TORONTECH

INDUCTIVELY COUPLED PLASMA EMISSION SPECTROSCOPY (ICP-OES)

Inductively Coupled Plasma Emission Spectroscopy (ICP-OES)

Inductively Coupled Plasma Emission Spectroscopy (ICP-OES) is a powerful analytical technique used to determine the elemental composition of liquid samples with high accuracy, speed, and sensitivity. In ICP-OES, samples are introduced into an extremely high-temperature inductively coupled plasma, where atoms and ions are excited and emit element-specific light that is measured to quantify elemental concentrations.

ICP-OES is widely adopted because it enables simultaneous multi-element analysis, low detection limits down to parts-per-billion (ppb), wide linear dynamic range, and minimal chemical interference. These advantages make inductively coupled plasma emission spectroscopy a trusted method for environmental testing, metallurgy, petrochemical analysis, food safety, semiconductor manufacturing, and scientific research.

ToronICP™ is Torontech's comprehensive platform of inductively coupled plasma spectrophotometers designed to cover routine analysis, advanced research, petrochemical testing, and fully automated high-throughput laboratories. The ToronICP portfolio includes compact systems, dual-view instruments, full-spectrum direct-reading platforms, petrochemical optimized editions, and fully automated PRO systems.

All ToronICP systems are built around stable solid-state RF plasma generation, precision optical designs, intelligent software, and automated safety controls. Whether configured for trace-level environmental analysis, complex organic petrochemical matrices, or continuous highvolume laboratory operation, ToronICP instruments deliver reliable ICP-OES performance with consistent accuracy and long-term stability.

APPLICATIONS

Applications of ToronICP™ Systems

ToronICP inductively coupled plasma emission spectroscopy systems are used across a broad range of industries and laboratories, including:

- Environmental Monitoring
  - Elemental analysis of water, wastewater, soil, sediments, and environmental samples for regulatory compliance and pollution assessment.
- Petrochemical & Energy Industries
  - Analysis of fuels, lubricants, additives, organic chemicals, and used oils, including direct injection of complex matrices with minimal sample preparation.
- Metallurgy & Materials Science
  - Determination of alloy composition, impurity levels, and trace elements in ferrous and non-ferrous metals.
- Geology & Mineral Resources
  - Elemental characterization of ores, rare earth elements, raw materials, and geological samples.
- Food, Agriculture & Biological Research
  - Trace element testing for food safety, fertilizers, agricultural products, and biological materials.
- Semiconductor & Electronic Materials
  - Ultra-trace elemental analysis for high-purity materials and advanced electronic applications.
- Research & Academic Laboratories
  - Multi-element analysis for scientific studies, method development, and advanced analytical research.

Why Choose ToronICP™ Inductively Coupled Plasma Systems?

Choosing ToronICP™ means investing in inductively coupled plasma emission spectroscopy systems engineered for accuracy, flexibility, and long-term laboratory efficiency.

- Comprehensive Product Range
  - From compact ICP-OES systems to dual-view, full-spectrum, petrochemical-specific, and fully automated platforms, ToronICP supports diverse analytical needs.
- High Analytical Confidence
  - Stable plasma generation, advanced optical systems, and research-grade detectors ensure reproducible results with low detection limits and minimal interference.
- Simultaneous Multi-Element Capability
  - Measure over 70 elements in a single run, improving throughput and reducing analysis time.
- Advanced Automation & Safety

    - Automated ignition, RF matching, gas control, plasma monitoring, and safety interlocks support unattended operation and protect both users and instruments.
- Ease of Use for All Experience Levels
    - Intuitive software, real-time plasma visualization, and intelligent workflows make inductively coupled plasma analysis accessible even to first-time users.
- Application-Optimized Configurations
    - Dedicated solutions for petrochemical analysis, trace environmental testing, high throughput labs, and research-grade measurements.
- Global Laboratory Compatibility
    - Designed to meet the expectations of international laboratories with scalable configurations and robust performance across industries.

TORONTECH.com

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Torontech Inc.
251 Consumers Road, Suite 1200
Toronto, Ontario, M2J 4R3, Canada

Phone: +1 416 368 2721 | Fax: +1 416 981 7652
Email: info@torontech.com

Torontech, LLC
601 Brickell Key Drive, Suite 700
Miami, FL 33131, USA

Toll-Free: 1-866-383-7919
Email: sales@torontech.com

Torontech ME FZE
Meydan Grandstand, 6th Floor,
Meydan Road, Nad Al Sheba,
Dubai-261440, UAE

Phone: +971 488 19252
Email: me@torontech.com

USA | Canada | EU | UAE | GCC | KSA | India | Africa | Latin America | Asia