Agilent Technologies, Inc. - Agilent 7700 Series Inductively Coupled Mass Spectrometer

GENERAL DESCRIPTION:

The Agilent 7700 Series Inductively Coupled Plasma Mass Spectrometer (ICP-MS) is a multi□element, high sensitivity trace metals analysis technique. The new 7700 series ICP-MS provides robust plasma (lowest CeO/Ce ratio) for superior ionization of sample. Agilent's high matrix introduction (HMI) technology further improves matrix tolerance to allow routine measurement of % levels of matrix. An new ion lens delivers higher sensitivity and reduced random background signals, providing excellent detection limits across the mass range. User-friendly ICP-MS MassHunter software features include One-click Plasma Setting and Expert Auto Tuning to simplify routine optimization. The compact benchtop design makes the 7700 the world's smallest commercial ICP-MS, saving valuable work bench and laboratory space. With its high-temperature plasma, matrix tolerant interface and 9 orders dynamic range, the 7700x provides the ideal combination of robustness, sensitivity and analytical range yet retains the flexibility to handle advanced research applications.

TECHNICAL DESCRIPTION:

All 7700 Series ICP-MS systems feature:

- Sample Introduction - includes an efficient, low-flow concentric nebulizer, a temperature-controlled spray chamber and a high precision, 10-roller peristaltic pump.
- Plasma RF Generator - high power-transfer efficiency and maintenance-free solid state digital drive 27 MHz RF generator with variable-frequency impedance matching.
- Torch - Easy-mount, one-piece quartz torch with wide 2.5mm internal ID injector maintains the highly robust plasma needed to efficiently decompose the sample matrix.
- Ion Lenses - Redesigned extraction and off-axis ion lenses provide high ion transmission for high sensitivity and low backgrounds, combined with uniform mass response across the mass range.
- Octopole Reaction System –The ORS3 is longer and narrower than the 7500 Series ORS cell, and operates at higher frequency, higher cell gas pressure and higher kinetic energy discrimination (KED) bias voltage.
- Quadrupole Mass Analyzer - The 7700 uses a true hyperbolic quadrupole, unique in ICP-MS, operating at high (3MHz) frequency.

Tier Selection

Final tier assignment is based on overall product score.

- 🟢 Top Tier
- 🟢 Second Tier
- ⚪ Third Tier
- 🔴 Fourth Tier
- 🔴 Bottom Tier

RANKINGS

	Biological	Chemical	Radiological
FIELD USE System	N/A	N/A	Bottom Tier
MOBILE Laboratory	N/A	N/A	Bottom Tier
DIAGNOSTIC Laboratory	N/A	N/A	Fourth Tier
ANALYTICAL Laboratory	N/A	N/A	Fourth Tier

Survey Source

Vendor Supplied Information

CONTACT INFORMATION

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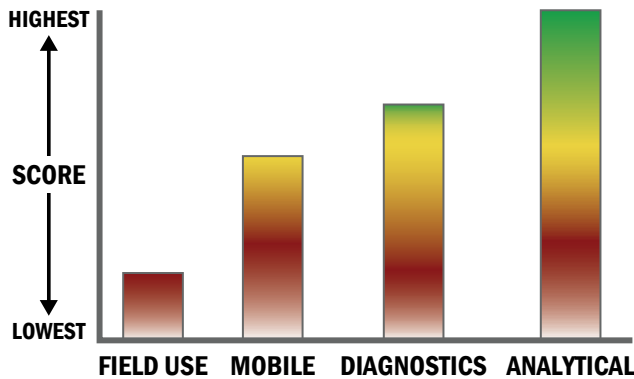443-285-7854
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COST

N/A

Scoring Analysis

System scores are compared across the four scenarios and ranked from highest to lowest.

Impact Chart

The Impact Chart is a spider graph representing specific categories and designed to give the reader a visual depiction of how a particular system is expected to operate across the four different scenarios. The score for each of the seven categories is presented as the percentage of the total possible score. Higher category scores extend the spokes of a graphic toward the outer edge of the chart. The area graphed for each of the four scenarios relates to how well the system performed in that scenario. Graphics for each of the four scenarios are super-imposed for ease of comparison.
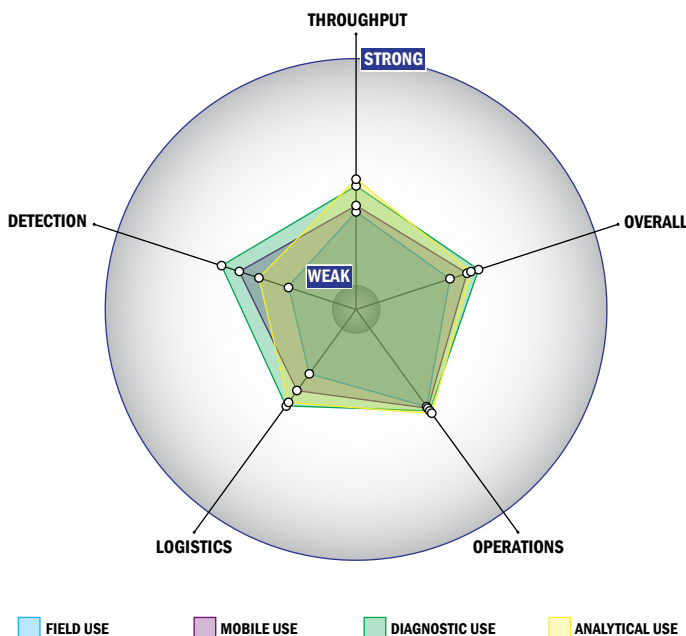

Evaluation Criteria

Throughput:
- Between 2 and 15 minutes for detection
- Multiple samples, multiple tests/sample per run
- Less than 32 samples every 2 hours
- The system or device is currently fully automated
- Device or system is intended for multiple detection assays
- 2 solutions, buffer, eluents, and/or reagents
- Greater than 20 minutes is required for setup
- Almost instantaneous for detection

Logistics:
- More than a day of training and significant technical skills are required
- Approximately the size of a home dishwasher
- More than 50 kg
- Wired connections are available
- System or device has 220V electrical requirement

MOST MATURE ◄——————— LEAST MATURE
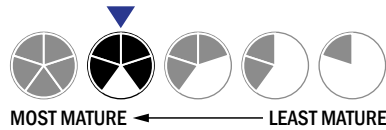
Operations:
- Can be used from 25°C to 37°C
- Performance is not influenced by relative humidity
- Between 6 months and 1 year shelf life
- 5-10 years expected life
- Results can be viewed in real-time
- The system could be adapted to a fully autonomous system with some effort
- The system software is closed and not available for modification
- The system hardware is closed and not available for modification

Detection:
- Possible the system could receive 510K clearance, no current efforts at this time
- Possible the system could receive FDA approval, no current efforts at this time
- Less than 250 µL
- Excellent specificity. System has occasional false alarms under certain conditions (<2%)