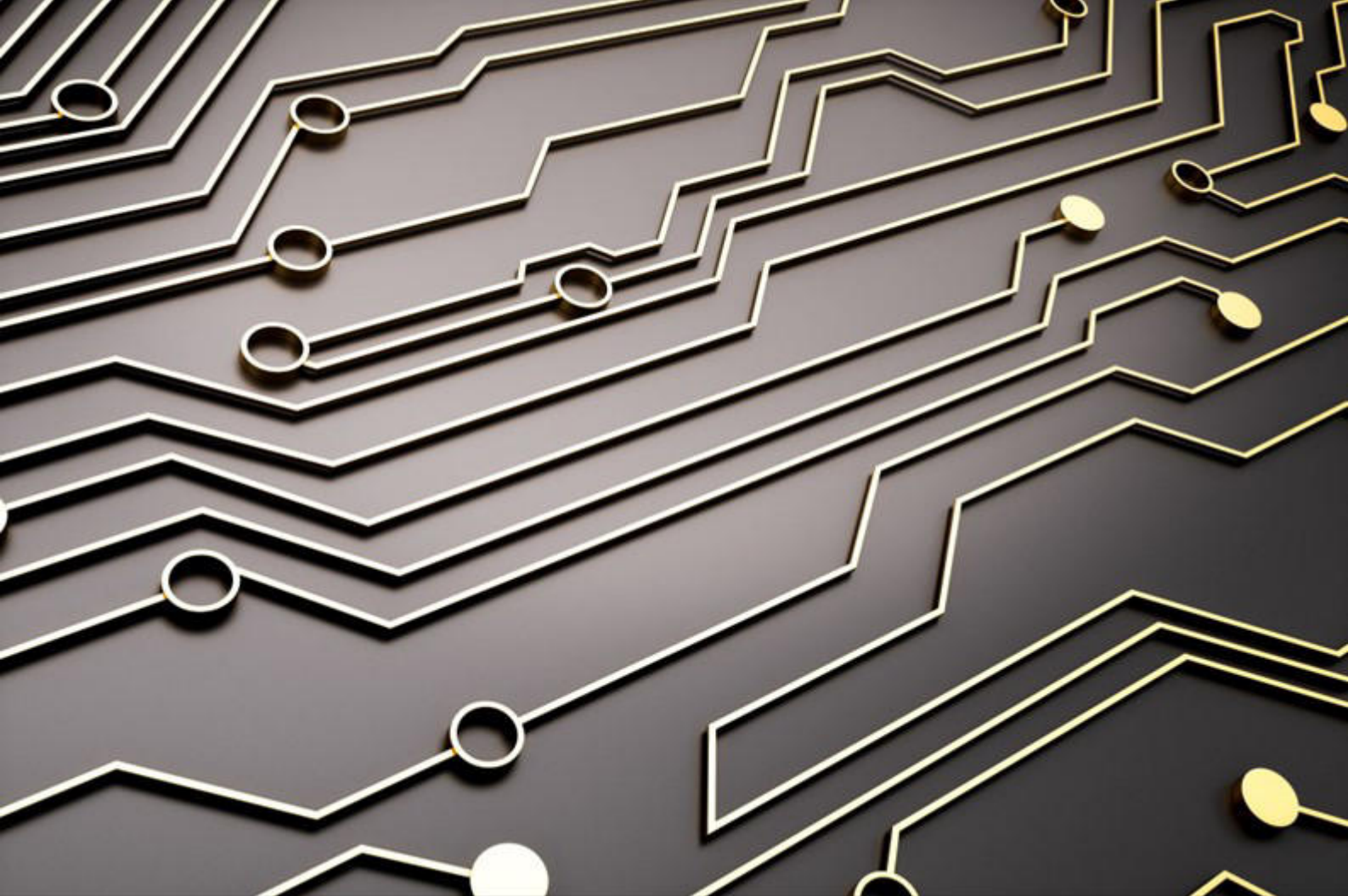




Application Note AN-V-236

化学镍镀液中的锑稳定剂

Straightforward determination of Sb(III) over a wide concentration range with the scTRACE Gold

Electroless nickel plating offers excellent wear and corrosion resistance. Producing printed circuit boards begins with electroless nickel coating, either via the ENIG (electroless nickel, immersion gold) or ENEPIG (electroless nickel, electroless palladium, immersion gold) process. Monitoring the stabilizer levels in electroless Ni plating baths is crucial to ensure uniform nickel deposits and high-quality coatings. The typical concentration of antimony(III) stabilizer in an electroless Ni bath is around 1 mg/L.

Anodic stripping voltammetry is a fast and robust tool for monitoring the Sb(III) stabilizer concentration in electroless Ni plating bath samples. This determination is performed on a combined sensor containing working, reference, and auxiliary electrodes integrated on a single ceramic substrate: the scTRACE Gold. The sensor does not need extensive maintenance such as mechanical polishing. This method is suited for manual or automated systems.

SAMPLE

Electroless Ni plating bath

EXPERIMENTAL

Add water, the electroless Ni plating bath sample, and the supporting electrolyte into the measuring vessel. The determination of antimony(III) is carried out with the 884 Professional VA (Figure 1) using the parameters specified in Table 1. The concentration is determined by two additions of an antimony(III) standard addition solution. The scTRACE Gold is electrochemically activated prior to the first determination.



Figure 1. 884 Professional VA, fully automated for VA analysis.

Table 1. Parameters

Parameter	Setting
Mode	DP – Differential Pulse
Deposition potential	-0.1 V
Deposition time	30 s
Start potential	-0.1 V
End potential	0.2 V
Peak potential Sb(III)	0.06 V

ELECTRODES

- scTRACE Gold

RESULTS

With a 30 s deposition time, this method is suitable for the determination of antimony(III) in electroless Ni plating bath samples over a wide concentration range when the dilution factor is adapted.

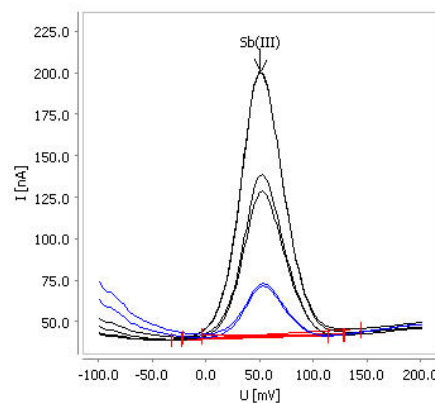


Figure 2. Determination of antimony(III) in an electroless Ni bath sample containing 1 mg/L Sb(III) (30 s deposition time, sample volume 25 μ L in 10 mL water).

Table 2. Result

Sample	Sb(III) (mg/L)
Electroless Ni plating bath containing 1 mg/L Sb(III)	0.971

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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。