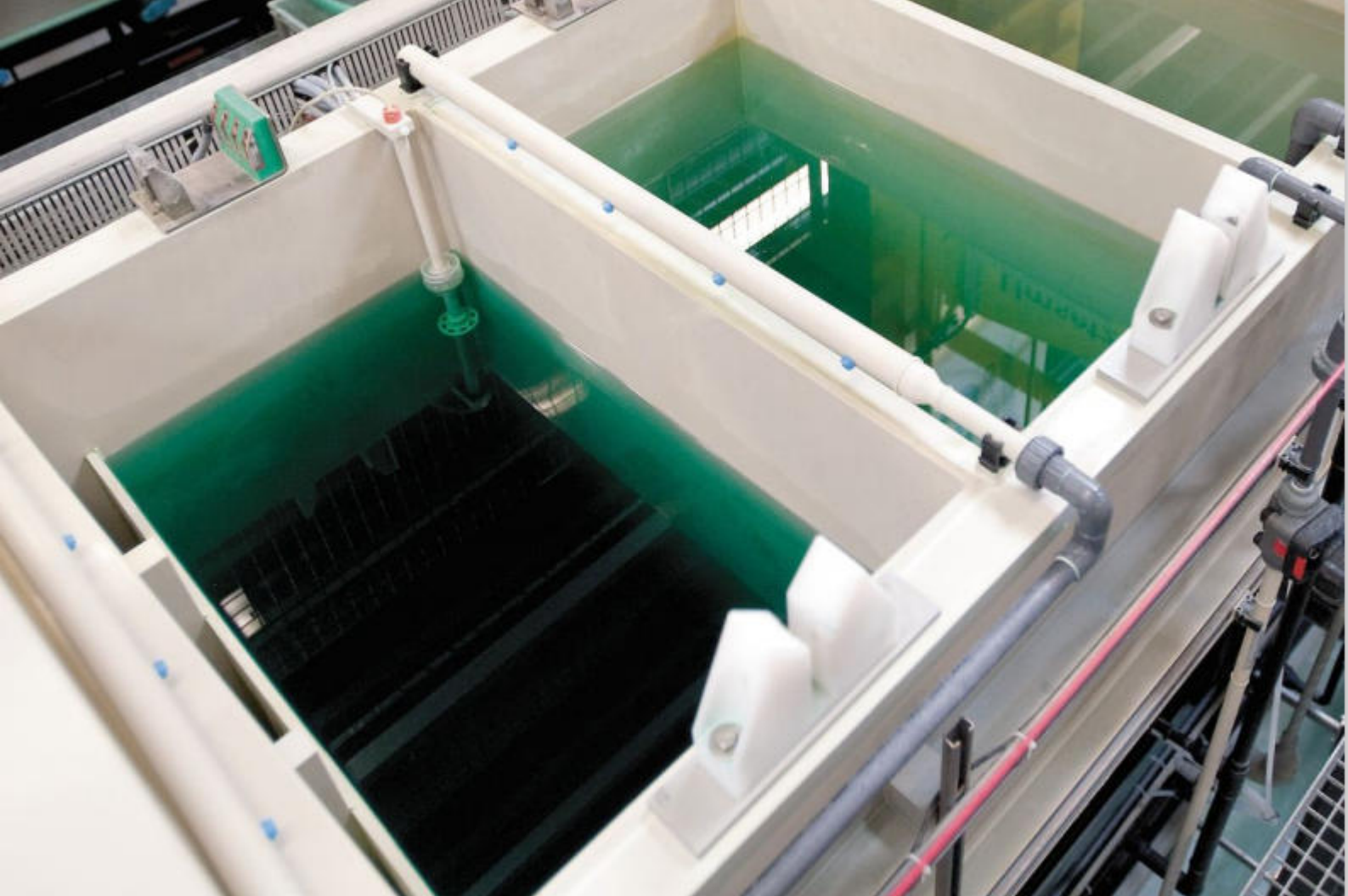




Application Note AN-V-195

无电解镍镀液中的碘酸盐

Polarographic determination of iodate stabilizers

In the past, lead was commonly used as a stabilizer in electroless nickel plating processes. The regular and precise determination of the stabilizer concentration is essential to keep the plating process under stable conditions and to run the process successfully. As restrictions on the use of lead in consumer products (particularly electronics) have grown in recent years, alternative stabilizers were developed and introduced. One of the stabilizers used as a lead replacement is iodate (IO_3^-). Electroless nickel plating is used in various industrial production processes (e.g., production

of hard disks, and for protection against corrosion or wear). The ENIG (electroless nickel, immersion gold) and ENEPIG (electroless nickel, electroless palladium, immersion gold) processes in the production of printed circuit boards (PCB) are very reliant on the success of this method as electroless nickel plating is the first step in the process.

Polarography can be used to determine the iodate content after dilution in supporting electrolyte and has been established as a straightforward, sensitive, selective, and interference-free method for this application.

SAMPLE

Electroless nickel plating bath

EXPERIMENTAL

After diluting the sample in electrolyte, the polarographic determination of iodate is carried out on the 884 Professional VA with the Multi-Mode Electrode pro as working electrode using the parameters listed in **Table 1**. The concentration of iodate is determined by two additions of standard addition solution.

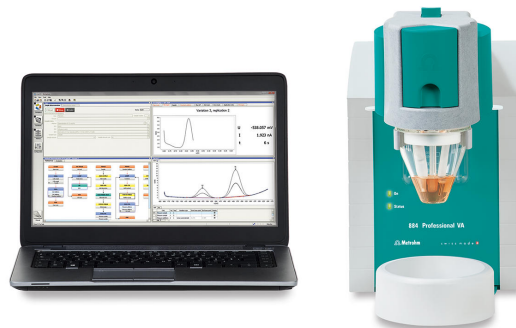


Figure 1. 884 Professional VA.

Table 1. Parameters for the iodate determination

Parameter	Setting
Working electrode	DME
Mode	DP – Differential Pulse
Start potential	-0.1 V
End potential	-0.7 V
Peak potential iodate	-0.34 V

ELECTRODES

- Working electrode: Multi-Mode Electrode pro with standard glass capillaries
- Reference electrode: Ag/AgCl/KCl (3 mol/L) reference electrode with electrolyte vessel. Bridge electrolyte: KCl (3 mol/L)
- Auxiliary electrode: Platinum rod electrode

RESULTS

The determination of iodate in electroless nickel plating baths can be carried out in a simple and straightforward manner. The method is selective and free of interferences. It is suitable for concentrations in the low mg/L range.

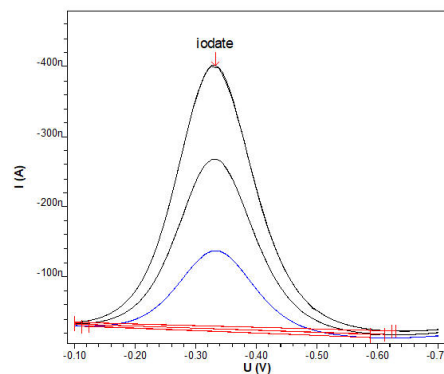


Figure 2. Determination of iodate in an electroless nickel bath with two standard additions.

Table 2. Result

Sample	Concentration IO_3^- [mg/L]
Electroless nickel bath	2.5

Internal reference: AW CH4-0475-092007

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CONFIGURATION



2 Dosino (MME) 884 Professional VA semiautomated

用于多模式电极 (MME) 的 884 Professional VA semiautomated 是一台操作方便的常规分析仪,可采用多模式电极 pro 或 scTRACE Gold 进行伏安测量和极谱法痕量测定。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。

两台随附的 800 Dosino 可在测定过程中自动添加辅助溶液,例如电解质、缓冲液或标准溶液。

使用 **viva** 软件进行控制、数据采集和评估。

用于多模式电极 (MME) 的 884 Professional VA semiautomated 供货时带有大量附件,以及用于多模式电极 pro的测量头。电极组和 **viva** 许可证则须单独订购。



VA pro Professional VA

整套电极组,用于极谱和伏安测定。包含多模式电极 pro、参比电极、铂辅助电极、量杯、搅拌器、电解质溶液和其它用于构建工作台以及运行多模式电极的附件。