PerkinElmer®
Science with Purpose

UNRIVALED PERFORMANCE.
UNMATCHED VALUE.

Avio 3000 ICP-OES

Where Extraordinary Performance Meets Everyday Productivity

PerkinElmer has a long-standing legacy of pioneering innovation in inductively coupled plasma optical emission spectroscopy (ICP-OES) — from the earliest commercial systems to continual advances in plasma stability, sensitivity, and low cost of ownership. This heritage translates into reliable, high-productivity solutions that help labs deliver precise, actionable trace elemental analysis across different applications.

And the Avio 3000, the next generation of our ICP-OES portfolio, is no exception to this legacy. It redefines true simultaneous ICP-OES, enabling high-speed analysis with unmatched stability, detection limits, low operating costs, and simplified workflows that deliver accurate, defensible data — every run, every day. This is thanks to its first-to-market third-generation ICP-OES technology. Built from the ground up, the Avio 3000 ICP-OES was engineered to address the evolving needs of the high-throughput laboratory, no matter the complexity of the sample matrix, while also delivering significant savings in operational costs as well as more uptime with minimal maintenance.

▶ INTRODUCTION

TECHNOLOGY

▶ NEXT-GENERATION

▶ FIELD-PROVEN

▶ SOFTWARE

▶ CONSUMABLES

▶ SERVICES AND SUPPORT

▶ CONTACT US

PerkinElmer®
Science with Purpose

Next-Generation Technologies > Next-Level Performance

The Avio 3000 advances true simultaneous ICP-OES through the integration of cutting-edge innovation and proven technologies. The outcome is simple: faster analysis and defensible data, while keeping operational costs under control. Let's begin with what's new.

▶ DETECTOR | ▶ OPTICAL SYSTEM | ▶ UV BOOST
▶ HELIPLATE | ▶ CHILLER-FREE

Next-Generation Detector – Unmatched performance with no chiller required

The new patented detector of the Avio 3000 ICP-OES features a cutting-edge backside-illuminated (BSI-CMOS) sensor that enhances signal-to-background ratios for more reliable detection of low-concentration analytes. It enables each analyte wavelength to be read independently at its optimal integration time and measured simultaneously, delivering faster analysis with improved precision and lower relative standard deviations. It provides full spectral coverage from 167 nm – 900 nm, while patented readout technology prevents signal spillover from high-concentration analytes, protecting the accuracy of nearby low-level analytes. Plus, it's air-cooled, eliminating the need for a chiller, lowering total operating costs while minimizing heat, noise, and routine maintenance.

Learn more > Download the Avio 3000 ICP-OES Detector Technical Note

▶ INTRODUCTION

TECHNOLOGY
▶ NEXT-GENERATION
▶ FIELD-PROVEN
▶ SOFTWARE

▶ CONSUMABLES
▶ SERVICES AND SUPPORT
▶ CONTACT US

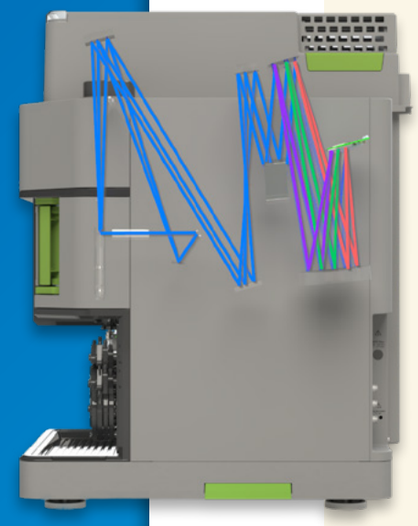
PerkinElmer®
Science with Purpose

Next-Generation Technologies > Next-Level Performance

The Avio 3000 advances true simultaneous ICP-OES through the integration of cutting-edge innovation and proven technologies. The outcome is simple: faster analysis and defensible data, while keeping operational costs under control. Let's begin with what's new.

▶ DETECTOR | ▶ OPTICAL SYSTEM | ▶ UV BOOST

▶ HELIPLATE | ▶ CHILLER-FREE



Cutting-Edge Optical System – Best-in-class signal-to-noise ratio

The unique patented optical design of the Avio 3000 ICP-OES utilizes a patented high-energy echelle-based polychromator that delivers 6 pm of resolution at 200 nm and 20 pm of resolution at 550 nm. This is accomplished through the use of a freeform optic which is combined with a prism. Light throughput has also been optimized in two ways: the number of optical components has been minimized; plus, all optical components feature a specialized UV coating, optimized for wavelengths shorter than 220 nm to enhance the signal for low-emitting elements in this wavelength range, allowing for accurate measurements at lower concentrations. Plus, the thermal stability of the system minimizes wavelength drift, resulting in less user intervention, simplifying operation while improving data quality.

Learn more > Download the Avio 3000 ICP-OES Optical System Technical Note

▶ INTRODUCTION

TECHNOLOGY

▶ NEXT-GENERATION

▶ FIELD-PROVEN

▶ SOFTWARE

▶ CONSUMABLES

▶ SERVICES AND SUPPORT

▶ CONTACT US

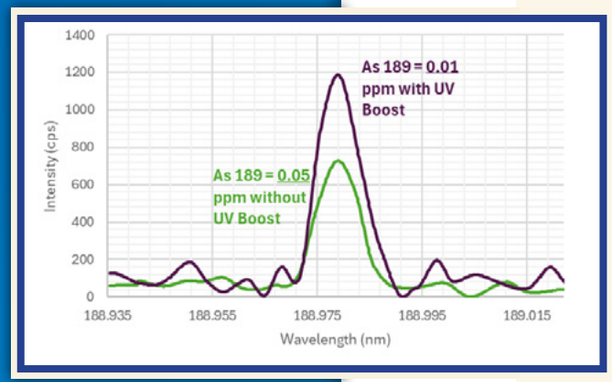
PerkinElmer
Science with Purpose

Next-Generation Technologies > Next-Level Performance

The Avio 3000 advances true simultaneous ICP-OES through the integration of cutting-edge innovation and proven technologies. The outcome is simple: faster analysis and defensible data, while keeping operational costs under control. Let's begin with what's new.

▶ DETECTOR | ▶ OPTICAL SYSTEM | ▶ UV BOOST

▶ HELIPLATE | ▶ CHILLER-FREE



UV Boost Mode – Increased sensitivity for challenging elements

UV Boost mode, an innovative feature incorporated in the patented Avio 3000 spectrometer, greatly improves sensitivity in the UV region, amplifying the capabilities of the Avio 3000 ICP-OES for the analysis of elements with emission lines lower than 243 nm. The increased sensitivity provided by UV Boost mode allows accurate measurements at lower concentrations, both in normal and high-resolution modes, while also unlocking secondary emission lines that were previously too weak to utilize effectively, boosting the potential of your ICP-OES analyses.

Learn more > Download the Avio 3000 ICP-OES UV Boost Technical Note

▶ INTRODUCTION

TECHNOLOGY

▶ NEXT-GENERATION

▶ FIELD-PROVEN

▶ SOFTWARE

▶ CONSUMABLES

▶ SERVICES AND SUPPORT

▶ CONTACT US

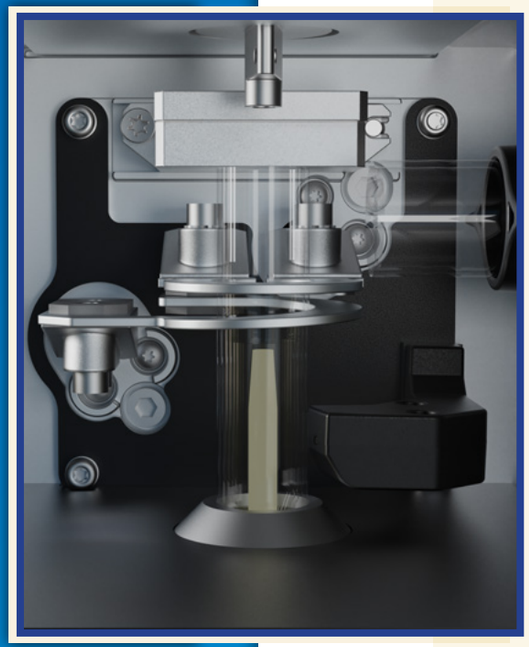
PerkinElmer
Science with Purpose

Next-Generation Technologies > Next-Level Performance

The Avio 3000 advances true simultaneous ICP-OES through the integration of cutting-edge innovation and proven technologies. The outcome is simple: faster analysis and defensible data, while keeping operational costs under control. Let's begin with what's new.

▶ DETECTOR | ▶ OPTICAL SYSTEM | ▶ UV BOOST

▶ HELIPLATE | ▶ CHILLER-FREE



HeliPlate Plasma Technology – Ensuring plasma robustness and stability

The Avio 3000 ICP-OES leverages the innovative HeliPlate™ technology, which builds on the proven Flat Plate™ oscillator design that consumes up to 50% less argon than traditional helical coils, providing the additional advantages of improved plasma robustness as well as not requiring a chiller. This combination leads to reduced noise, lower operating costs, less on-going maintenance, minimized environmental impact, and a smaller footprint in the lab, while at the same time providing a more stable plasma.

Learn more > Download the Avio 3000 ICP-OES HeliPlate Technical Note

▶ INTRODUCTION

TECHNOLOGY

▶ NEXT-GENERATION

▶ FIELD-PROVEN

▶ SOFTWARE

▶ CONSUMABLES

▶ SERVICES AND SUPPORT

▶ CONTACT US

PerkinElmer®
Science with Purpose

Next-Generation Technologies > Next-Level Performance

The Avio 3000 advances true simultaneous ICP-OES through the integration of cutting-edge innovation and proven technologies. The outcome is simple: faster analysis and defensible data, while keeping operational costs under control. Let's begin with what's new.

▶ DETECTOR | ▶ OPTICAL SYSTEM | ▶ UV BOOST

▶ HELIPLATE | ▶ CHILLER-FREE

Chiller-Free ICP-OES System – Increased uptime with lower operating costs

The Avio 3000 ICP-OES instrument features a patented 40-MHz, free-running solid-state RF generator, adjustable from 700 to 1500 watts. This next-generation generator allows the Avio 3000 ICP-OES system to run without the use of a chiller, significantly reducing total operating costs for the laboratory by providing savings in electricity, heat, noise, maintenance, as well as carbon footprint, while also occupying less lab space.

This chiller-free design is the result of the integration of the Avio 3000's innovations, such as the next-generation patented detector with full-frame BSI-CMOS sensor as well as HeliPlate plasma technology, which leverages new innovative electronic oscillator circuitry that is air cooled.

▶ INTRODUCTION

TECHNOLOGY

▶ NEXT-GENERATION

▶ FIELD-PROVEN

▶ SOFTWARE

▶ CONSUMABLES

▶ SERVICES AND SUPPORT

▶ CONTACT US

PerkinElmer®
Science with Purpose

▶ INTRODUCTION

TECHNOLOGY

▶ NEXT-GENERATION

▶ FIELD-PROVEN

▶ SOFTWARE

▶ CONSUMABLES

▶ SERVICES AND SUPPORT

▶ CONTACT US

Built on What Works— Engineered for What's Next

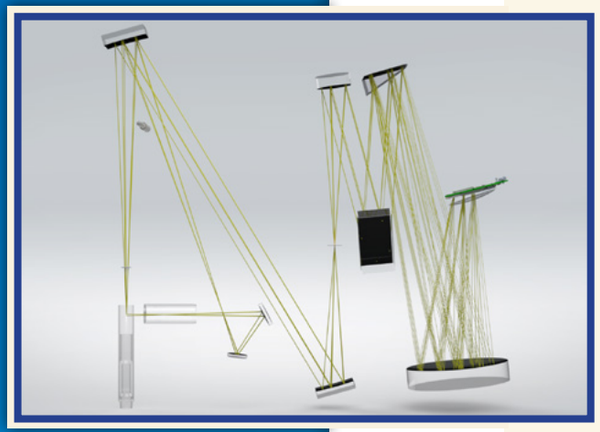
To maximize performance while simplifying daily operations, the Avio 3000 ICP-OES also integrates established, field-proven technologies trusted by hundreds of laboratories worldwide—helping you achieve reliable results with greater efficiency and confidence. Let's see how.

▶ VERTICAL DUAL VIEW

▶ PLASMASHEAR

▶ UNIVERSAL DATA AQUISITION

▶ MULTICOMPONENT SPECTRAL FITTING



Vertical Dual View Design – The best of both worlds

Axial and radial viewing modes each offer distinct advantages, but neither alone meets every ICP-OES challenge. By combining the strengths of both viewing modes, Dual View on the Avio 3000 ICP-OES effectively expands the instrument's linear dynamic range, enabling both plasma views within a single method. Axial view provides enhanced sensitivity for low-concentration elements, while radial view delivers greater robustness for the high-concentration elements. If interferences occur in axial view, measurements can be shifted to radial view or to an alternate emission line, ensuring reliable, accurate results across diverse samples.

Learn more > Download the Avio 3000 ICP-OES Vertical Dual View Tech Note

PerkinElmer
Science with Purpose

Built on What Works—
Engineered for What's Next

To maximize performance while simplifying daily operations, the Avio 3000 ICP-OES also integrates established, field-proven technologies trusted by hundreds of laboratories worldwide—helping you achieve reliable results with greater efficiency and confidence. Let's see how.

▶ VERTICAL DUAL VIEW

▶ PLASMASHEAR

▶ UNIVERSAL DATA AQUISITION

▶ MULTICOMPONENT SPECTRAL FITTING

PlasmaShear Technology – Reducing maintenance and improving stability

ICP-OES easily handles high dissolved solids samples, but robust accuracy depends on minimizing plasma self-absorption and residual solid deposits. The Avio 3000 ICP-OES leverages PlasmaShear™ technology, a fully integrated, fully automated interference-removal system that delivers problem-free axial analysis while protecting the optics from corrosion and deposition. This proven proprietary technology utilizes a thin jet of air traveling perpendicular to the plasma several centimeters above the torch, which cuts off the top of the plasma. The tail of the plasma is removed, providing analytical benefits, increasing method robustness and decreasing the amount of instrument maintenance required. The result: extended linear range for axially viewed plasma with decreased maintenance requirements and improved robustness.

Learn more > Download the Avio PlasmaShear Technical Note

▶ INTRODUCTION

TECHNOLOGY

▶ NEXT-GENERATION

▶ FIELD-PROVEN

▶ SOFTWARE

▶ CONSUMABLES

▶ SERVICES AND SUPPORT

▶ CONTACT US

PerkinElmer
Science with Purpose

Built on What Works—
Engineered for What's Next

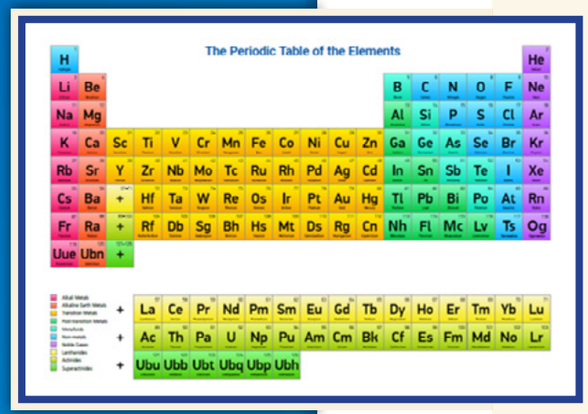
To maximize performance while simplifying daily operations, the Avio 3000 ICP-OES also integrates established, field-proven technologies trusted by hundreds of laboratories worldwide—helping you achieve reliable results with greater efficiency and confidence. Let's see how.

▶ VERTICAL DUAL VIEW

▶ PLASMASHEAR

▶ UNIVERSAL DATA AQUISITION

▶ MULTICOMPONENT SPECTRAL FITTING



Universal Data Acquisition – Every wavelength. Every analysis.

To fully leverage the Avio 3000's true-simultaneous high-throughput capabilities, Universal Data Acquisition (UDA) within Syngistix™ for ICP software simultaneously captures all available emission wavelengths with every sample run, so you collect the full spectral dataset upfront without extra time or storage burden. This unique capability lets you confidently reprocess data to quantify additional elements or alternate wavelengths later — even ones not originally in the method — eliminating the need to rerun samples, boosting lab productivity. By capturing every wavelength at once and enabling flexible post-run analysis, UDA simplifies method development, enhances interference correction, and provides greater confidence in results, while at the same time maximizing throughput and resource efficiency.

▶ INTRODUCTION

TECHNOLOGY

▶ NEXT-GENERATION

▶ FIELD-PROVEN

▶ SOFTWARE

▶ CONSUMABLES

▶ SERVICES AND SUPPORT

▶ CONTACT US

PerkinElmer®
Science with Purpose

Built on What Works—
Engineered for What's Next

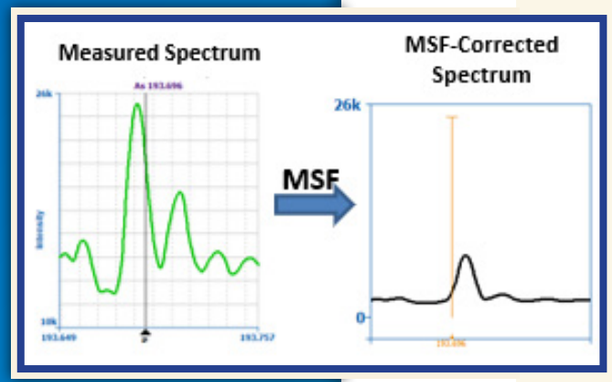
To maximize performance while simplifying daily operations, the Avio 3000 ICP-OES also integrates established, field-proven technologies trusted by hundreds of laboratories worldwide—helping you achieve reliable results with greater efficiency and confidence. Let's see how.

▶ VERTICAL DUAL VIEW

▶ PLASMASHEAR

▶ UNIVERSAL DATA AQUISITION

▶ MULTICOMPONENT SPECTRAL FITTING



Multicomponent Spectral Fitting – Improving accuracy with interference reduction

PerkinElmer's Multicomponent Spectral Fitting (MSF) delivers more accurate, interference-resilient results by mathematically distinguishing analyte signals from overlapping spectral contributions. Using the full segment of the spectrum around the analyte wavelength rather than just relying on one or two points, MSF uses this rich dataset to model both the analyte and any interfering components, significantly improving detection limits, precision, and accuracy — especially in complex matrices where traditional background correction falls short. MSF eliminates the need to rerun samples for additional elements and enhances confidence in analytical outcomes. No need to worry about assigning background points or sensitivity changes over time, since the whole spectrum around the analyte is used.

Learn more > Download the Avio Multicomponent Spectral Fitting Tech Note

▶ INTRODUCTION

TECHNOLOGY

▶ NEXT-GENERATION

▶ FIELD-PROVEN

▶ SOFTWARE

▶ CONSUMABLES

▶ SERVICES AND SUPPORT

▶ CONTACT US

PerkinElmer®
Science with Purpose

Precision Engineered. Intelligently Controlled.

Supporting the Avio 3000 ICP-OES' innovative hardware technologies, is the intuitive, powerful, and intelligent Syngistix for ICP software, with workflows that walk you through day-to-day operation from startup, optimization, method development, and sample analysis to data review and reporting. Here's a quick overview of some of these.

QuickStart - 3 clicks to analysis. QuickStart provides a simple way for high-throughput labs to quickly and easily start their analyses. From the Express Analysis window, you simply select the method, sample list, location to save the data, and then press the Analysis button. That's it. No additional windows to navigate – everything is done in a single window.

SmartQuant enables you to customize how to monitor all ICP-OES measurable elements, presenting the results in a visual display which is quick and simple to understand and navigate. SmartQuant can be customized to provide quantitative or semi-quantitative results for as few or as many elements as desired, with the capability of monitoring multiple wavelengths per element.

Automated Analysis allows flexibility to automatically run multiple methods consecutively with a user-defined delay between methods. Plus, each method can be assigned to specific samples. Users can choose to run partial or complete sample lists, as well as insert priority samples. When an analysis is complete, data can be exported automatically and the plasma turned off. To minimize the need for users to adjust peak positions after an analysis, both Automatic Wavelength Offset Correction and Automatic Method Align can be enabled. Automatic Wavelength Offset Correction corrects for peak drift associated with changes in lab temperature, while Automatic Method Align automatically performs a wavelength calibration for the analytes in the active method.

▶ INTRODUCTION

TECHNOLOGY

▶ NEXT-GENERATION

▶ FIELD-PROVEN

▶ SOFTWARE

▶ CONSUMABLES

▶ SERVICES AND SUPPORT

▶ CONTACT US

PerkinElmer®
Science with Purpose

Precision Engineered. Intelligently Controlled.

Supporting the Avio 3000 ICP-OES' innovative hardware technologies, is the intuitive, powerful, and intelligent Syngistix for ICP software, with workflows that walk you through day-to-day operation from startup, optimization, method development, and sample analysis to data review and reporting. Here's a quick overview of some of these.

Smart Diagnostics, in addition to safety interlocks, offers numerous internal diagnostics that continuously monitor instrument health, such as the input line voltage, current and frequency, the input gas pressures, the ambient temperature, pressure and humidity. For user safety and system protection, the system constantly monitors exhaust flow, shear gas pressure, argon pressures, sample-compartment-door closure, torch installation, plasma stability and displays the interlock status on the computer screen as graphic symbols. If an interlock is interrupted, the plasma immediately and safely shuts down.

SmartRinse is a wavelength-selectable dynamic-rinsing function that automatically adjusts how long the sample probe is rinsed between samples to minimize carryover, while maintaining throughput. It will automatically adjust rinse times to prevent sample carryover and will also reduce unnecessary rinse time if the signal is low, providing more consistent data quality with less user intervention.

▶ INTRODUCTION

TECHNOLOGY

▶ NEXT-GENERATION

▶ FIELD-PROVEN

▶ SOFTWARE

▶ CONSUMABLES

▶ SERVICES AND SUPPORT

▶ CONTACT US

PerkinElmer®
Science with Purpose

Avio 3000 ICP-OES – Performance Starts Within

Powered by a host of proprietary technologies working seamlessly together, the Avio 3000 redefines true simultaneous ICP-OES, delivering high-speed analysis, outstanding stability, and streamlined workflows while keeping operating costs low and ensuring accurate, defensible results. Here's a quick snapshot of what makes this possible.

NEXT-GENERATION DETECTOR
- Increases signal-to-background
- Maximizes sample throughput
- Improves data quality

CUTTING-EDGE OPTICAL SYSTEM
- Improves the accuracy of low concentration measurements
- Allows the use of a single detector, reducing complexity
- Enables UV Boost

UV BOOST
- Improves sensitivity in UV region
- Boosts potential of ICP-OES analyses

HELIPLATE PLASMA TECHNOLOGY
- Enhances plasma robustness
- Consumes up to 50% less argon than traditional helical coils
- Does not require a chiller

SMART DIAGNOSTICS
- Continuously monitor instrument health

VERTICAL DUAL VIEW
- Extends dynamic range in a single run
- Provides flexible viewing modes
- Optimizes efficiency and throughput

PROPRIETARY PLASMASHEAR
- Enables automated interference removal
- Lowers operating costs and maintenance
- Extends analytical performance

UNIVERSAL DATA ACQUISITION
- Provides comprehensive data capture
- Delivers post-run flexibility
- Maintains efficiency with minimal storage

MULTICOMPONENT SPECTRAL FITTING
- Improves accuracy for complex matrices
- Reduces method development time
- Enhances confidence in results

CHILLER-FREE SYSTEM
- Lowers upfront purchase investment
- Reduces ongoing operational costs (electricity, heat, noise, maintenance) and carbon footprint
- Occupies less space in the lab

▶ INTRODUCTION

TECHNOLOGY

▶ NEXT-GENERATION

▶ FIELD-PROVEN

▶ SOFTWARE

▶ CONSUMABLES

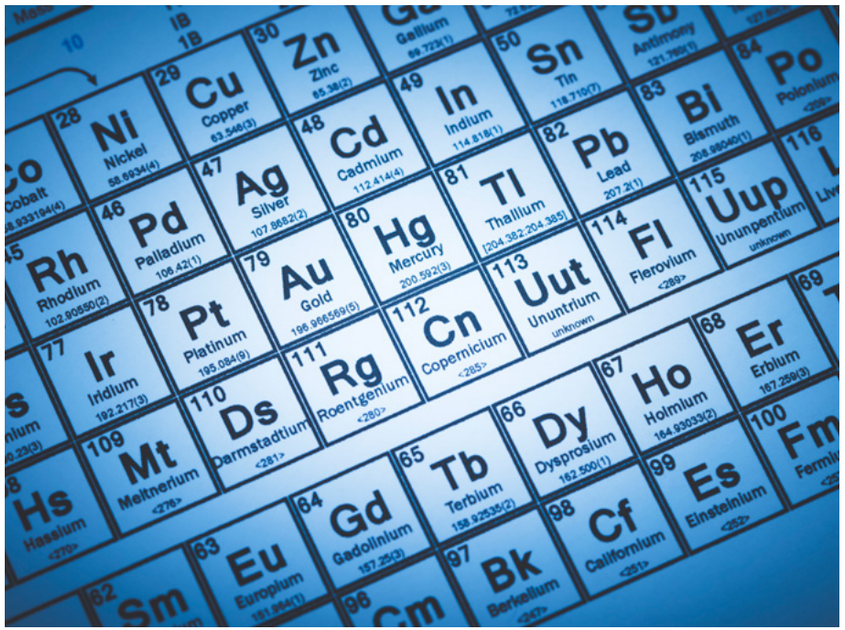
▶ SERVICES AND SUPPORT

▶ CONTACT US

PerkinElmer®
Science with Purpose

PRECISION-ENGINEERED CONSUMABLES

The consumables for our Avio 3000 ICP-OES are designed with your instrument in mind, with each fit to perform and manufactured with the highest quality materials available. Whether you're looking for sample introduction components or standards, we have the consumables you need to keep your Avio 3000 instrument up and running smoothly and efficiently.



▶ INTRODUCTION

TECHNOLOGY

▶ NEXT-GENERATION

▶ FIELD-PROVEN

▶ SOFTWARE

▶ CONSUMABLES

▶ SERVICES AND SUPPORT

▶ CONTACT US

PerkinElmer®
Science with Purpose

At Your Service

Our instrument services, application support, and training help ensure your instruments perform at their best—delivering accurate, compliant, and repeatable results.

Visit our dedicated web pages to discover other areas we can support you with and learn more about the types of support services we can offer.

- For more information on instrument preventive maintenance services, visit www.perkinelmer.com/instrumentsservices
- For more information on customer training and application support services, visit www.perkinelmer.com/training

▶ INTRODUCTION

TECHNOLOGY

▶ NEXT-GENERATION

▶ FIELD-PROVEN

▶ SOFTWARE

▶ CONSUMABLES

▶ SERVICES AND SUPPORT

▶ CONTACT US

PerkinElmer®
Science with Purpose

For more information visit
www.perkinelmer.com/Avio3000

PerkinElmer U.S. LLC
710 Bridgeport Ave.
Shelton, CT 06484-4794 USA
(+1) 855-726-9377
www.perkinelmer.com

For a complete listing of our global offices, visit www.perkinelmer.com/ContactUs

2719762