Reinheldt R 6500 ICP-OES

High-Definition Optical Emission Spectrometry
Unrivaled Stability. Intelligent Precision. Absolute Efficiency.

Reinheldt GmbH adheres to the responsibility and mission of the **"Future Laboratory Explorer."**

We have created the new generation **Reinheldt R 6500 ICP-OES** after years of technology accumulation and devotion in research and development.

This instrument represents a new leap in core technologies, including advanced RF power supplies, large area array detectors, and innovative methods for observation with plasma torch flame.

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The Reinheldt R 6500 supports the analysis of rare earths with requirements for full-spectrum high-resolution, as well as the analysis of Cl/Br elements over the deep ultraviolet waveband.

Developed as anintelligent analysis system, it features a variety of easy-to-use functionsand auxiliary equipment designed to help operators improve efficiency,free them from complicated and repetitive tasks, and create value moreeffectively.

MAIN FEATURES OF PRODUCT

A New Generation of Vertical Torch Dual Observation Technology

The Reinheldt R 6500 adopts a newly developed vertical torch dual observation technology, which greatly reduces argon and torch consumption. It is designed to measure elements with relatively large differences in content within a complex matrix.

- **Reliability:** The vertical torch prevents high salt deposition.
- **Precision:** Radial observation avoids matrix interference, achieving superior sensitivity and repeatability.
- **Flexibility:** Adjustable height allows for optimized observation positions for different elements.

Patented Self-Excited All-Solid-State RF Power Supply

The system integrates a third-generation patented self-excited all-solid-state RF power supply to ensure excellent sample adaptability and stability.

- **Performance:** Prevents flameout even during the direct injection of organic samples (such as oil products) or air, eliminating the need for pre-treatment.
- **Efficiency:** The power range is 500–1600W. In the 500W low-power standby mode, argon consumption is just 5L/min, saving consumable costs and eliminating wait times for stable power.

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Large Area Array ECCD Sensor

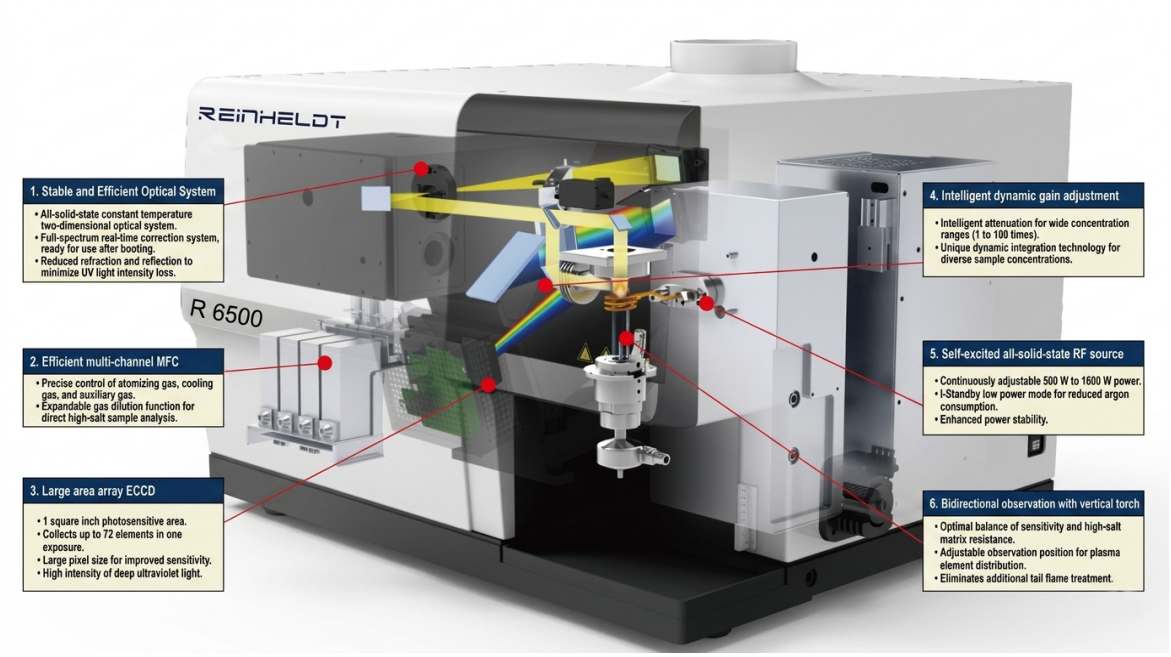
Equipped with a proprietary large area array ECCD sensor, the R 6500 offers excellent low noise and deep ultraviolet response combined with an anti-overflow design.

- **Detection:** Provides high-tier detection limits and allows the instrument to acquire a full spectrum in one take.
- **Speed:** Capable of finishing the analysis of **72 elements in 10 seconds**.

8-Hour Stability (RSD < 1%)

Through high-precision temperature gradient field simulation and air duct fluid dynamics simulation, the internal structure has been optimized for maximum resistance to environmental temperatures.

- **Stability:** The high stability of the RF power supply and injection system ensures an **8-hour RSD below 1%**, reaching leading international performance levels.
- **Accuracy:** Offers an 8-hour stability index RSD of < 1% and a twin internal standard method precision RSD of < 0.1%, delivering stable and reliable analysis results.



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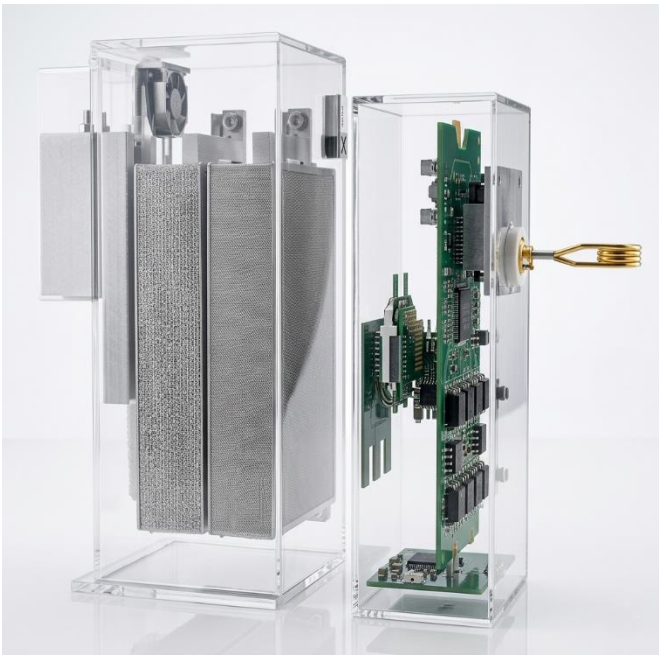
ADVANCED POWER MANAGEMENT & OPTICAL PRECISION

All-Digital Self-Excited RF Power Supply

*Featuring Integrated **iStandby** Technology*



- **Adaptive Power Control:**

  Utilizing a fully digital dual-power architecture, the system provides a wide, continuously adjustable power range from **500W to 1600W**, ensuring seamless adaptability for diverse sample types.

- **Rapid Impedance Matching:**

  The self-excited RF source delivers near-instant matching for complex matrix switching. With a solid-state design and no moving parts, the system offers industry-leading mechanical reliability.

- **Eco-Efficiency:**

  The proprietary **iStandby mode** facilitates an ultra-low power state, effectively cutting argon gas consumption by **over 50%** during idle periods.

- **Thermal Stability:**

  A dedicated water-cooled interface ensures rapid heat dissipation, maintaining power stability within **0.1%** for consistent analytical performance.

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High-Efficiency Two-Dimensional Optical System

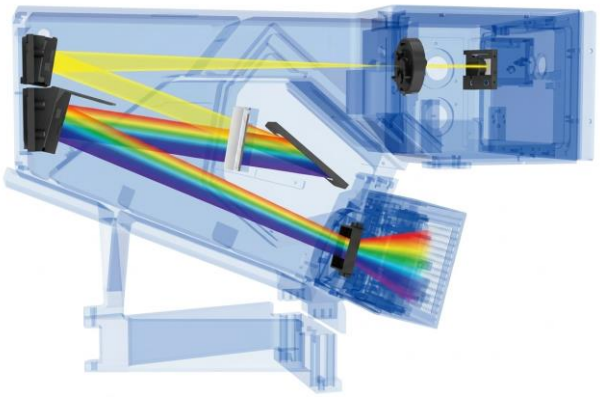
With Precision Echelle Grating

- **Optimized Light Path:**

  Our advanced two-dimensional spectroscopic design minimizes internal reflections, significantly reducing light energy loss and maximizing signal throughput.

- **Precision Climate Control:**

  To ensure absolute analytical consistency, the light chamber is thermally stabilized at a constant **36°C**, providing a rock-solid foundation for long-term measurements.



- **Advanced Fluid Dynamics:**

  The distributed purge system, engineered through fluid mechanics simulation, rapidly establishes a high-purity argon environment. This enables superior deep-ultraviolet (UV) analysis while optimizing gas usage.

- **Environmental Resilience:**

  A sophisticated thermal isolation barrier protects the optical bench from external temperature fluctuations, ensuring the system remains stable in varied laboratory conditions.

- **Mobile Ready:**

  The robust, vibration-resistant construction is fully certified for stable operation in mobile or vehicle-mounted laboratory environments.

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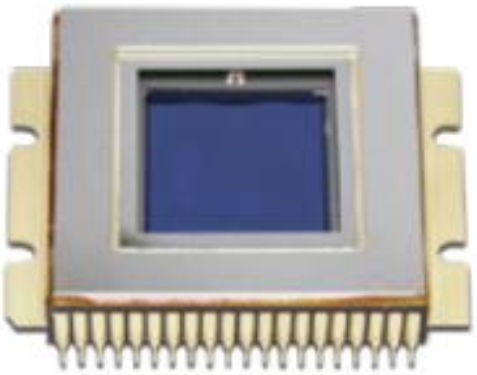
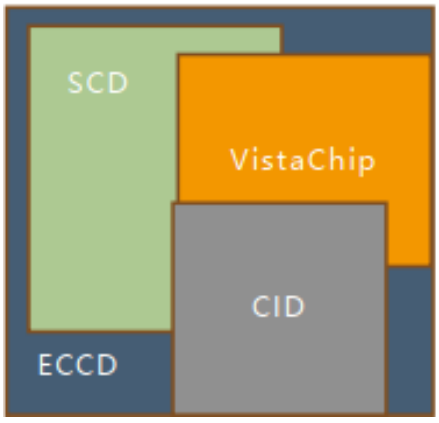
Proprietary High-Performance Large Area Array ECCD

The Reinheldt R 6500 is equipped with a cutting-edge **Enhanced Charge-Coupled Device (ECCD)**, specifically engineered to maximize detection limits and analytical speed for complex laboratory environments.



- **Large-Format CCD Detector:** Featuring an expansive one-square-inch photosensitive area, this detector utilizes enlarged pixel sizes to deliver high-sensitivity responses
- **1024 x 1024 High-Density Pixel Array:** With a one-time exposure capability, the system can simultaneously detect **72 different elements** within a spectral range of **165 nm to 900 nm**. Comprehensive analytical results are obtained in as little as **10 seconds**.



- **Deep-Ultraviolet Sensitivity:** The detector features an obvious hierarchy in the deep-ultraviolet zone, ensuring superior sensitivity for difficult-to-detect elements like Cl and Br.
- **Anti-Overflow Protection:** An innovative back-vented anti-overflow design eliminates concerns regarding spectral line saturation.
- **Integrated TEC Cooling:** The sensor is packaged with internal **Thermoelectric Cooling (TEC)** that acts directly on the pixels. This integrated design is highly efficient and reliable, effectively eliminating thermal noise to provide a clean, stable baseline for trace analysis.

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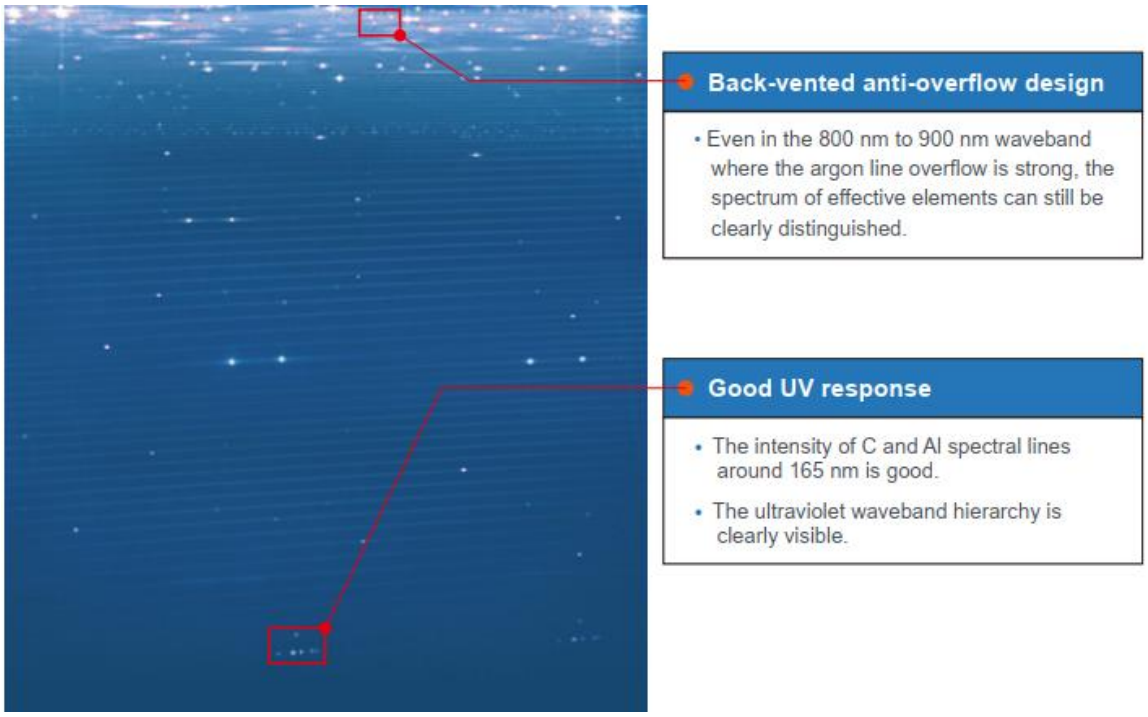

NEXT-GENERATION VERTICAL TORCH DUAL OBSERVATION TECHNOLOGY

The Reinheldt R 6500 redefines analytical efficiency with its advanced vertical torch architecture, engineered to provide a superior balance between high sensitivity and long-term hardware durability.

- **Vertical Torch Design:** By utilizing a vertical orientation, the system significantly reduces argon gas consumption and effectively prevents high-salt deposition. This design inherently extends the operational lifespan of the torch while minimizing the cost of consumables.
- **Axial Observation for Trace Analysis:** Provides maximum sensitivity for low-level detection, allowing for the precise measurement of trace elements.
- **Radial Observation for Complex Matrices:** Effectively eliminates matrix interference. The system allows for precise adjustment of the plasma light position, enabling operators to optimize element acquisition based on specific plasma zones.

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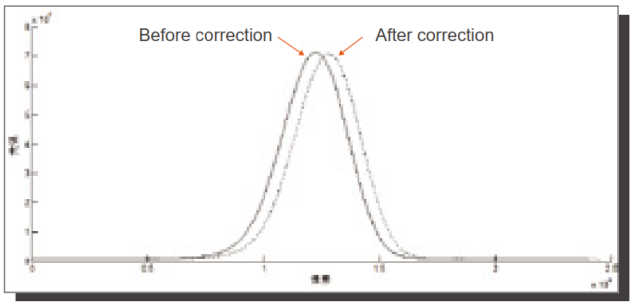
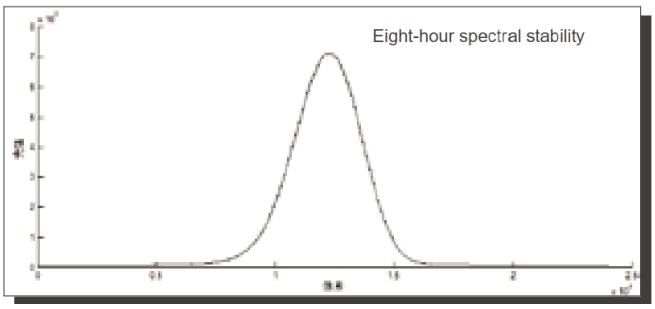
- **Bidirectional Synergy:** By integrating both axial and radial observation capabilities, the R 6500 offers the combined advantages of both methods. This bidirectional approach outperforms traditional single-view systems, making it capable of measuring elements with vast concentration differences within a single complex matrix.

Patented Real-Time Drift Correction Technology

- Only C, N, and Ar spectral lines are used for start-up and ignition, and the spectrum correction is automatically completed without specific sample injection.
- The patented full-spectrum real-time correction (FSC) technology uses the characteristic line of the non-interfering neon to correct the subtle deviations of the spectrum in real time, so that better spectral integration can be achieved to ensure good long-term stability





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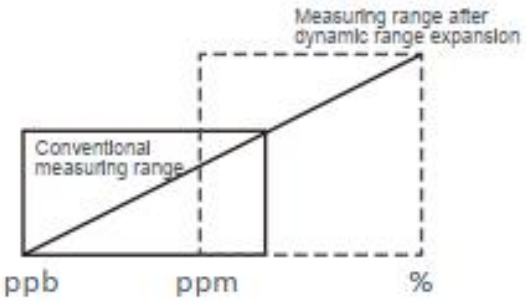
Intelligent Dynamic Gain Adjustment "Triple Hit"

Precision Control Across Every Concentration Gradient

The Reinheldt R 6500 features a sophisticated "Triple Hit" dynamic gain system, designed to provide seamless control over samples with widely varying concentration levels.

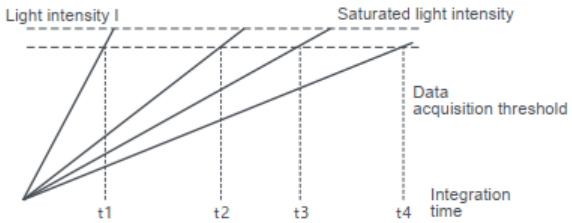
Automatically handles concentration gradients from **1 to 100 times** in a single run, reducing the difficulty of sample pre-treatment and repeated dilutions.



Effect of dynamic range expansion

Patented Smart Integration Technology

Synchronously acquires signals and background data; automatically calculates optimal exposure times with microsecond precision to widen the dynamic range.



Schematic diagram for self-adaptive integration data acquisition system

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Argon Online Dilution:

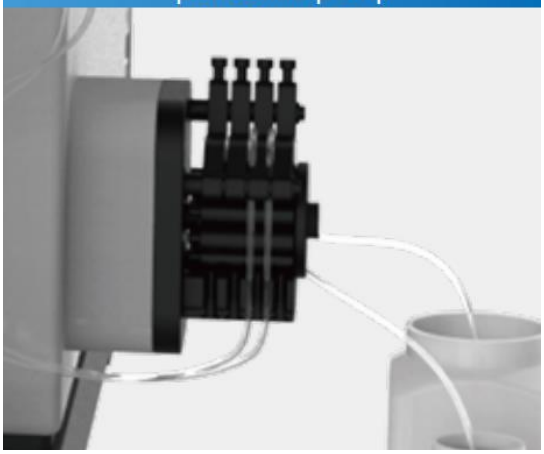
Controlled by a multi-channel **MFC**, this feature effectively dilutes high-salt samples (>10%) before they enter the torch.

Schematic diagram for argon dilution input

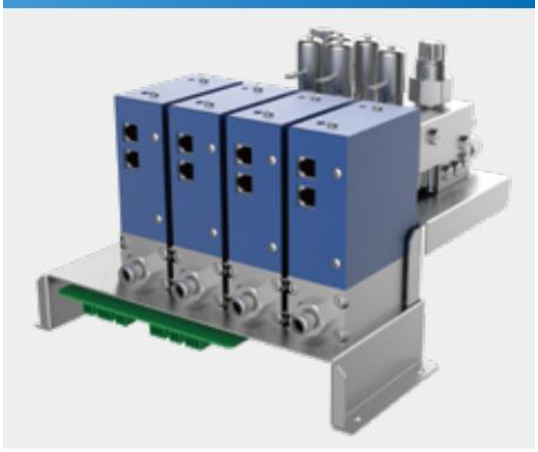
STABLE INJECTION SYSTEM

- **Precision Control**: Multi-channel digital mass flow controller provides argon control accuracy of **0.01 L/min**.
- **Sample Delivery**: High-precision 12-rotor, 4-channel peristaltic pump ensures stable injection and supports internal standard/standard addition solutions.
- **Maintenance**: Features a fully split-body, self-collimating torch where only the center tube needs replacement to reduce costs.

High-precision 12-rotor 4-channel peristaltic pump



Multi-channel MFC



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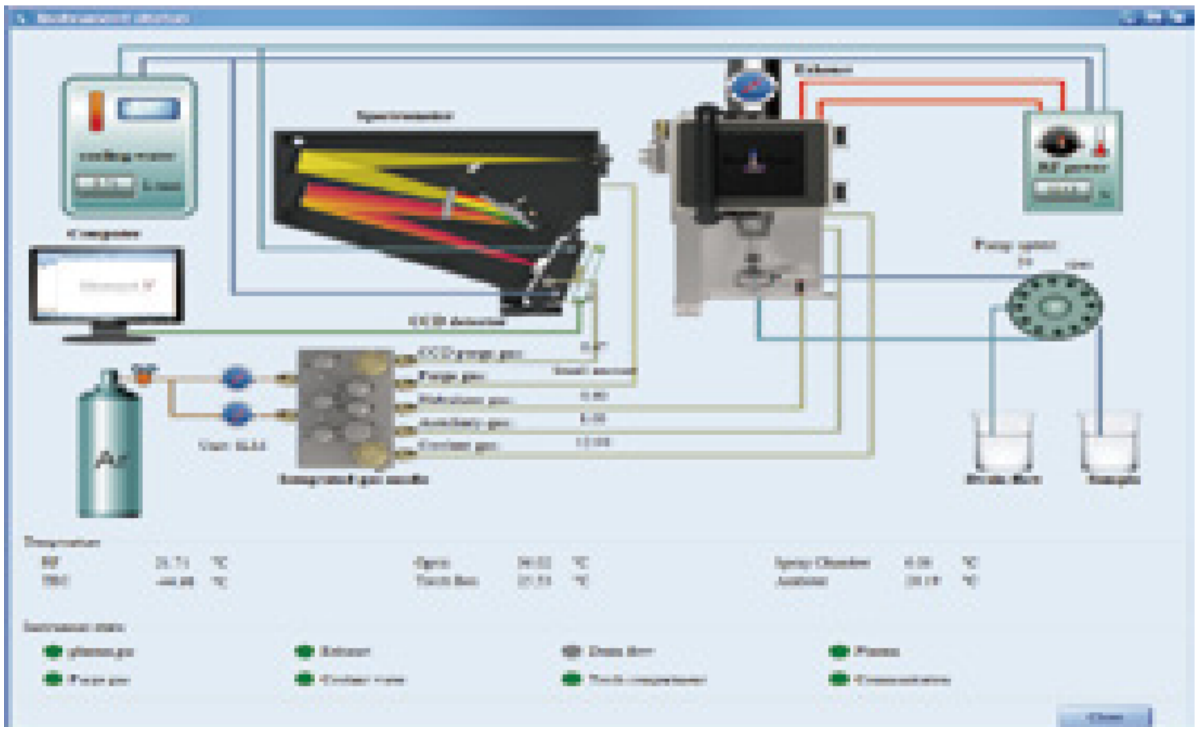
Real-time display of status information



Supporting expansion with a variety of accessories

Automatic injector

Hydride generator

Organic injection system

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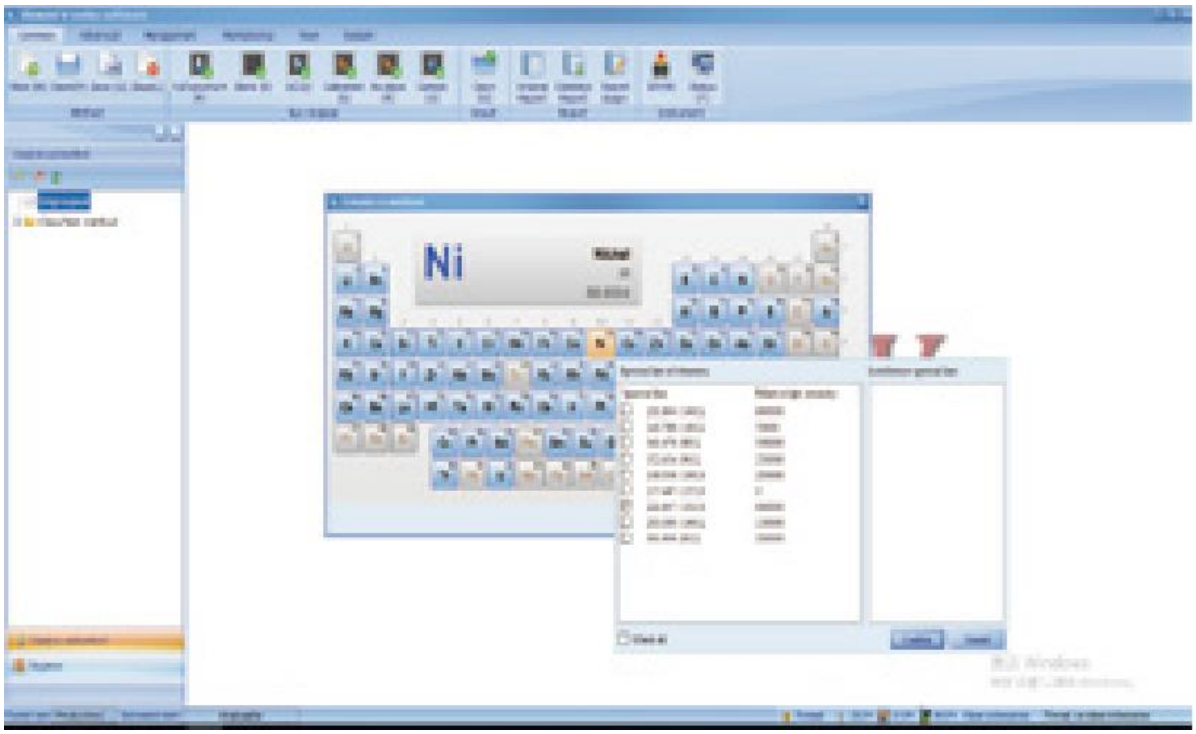
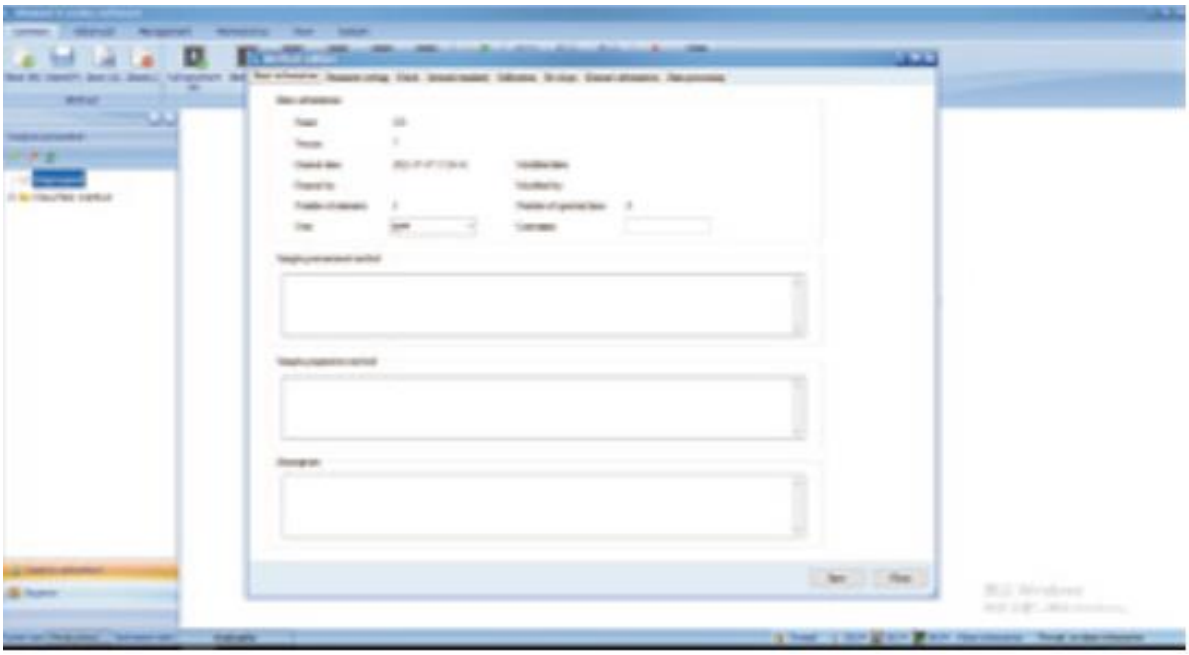
Windows-style operation interface



Method backup and import



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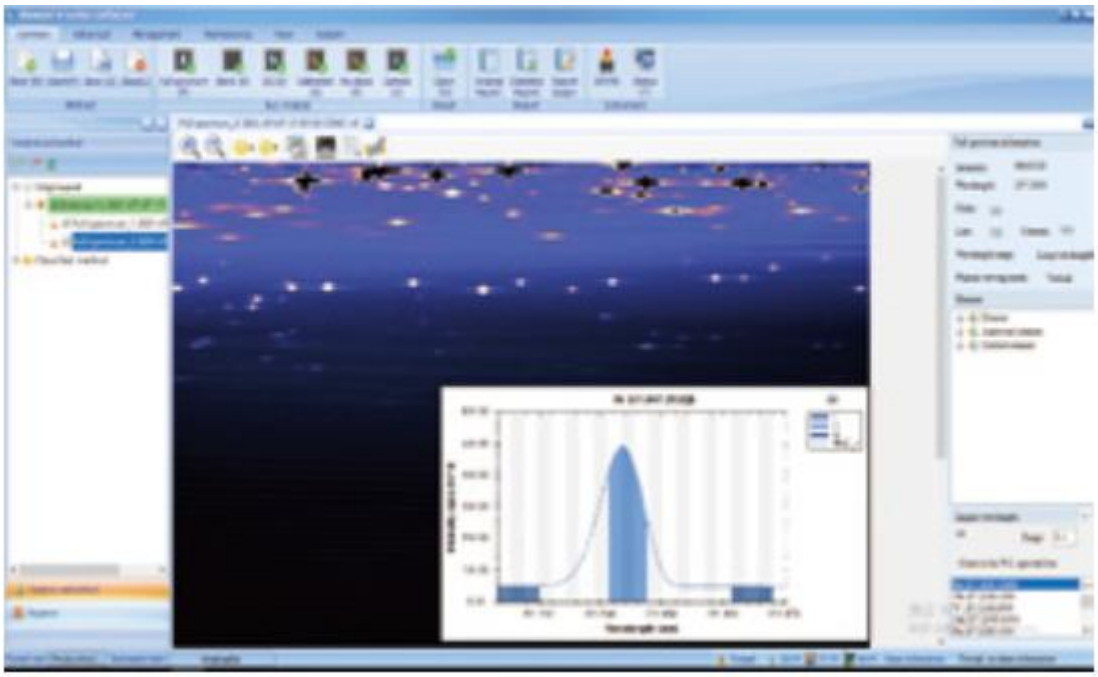
Full spectrum and sub-array controls



Performance Specifications

Feature	Specification / Benefit
Stability (8-hour)	RSD<1%
Precision	RSD<0.1% (Twin Internal Standard)
Analysis Time	72 elements in 10 seconds
Spectral Range	165nm to 900nm
Gas Efficiency	>50% Argon saving in iStandby mode
RF Power	500W – 1600W (fully digital control)

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Strategic Applications

- **Environmental Monitoring:** High-throughput analysis of soil extracts and wastewater.
- **Petrochemicals:** Direct injection of oil products without complex pre-treatment.
- **Food Safety:** Rapid screening for heavy metals and nutritional minerals.
- **Rare Earth Analysis:** High-resolution separation of complex spectral overlaps.

Contact Information

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