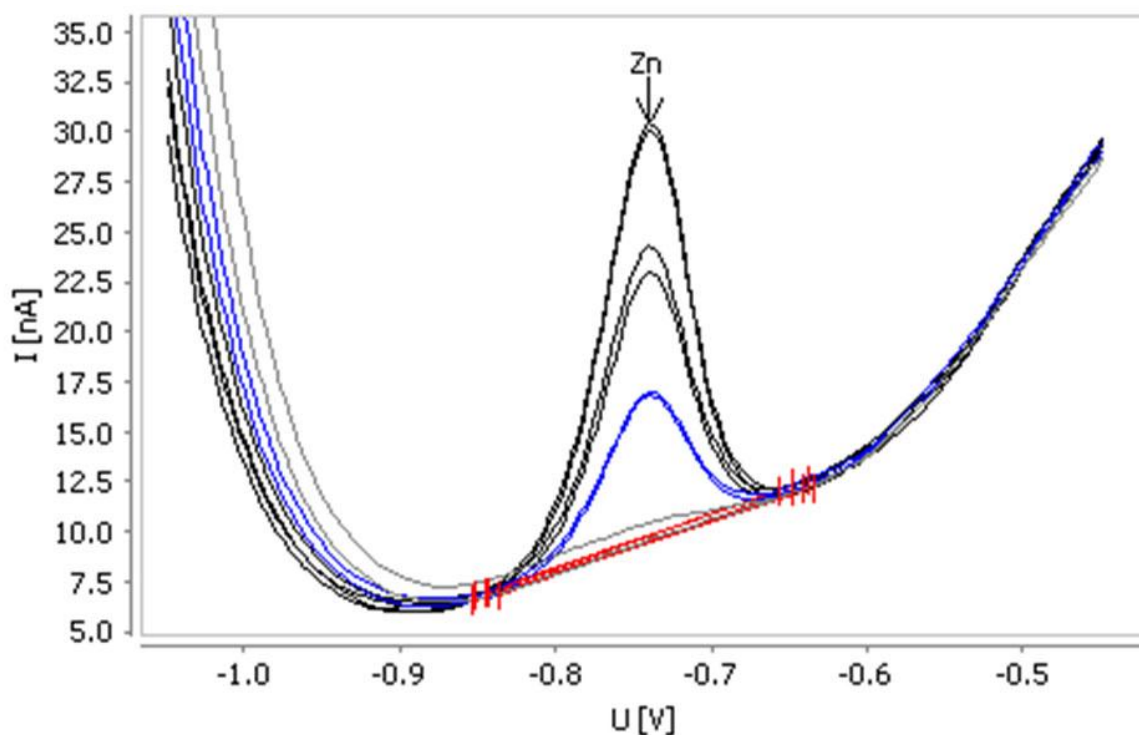


Figure 3. Determination of zinc in mineral water spiked with 10 $\mu\text{g/L}$ (0 s deposition time)

Table 2. Results

Sample	Zn ($\mu\text{g/L}$)
Mineral water spiked with 10 $\mu\text{g/L}$ Zn	10.8

Internal references: AW VA CH4-0573-112018;

AW VA CH4-0575-122018

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CONFIGURATION



(MME) 884 Professional VA manual

用于多模式 (MME) 的 884 Professional VA manual 是借助多模式 pro 或 scTRACE Gold 或液滴使用伏安法和法行高端痕量分析的入器。此已的瑞士万通技与高效位/恒位以及外接的活 viva 件用,在重金属定域中展了新的前景。有的校准器的恒位在每次量之前均自冲洗行校准,保可能的最高精度。

通此器也可使用旋行定,例如借助«循环伏安溶出法»(CVS)、«循环脉冲伏安溶出法»(CPVS)和位法(CP)定池中的有机添加。借助可更的量,可在使用不同的各用之快速切。

使用 viva 件行控制、数据采集和估。

用于 MME(多模式)的 884 Professional VA manual 供配大量附件,包括用于多模式 pro 的量。和 viva 可独。



VA scTRACE Gold Professional VA

整套,用于定或汞。包括用于 scTRACE Gold、scTRACE Gold、拌器和量杯的支架。



946 Portable VA Analyzer (scTRACE Gold)

用于定重金属,如痕量汞,,,,,,,、或之重金属的便携式金属分析器。scTRACE Gold 用的器版本。系由恒位和集成了拌器与可更式的独立量台成。用 Portable VA Analyzer 件。源由 USB 接口和内置的可充池提供。装在手提箱内交付,包含所有必需的附件。