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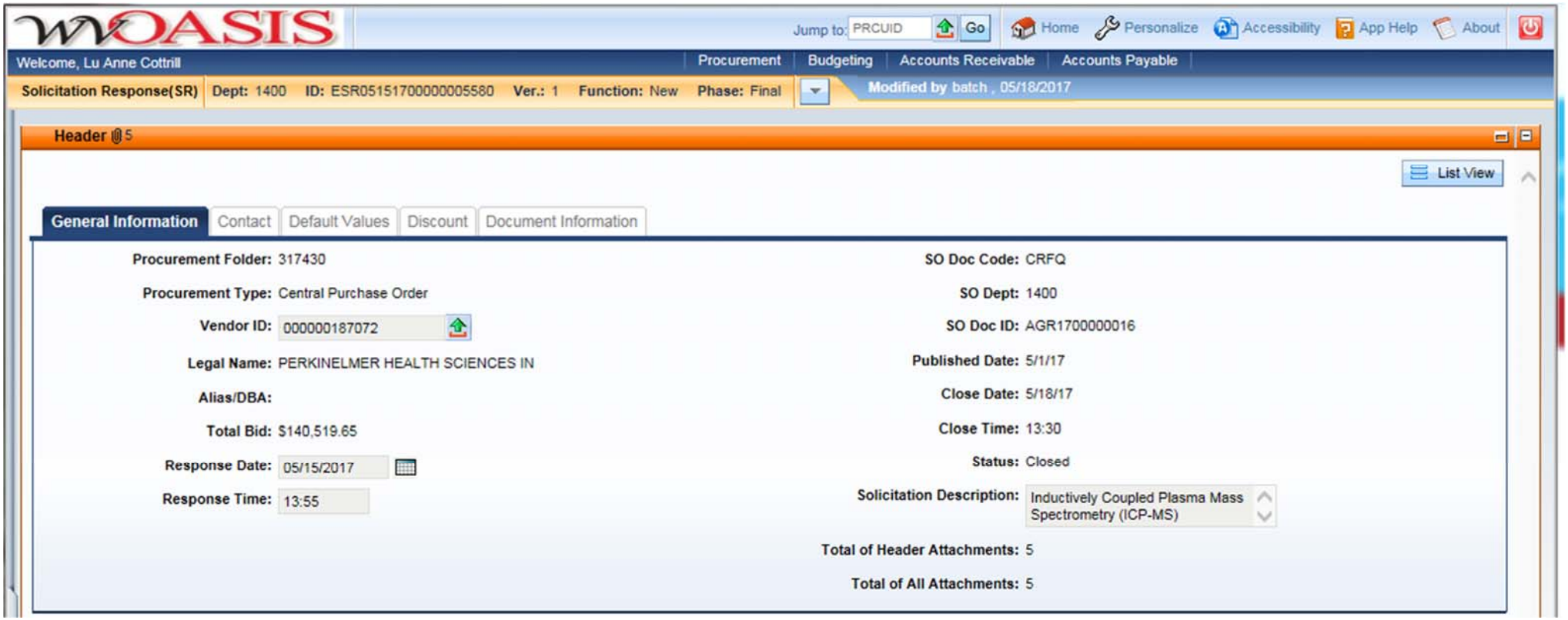
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Procurement Folder: 317430
Procurement Type: Central Purchase Order
Vendor ID: 000000187072
Legal Name: PERKINELMER HEALTH SCIENCES IN
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Total Bid: $140,519.65
Response Date: 05/15/2017
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SO Dept: 1400
SO Doc ID: AGR1700000016
Published Date: 5/1/17
Close Date: 5/18/17
Close Time: 13:30
Status: Closed
Solicitation Description: Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
Total of Header Attachments: 5
Total of All Attachments: 5

Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

State of West Virginia
Solicitation Response

Proc Folder : 317430

Solicitation Description : Inductively Coupled Plasma Mass Spectrometry (ICP-MS)

Proc Type : Central Purchase Order

Date issued	Solicitation Closes	Solicitation Response	Version
	2017-05-18 13:30:00	SR 1400 ESR05151700000005580	1

VENDOR

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PERKINELMER HEALTH SCIENCES IN

Solicitation Number: CRFQ 1400 AGR1700000016

Total Bid : $140,519.65 **Response Date:** 2017-05-15 **Response Time:** 13:55:15

Comments: -

FOR INFORMATION CONTACT THE BUYER

Tara Lyle

(304) 558-2544
tara.l.lyle@wv.gov

Signature on File **FEIN #** **DATE**

All offers subject to all terms and conditions contained in this solicitation

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
1	ICP-MS Autosampler, computer, software	1.00000	EA	$132,067.650000	$132,067.65

Comm Code	Manufacturer	Specification	Model #
41000000			

Extended Description : ICP-MS Autosampler, computer, software

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
2	Shipping Charges & Inside Delivery	1.00000	EA	$3,072.000000	$3,072.00

Comm Code	Manufacturer	Specification	Model #
78121603			

Extended Description : Shipping Charges & Inside Delivery

Comments: Delivery including liftgate and inside delivery

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
3	Installation/Validation	1.00000	EA	$0.000000	$0.00

Comm Code	Manufacturer	Specification	Model #
73171605			

Extended Description : Installation/Validation

Comments: Included

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
4	Training/Warranty	1.00000	EA	$2,880.000000	$2,880.00

Comm Code	Manufacturer	Specification	Model #
73171605			

Extended Description : Training/Warranty

Comments: On-Site training

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
5	Preventative maintenance	1.00000	EA	$2,500.000000	$2,500.00

Comm Code	Manufacturer	Specification	Model #
81101706			

Extended Description : Preventative maintenance

Comments: PM Visit

TECHNICAL NOTE

ICP - Mass Spectrometry

Advantages of a Novel Plasma Generator for the NexION 2000 ICP-MS

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Woodbridge, Ontario, Canada

Inductively Coupled Plasma as an Ionization Source for Mass Spectrometry

Since its first commercial introduction in 1983 by PerkinElmer-SCIEX, inductively coupled plasma mass spectrometry (ICP-MS) has become the fastest growing trace-element detection technique covering a diverse range of applications. Hurdles in successfully coupling an ICP source to a mass spectrometer were initially overcome with design breakthroughs such as a center-tapped ground coil to minimize plasma potential and eliminate secondary discharge between the plasma and the grounded MS interface. Further evolution of plasma RF generators led to a unique free-running design where impedance changes in the plasma were matched instantaneously through small changes in the frequency with no moving parts. In addition, plasma potential was kept at minimum by electronically balancing the plasma with respect to the ground potential.

Plasma Generation

Inductively coupled plasma is a region of hot, partially ionized gas formed within the outer tube of an assembly of three concentric quartz tubes, known as the torch. Figure 1 shows a schematic diagram of an ICP torch assembly in operation. Argon gas flows through each of the three tubes at different flow rates for plasma generation, cooling and protecting the quartz surfaces from the high-temperature plasma, and finally for introducing the sample aerosol into the central channel of the plasma.

The torch is surrounded at the top end by an induction coil (also known as the load coil) connected to a radio-frequency (RF) generator. The induction coil is traditionally made of a coiled copper tube and is gas- or liquid-cooled by the flow of the coolant through the coil. A high-voltage Tesla discharge produces electrons and argon ions in the downstream gas flowing through the region encircled by the load coil. The interaction of the electromagnetic field with ions and electrons causes them to accelerate. However, given their significantly lighter mass, electrons gain much higher velocities compared to positive ions and hence play a dominant role in collision processes that occur in the plasma. Electrons collide with argon atoms and upon sufficient energy transfer, ionization of more argon atoms occurs with the release of additional electrons that would subsequently take part in the collision processes. The plasma is sustained shortly after ignition when the rate of electron release from atoms matches the rate at which they recombine with ions. The latter process involves release of energy in the form of photons that produces the plasma continuum emission superimposed by argon line spectra.

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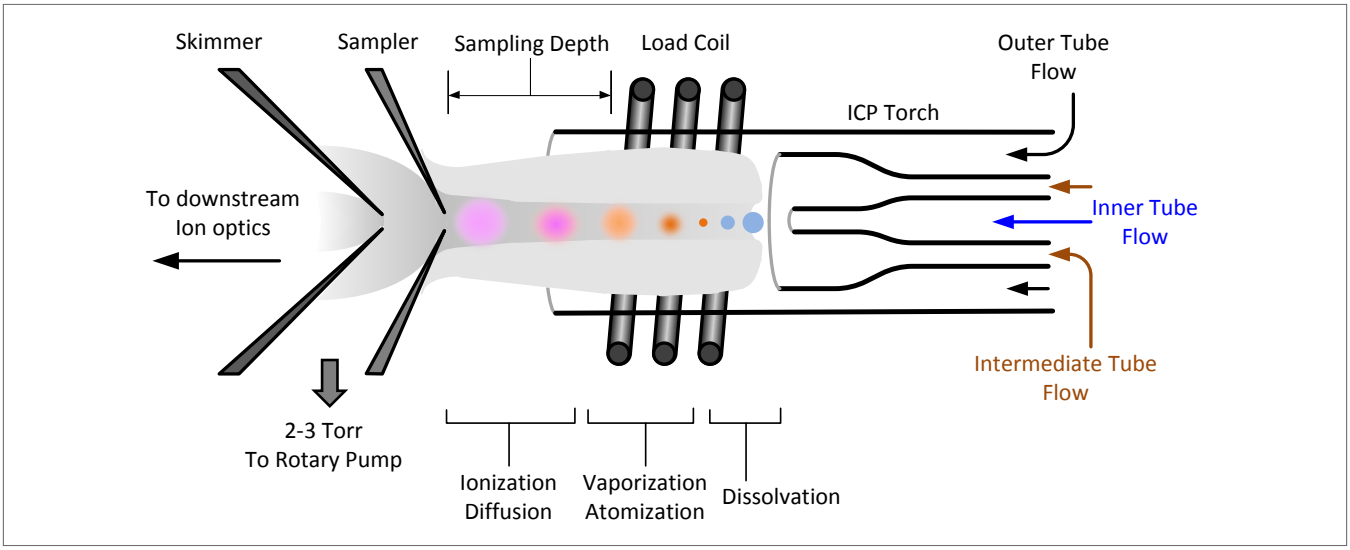

Figure 1. Schematic diagram of an Ar ICP source against a typical MS interface showing processes occurring to convert a droplet of sample aerosol into ions in the plasma.

Most of the energy from the RF field couples to the outer regions of the plasma akin to a "donut" shape where temperatures can reach 10,000 K, whereas the central channel region is typically at around 5000 to 7000 K, depending on the plasma operating conditions. Figure 2 shows simulated temperature fields in argon ICP demonstrating a thermal inhomogeneity within the plasma volume. Therefore, an ICP cannot be assumed to be in thermodynamic equilibrium due to the inherently different nature of collisional processes that occur including ionization, recombination, and excitation. However, a partial local thermodynamic equilibrium (LTE) can be safely assumed to characterize the ICP based on ionization temperature (T_{ion}), gas kinetic temperature (T_{gas}), electron temperature (T_e), excitation temperature (T_{exc}), and rotational temperature (T_{rot}).

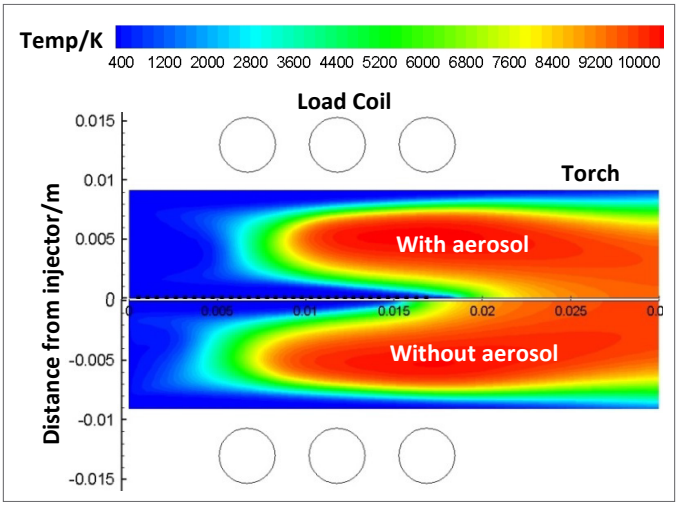

Figure 2. Simulated gas kinetic temperature fields in an argon ICP torch with (top half) and without (bottom half) aerosol introduction. The simulation model is based on a two-dimensional, time-dependent ICP model assuming optically thin RF plasma at local thermodynamic equilibrium (LTE).

Figure 1 also depicts the processes that would lead to the generation of an ion cloud in the plasma for each droplet. Droplets in the sample aerosol undergo a sequence of desolvation, vaporization, atomization, and ionization during their residence time in the plasma. One could consider the regions of the plasma dominated by such processes as distinct, but in practice, the sample aerosol does not consist of monodisperse droplets and contains a distribution of droplet sizes. Hence, it is believed that these regions overlap to some extent. In addition to the above mentioned processes, the diffusion of the sample vapor and the resulting ion cloud in the plasma can significantly affect the intensity of the signal. The signal is typically at its maximum around the point in plasma where vaporization and ionization processes are nearly complete but diffusion is yet to become dominant. In addition to droplet size, the duration of such processes in the plasma is, to a large degree, dependent on the operating conditions such as plasma sampling depth, plasma power, nebulizer gas flow rate, and the inner tube diameter.

Important Properties of an Ideal RF Generator for ICP-MS

The main function of any RF generator is to deliver a well-defined and stable alternating current to the load coil to ignite and sustain the plasma reliably. For maximum transfer efficiency of RF power to the plasma, the impedance of the source (*i.e.*, the generator) and the load (*i.e.*, the plasma source) need to match as part of a single electrical circuit. This is typically termed as resonance or impedance match condition. The impedance (Z) of the circuit depends on frequency of operation and has both a real (resistive) and imaginary (reactive) component to define the phase relationship which in Cartesian terms can be defined as:

$$Z = R + jX$$

where j is the imaginary term ($\sqrt{-1}$) and R and X are resistance (Ω) and reactance (Ω) defining the real and imaginary components of impedance, respectively.

The impedance of the plasma is a dynamic variable that can change rapidly in response to changing plasma operating conditions, such as RF power, gas flow rates, gas type, sample/vapor load, sample type, frequency of operation, and sampling depth. The ability of the generator circuitry to rapidly detect and react to changes in load impedance is crucial to minimize the reflected power and maintain robust plasma conditions. ***This feature sets apart design approaches based on instantaneous matching of impedance by slight changes in the frequency of operation from those relying on relatively slow and failure-prone moving parts such as servo-driven capacitors in their impedance matching networks.***

Another important aspect of RF generators is the way the generator drives the load coil. If the output RF drive is single-ended and one end of the load coil is always connected to the ground, the generator is said to be an *unbalanced* RF drive source. Plasmas produced by such circuitry exhibit relatively high plasma potential, which would lead to a secondary discharge between the plasma and the grounded sampler cone of the mass spectrometer. Mechanical approaches to minimize the plasma potential include those using interlaced load coils (essentially two intertwined load coils with opposite grounding polarity) or moving, electrostatic shields to act as a grounded shield between the load coil and the plasma.

If the generator is designed to drive the load coil with two identical RF outputs but 180° out of phase, the generator is categorized as a balanced RF source. This approach was first developed and patented by PerkinElmer-SCIEX under the trade name PlasmaLok. The phase relationship between the two opposing waveform outputs creates a virtual ground at the electrical center of the load coil. Plasma potential with such design is kept at minimum regardless of the plasma operating conditions (*e.g.*, inner tube flow rate, plasma power, matrix composition) and hence does not play a significant role in defining the kinetic energy of the plasma species. Consequently, independent optimization of plasma operating conditions and ion optics is facilitated.

Other properties, such as power transfer efficiency, size, simplicity, cooling strategy, ruggedness, consumables, maintenance, and the ability to rapidly switch between high and low RF power extremes, also play an important role in the design of an RF generator.

Latest Solid-state Transistor Technology Meeting Innovative Circuits

The latest ICP-MS RF generator by PerkinElmer specifically designed for NexION® 2000 ICP Mass Spectrometer takes advantage of the newest circuit design techniques as well as state-of-the-art components to deliver a plasma source with uncompromised performance, robustness and long-term reliability.

Over the past two decades, demand for faster, smaller and more efficient semiconductor electronics has enabled continuous improvements in developing more compact electronic circuitry that require less power and incorporate more functionality. Power electronics also benefited from the latest semiconductor advancements to achieve higher power density, efficiency, and excellent thermal stability. The design team at PerkinElmer selected the latest generation of laterally diffused metal oxide semiconductor (LDMOS) transistor technology to empower the RF generator in the NexION 2000 ICP-MS, with superior advantages at the semiconductor level.

The high power density advantage enables the RF generator to reach 1.6 kW of power with minimal number of power transistors, thus eliminating the efficiency penalty of a power-combining circuit to sum the power from numerous lower-power transistors. It also minimizes the gain, efficiency, current, and thermal mismatch that typically exist among numerous transistor devices.

The higher output rating of the advanced transistors also translates to better long-term reliability, because of the increased margin for back-off operation, as the available power exceeds the actual delivered power. For example, to generate 800 W RF power, a power transistor rated at 1.2 kW will have a longer lifetime compared to that rated for 800 W, which always operates at its maximum limit.

Although the latest transistor technologies offer many advantages, the use of such transistors cannot guarantee a high performance solid-state plasma generator on their own. While making strides in higher speed, efficiency and density, the evolution of silicon transistors is offset by lower device breakdown limits due to device shrinkage and optimization. For example, the gate of traditional power transistors can often withstand +/- 40V, but the latest transistors suffer gate breakdown at around -7V. The older transistors are also more immune to fast voltage transients that are beyond the transistor frequency response, due to the gain roll off at the harmonic frequencies.

The lower breakdown voltages of the latest transistors do not pose a serious problem in typical low-power consumer electronics. However, a much lower breakdown tolerance in modern transistors could become problematic in ICP-MS RF generators unless design features are in place to overcome the drawback. An inductively-coupled plasma load, unlike a typical electronic load such as a broadcast antenna, is relatively unstable and has a wide impedance range. Prior to plasma ignition, the plasma coil is a pure reactive load with most of the RF power reflected back to the transistors. After plasma ignition, the plasma coil abruptly changes to become a real load absorber for RF power. The RF impedance of the plasma is also affected by the sample solution. All these operations present rapid changes to the RF impedance, reflected power, and voltage transients. A few RF cycles of uncontrolled voltage spikes and current surges are sufficient to cause a power transistor to break down. As a result, most ICP-MS manufacturers prefer to use older power transistor technology despite risks such as obsolescence as well as less flexible designs and sub-optimal power transfer efficiency. To realize the many advantages offered by the latest transistors, PerkinElmer scientists designed and tested advanced and novel circuit techniques to eliminate the risk of lower breakdown voltage. The result is an RF generator capable of uncompromised reliability, speed, efficiency, and plasma robustness.

Direct-Feedback Oscillator Design

Plasma RF generator designs are typically divided into two approaches: the *driven design* and the *oscillator design*. In the driven design, the plasma load coil is directly driven by an amplified, fixed-frequency RF signal source. Since the plasma impedance is dependent on the sample loading into the plasma, the impedance matching network must be constantly monitored and adjusted over time. In some systems, the matching network consists of one or more mechanically tunable (motor-driven) variable capacitors. Driven-mode plasma generators typically have good amplitude stability with lower phase noise while the plasma conditions are unchanged. However, the response time of such systems is relatively slow when the plasma impedance undergoes a sudden change due to, for instance, sample changeover, a rapid transient sample load, or introduction of different type of gas into the plasma.

The primary advantage of an oscillator-based plasma generator is the faster response time for impedance matching when the plasma is loaded with different samples. In a typical oscillator design, the plasma is driven by a variable-frequency oscillator, such as a voltage-controlled oscillator (VCO). The oscillation frequency is adjusted by a controlled voltage to achieve optimal impedance matching. The phase mismatch of the impedance network is used as the feedback signal to adjust the frequency for optimal impedance matching. Since the frequency adjustment is achieved by electronics, the response time is virtually instantaneous compared to the driven-mode plasma generators with mechanical adjustment. However, the phase mismatch signal is usually an analog signal at a lower frequency compared to the RF frequency. Therefore, the speed of frequency adjustment is limited by the response time of the VCO, plus the total time constant of all low-pass filters in the circuitry.

Unlike a typical VCO-type oscillator design, the output matching network of the NexION 2000 RF generator is an integral part of the oscillation core. The direct sampling of the plasma load coil output as a feedback signal enables impedance matching within a few RF cycles, which translates into a few microseconds. Consequently, this enables a much faster response compared to a typical VCO-type oscillator where plasma matching duration takes in the order of a second. This becomes crucial, especially for optimal power transfer, to stabilize the plasma during plasma ignition and during the analysis of difficult samples where plasma impedance changes abruptly and the plasma would otherwise extinguish if the impedance is not matched fast enough.

The oscillator is also designed to have a differential oscillation core based on a balanced design approach, so that the RF output drives the plasma load coil differentially to minimize the plasma potential. In addition, the output power generated by a pair of high-power transistors drives the plasma load coil with a low-loss impedance matching network, without the need for power-combining a series of transistors. The impedance matching network is also designed with robust components that have rated breakdown limits far exceeding the required operating conditions.

Most plasma generators operate at nominal frequencies of either 27 or 40 MHz. There has been much debate surrounding the effect of RF generator frequency on analytical performance characteristics of ICP-MS. However, many studies in the past disregarded the effect of secondary discharge, MS interface, and ion sampling processes when comparing the two frequencies. In addition, an important determining factor for the choice of plasma frequency, which is the effect of balanced *vs.* unbalanced generator, was often not considered. Techniques such as electrostatic shields for unbalanced systems become much less effective as the frequency of operation increases, which explains their limited use only at 27 MHz. During the development of the NexION 2000 ICP-MS, extensive simulations and in-lab studies were performed to determine the optimum operating frequency based on analytical performance and plasma fundamentals. Using a balanced RF generator, lower frequencies typically produce plasmas with slightly higher gas kinetic temperatures due to slightly thicker skin depth; however, at higher frequencies, the coupling efficiency improves, which leads to better robustness and plasma stability as well as improved tolerance to complex matrices, organic solvents, and mixed-gas plasmas. Based on the results of the studies, the RF generator designed for the NexION 2000 system is targeted to operate at around 34 MHz, which is roughly the mid-point between 27 MHz and 40 MHz for a more well-rounded performance between these two frequencies.

A Trouble-Free, Fire-and-Forget Experience

The plasma generator of the NexION 2000 ICP-MS offers the user a trouble-free, "fire-and-forget" experience. It is designed to ignite the plasma with close to 100% success rate. For instance, a number of NexION 2000 instruments recently underwent accelerated ignition tests: the plasma was ignited 4000 times on each instrument and shut off during a back-to-back test. Success rates ranged from 99.97% (1:4000) to 100% (no failures).

Long-term Reliability

Long-term reliability of the plasma generator is an important part of a trouble-free user experience. The RF generator board is water-cooled to prolong the service lifetime. In addition, an ensemble of advanced electronics is provisioned, as part of the RF circuitry, to protect the power transistors, facilitating long-term reliability. The RF generator circuitry designed for the NexION 2000 system also utilizes both wideband and narrowband circuit techniques to safeguard the transistors from fast transients and voltage breakdowns.

Power and current mismatches between power transistors are undesirable effects for any plasma RF generator. The problem manifests when one of the transistors is driven harder and running hotter than the other transistor, which negatively impacts the transistor reliability. Such problems typically originate from mismatches in device gain, output load, or input drive strength that would lead to uneven power loading of the transistors. Since the mismatch has numerous causes, the problem cannot be addressed by one circuit alone. Therefore, through a rigorous design and test approach, our design team ensured that the currents of the two power transistors in the NexION 2000's RF plasma generator are controlled and balanced

to be virtually equal to one other. This is the hallmark of a symmetrical, well-balanced differential RF plasma generator; an advantage not only to reduce the plasma potential, but also to increase the MTBF (Mean Time Between Failures) of the plasma generator.

The plasma generator in the NexION 2000 ICP-MS is equipped with a dedicated 32-bit microcontroller (MCU) with built-in firmware. The MCU implements a digital control loop to monitor and supervise the plasma operating conditions. It ensures that the transistors are operating at the optimal operating voltage and current to maximize the margin against voltage breakdown and current meltdown simultaneously. A novel feature is that the MCU can monitor the health condition of the power transistors in real-time during normal operation. In the event that the MCU detects that the transistors are on the verge of breakdown or at the onset of failure, the MCU will take the appropriate action and shut down the plasma generator automatically to prevent any component damage. This feature helps prolong the power transistors' service lifetime. The MCU also provides a suite of diagnostic information during operation and shares the information with the user through the Syngistix™ ICP-MS software.

LumiCoil - A Novel Plasma Load Coil

The NexION 2000 ICP-MS also utilizes an all-new and patented plasma load coil, called LumiCoil™, designed by the Research and Technology group at PerkinElmer specifically for the NexION 2000 and the newly designed solid-state RF generator. Traditionally, plasma load coils are made from copper tubes and require active liquid or gas cooling to minimize oxidation and degradation of the coil over time. In addition to oxidation, copper load coils are susceptible to chemical attack especially when corrosive samples are used. The formation of the oxide layer on the copper surface not only leads to further overheating of the coil causing more oxide buildup, but also changes the characteristics of the coil as an RF inductor leading to inefficient power transfer to the plasma. Coil degradation can also cause long-term signal drift and significant reduction in sensitivity especially for high IP elements. Severe oxidation to the point of flaking can also cause arcing between adjacent turns of the coil. Consequently, copper induction coils are generally considered consumable parts that need to be replaced periodically, depending on the operating conditions of the instrument.

A Self-cooling Load Coil: LumiCoil

The LumiCoil RF coil is designed to greatly increase the operating lifetime, plasma stability, and the MTBF of the plasma generator by eliminating load coil oxidation and corrosion. The highlight of LumiCoil is an array of fins distributed along the coil. Unlike traditional load coils, this all-new coil design does not require active cooling. Instead, the fins significantly increase the surface area of the coil so that air ventilation around the coil is sufficient to keep the coil at the proper service temperature. Servicing and cleaning the LumiCoil RF coil, if required, is also easier since there are no leak-prone liquid or gas lines.

Optimal Power Coupling with LumiCoil

Increasing the load coil surface area as a solid piece to facilitate cooling and with no regards to the RF current direction would degrade the plasma power density. The reason is that the RF power is magnetically coupled from the load coil to the argon plasma. An oversized coil winding surface encourages stray RF current to flow through the added metal surfaces. This lowers the mutual inductance and complicates the magnetic flux linkage between the load coil and the plasma generated in the torch.

Therefore, in the LumiCoil design, the position of each fin is calculated and designed with a narrow width to suppress concentric RF current flowing radially between the fins (shown in red color in Figure 5). The unique design of the fins in LumiCoil forces the RF drive current to only flow through the well-defined windings of the coil (shown in blue color in Figure 5) and in close proximity to the torch. This way, the magnetic flux linkage is maximized for inductive coupling of the RF power to the torch.

Figure 3. Copper load coil used in most ICP sources.

Figure 4. LumiCoil: a patented technology exclusive to the NexION 2000 ICP-MS.

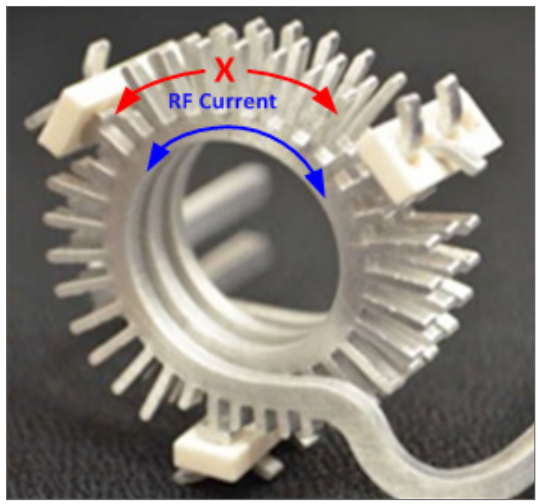

Figure 5. Optimal RF current flow to maximize the magnetic flux linkage.

Extended Operating Lifetime

LumiCoil technology uses a special alloy of solid aluminum core for the windings, which forms a layer of aluminum oxide on its surface. The oxide layer is highly resistant to chemical attack, and it effectively eliminates the heat-induced oxidation process of the material to protect the coil. Consequently, compared to the copper load coil, the LumiCoil has a much longer operating lifetime. Testing on multiple units with various sample types has demonstrated that the LumiCoil shows no sign of degradation even after a year of continuous operation, compared to a regular copper load coil, which lasted only three months under the same test conditions. Hence, LumiCoil technology enables the user to focus more on sample analysis and less on the maintenance of the load coil (*i.e.*, less down time, higher productivity). This not only increases the overall sample throughput of the instrument but also reduces the number of replacement parts in the system and thus reduces the operating cost of the instrument.

LumiCoil is also designed to achieve superior mechanical rigidity compared to a traditional plasma load coil. Rigid ceramic spacers maintain the correct distance between the coil windings and protect the coil from deformation. In addition, the heat and mechanical stress is distributed evenly along the coil.

With the advantages of extended lifetime, optimal inductive coupling, and using air instead of expensive liquid or gas cooling, LumiCoil technology complements the state-of-the-art RF generator to offer a trouble-free plasma operation.

Long-term Stability and Matrix Tolerance

In addition to improved sensitivity, the NexION 2000 ICP-MS is also designed to achieve long-term stability and matrix tolerance partly due to the design of the RF generator to produce a robust plasma with excellent matrix-matching capabilities. This is evident from tests performed for applications dealing with complex matrices with high total dissolved solids such as EPA method 6020B. Figure 6 shows a plot of internal standard stability for method 6020B over 11 hours of continuous operation. Certified Reference Materials Soil Solution A and Soil Solution B (High Purity Standards™, Charleston, South Carolina, USA) at 1 g L^{-1} were used over the course of experiments in combination with Interference Check Solution-A (ICS-A) and QC checks (*i.e.*, CCB, and CCV) every 10 soil samples. The results show excellent stability of internal standards over the course of experiments, which included the analysis of 280 soil samples in addition to blank and QC checks. The stability plot also shows minimum amount of signal suppression between the blank, QC checks, and soil samples.

Robust Plasma for Challenging Samples

The plasma generator used in the NexION 2000 system is designed to handle challenging samples with improved robustness. Figure 7 shows examples of a variety of sample matrices (aqueous and organic) that are used at the standard uptake rate (*i.e.*, 300 µL min^{-1}) using a room-temperature spray chamber and no special adjustment on the nebulizer gas or auxiliary gas flow rates.

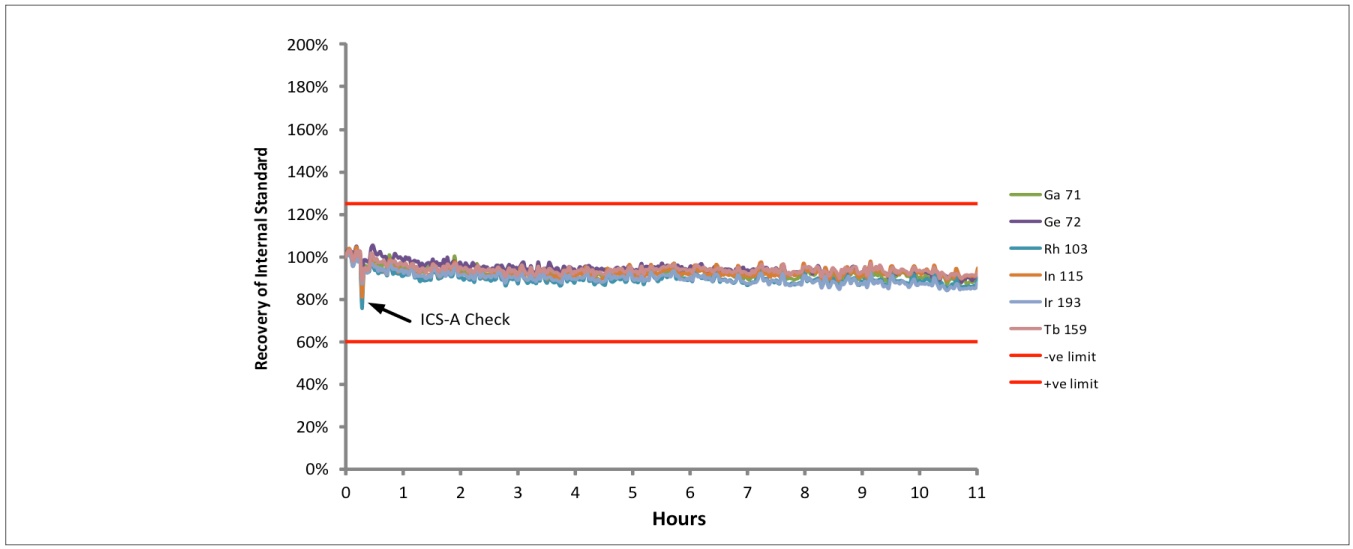

Figure 6. Internal standard recovery obtained as part of method 6020B analysis of 280 soil samples for 11 hours using the NexION 2000 ICP-MS. Blank and CCV checks were also performed every 10 samples and are included in the plot.

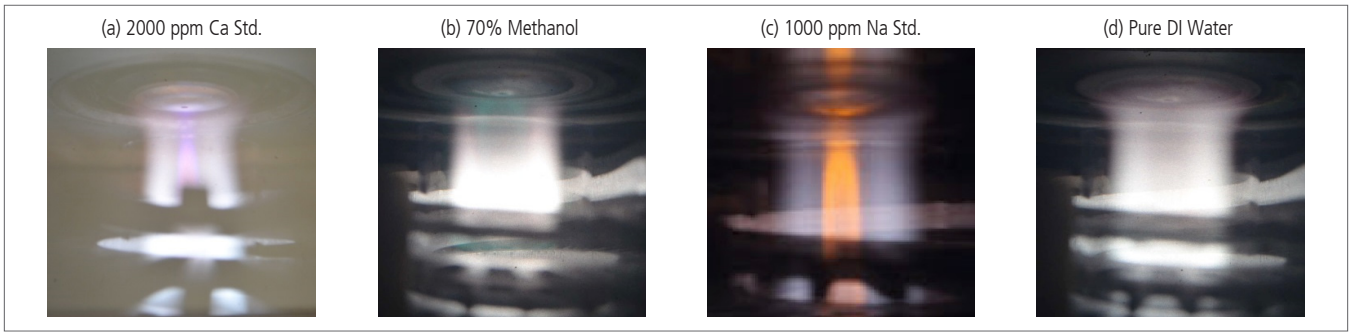

Figure 7. Examples of a variety of sample matrices used with NexION 2000 under normal conditions.

Robust Plasma for Mixed Gases

There are a number of growing applications that require the addition of gases, other than argon, to the plasma source. Mixing gases such as O_2 and He with argon is more common especially when analyzing organic samples or when an ICP-MS is coupled to a laser ablation (LA) system. Mixed gas plasmas with other noble, diatomic, or polyatomic gases are typically used for reducing spectroscopic and non-spectroscopic interferences, or for improving the ionization of some elements. The fast matching capability of the RF generator designed for the NexION 2000 ICP-MS and its inherent robustness makes the system especially suited and easy to use with mixed gases. The speed of impedance matching through small shifts in frequency makes the NexION 2000 tolerant even to sudden introduction of mixing gases. To demonstrate the ruggedness of the plasma source with the NexION 2000, Figure 8 shows a stable plasma in operation with the sample introduction completely removed and with the injector tube exposed to open air.

Figure 9 shows the plasma operating with 70 mL min^{-1} of methane (CH_4). The plasma continues to remain stable and operate uninterrupted even when the methane gas flow is abruptly switched on and off.

Figure 8. NexION 2000 ICP-MS with stable plasma operating with its back open to air.

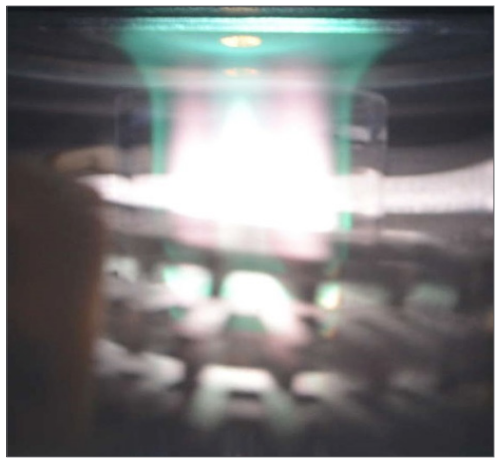

Figure 9. Stable Ar/CH_4 plasma with NexION 2000 ICP-MS.

Fast Plasma Power Switching

Operating ICP-MS under cold plasma conditions has been effective for many applications, including those related to the analysis of chemicals for semiconductor processes, to improve the background equivalent concentration (BEC) of a number of elements that suffer from spectral overlaps by argon-based polyatomic interferences. Multi-mode methods in the NexION 2000 ICP-MS can now take advantage of a combination of hot and cold plasma conditions combined with cell-based modes, such as Reaction and Collision. The plasma generator designed for the NexION 2000 enables fast power switching between cold and hot plasma conditions to increase the throughput of such multi-mode methods. Figure 10 shows four consecutive power transitions of a NexION 2000 system between 500 and 1600 W, while measuring cobalt at 59 amu. The results show that the actual switching time between the two power levels is practically negligible and the Co signal stabilizes in less than 30 seconds for each power level. The time required for signal stabilization is mostly dominated by thermal effects and the time required to reach thermal equilibrium after each power change.

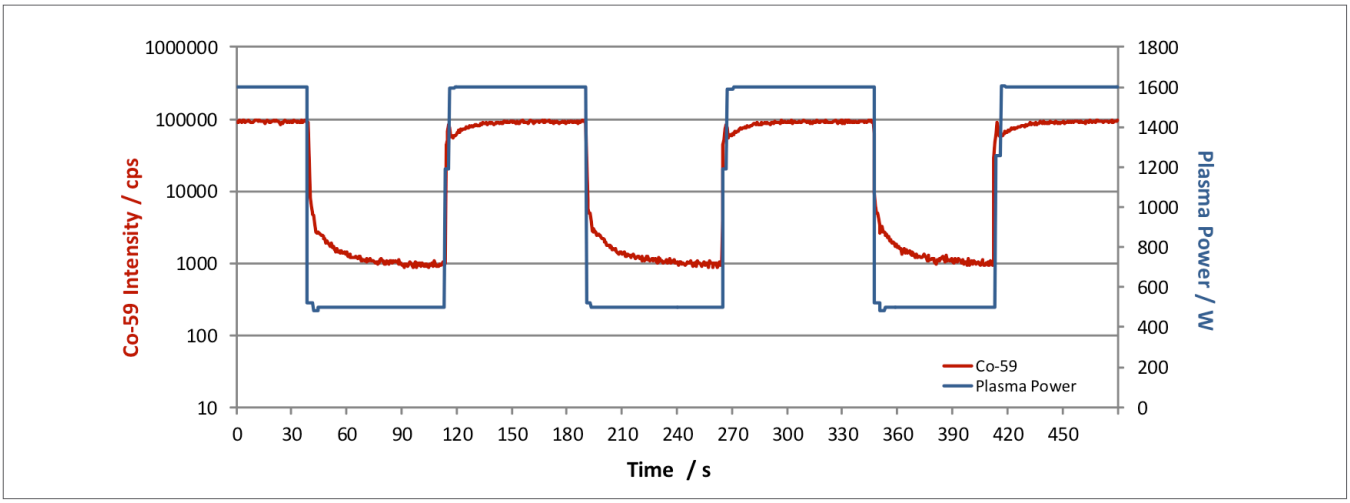

Figure 10. The output power and Co signal response of NexION 2000 under power transitions between 500 and 1600 W.

Conclusion

The novel and patented plasma generator and LumiCoil technology are designed specifically for the NexION 2000 ICP-MS to enhance analytical performance as well as reliability and lower operating cost. The balanced and free-running RF generator design focuses on many attributes such as robustness, high efficiency, wide power range, fast power switching, and instantaneous impedance matching without the need for any mechanical matching network or cascade of transistors. In addition, on-board firmware intelligence and long-life components make the RF generator for the NexION 2000 essentially a maintenance-free system. This, combined with the novel design of the self-cooling LumiCoil, provides a reliable plasma source for a wide range of demanding applications including environmental, geological, biological, and semiconductor with a variety of sample types and plasma conditions.

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PerkinElmer®

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

013242_01 PKI

ANY MATRIX
ANY INTERFERENCE
ANY PARTICLE SIZE

NexION® 2000 ICP Mass Spectrometer

PerkinElmer®
For the Better

TRIPLE QUAD POWER MEETS SINGLE QUAD VERSATILITY

Unrivaled ppq detection limits. Unparalleled usability. Finally analysts can have the best of both worlds with the groundbreaking NexION® 2000 ICP-MS.

The most versatile ICP-MS on the market, the NexION 2000 features an array of unique technologies that combine to deliver the highest performance no matter what your analytical challenge. Discover the effortless versatility of an instrument that makes it easy to handle:

- Any sample matrix
- Any interference
- Any particle size

THE TECHNOLOGIES THAT DEFINE PERFORMANCE

The NexION 2000's technical innovations offer unique benefits to laboratories, both large and small.

The most powerful interference removal for the best detection limits

Easily and confidently remove interferences with second-generation Universal Cell Technology™, featuring three modes of operation and three gas channels for unsurpassed flexibility and performance.

Any Mode

With three modes of operation – Standard, Collision, and Reaction – the NexION 2000 combines the simplicity of a collision cell and the efficiency of a controlled reaction cell in one instrument.

Any Gas

The NexION 2000 is **the only ICP-MS that can run pure ammonia and other reactive gases** for complete and targeted interference removal.

Any Application

Capable of handling any sample matrix and addressing any and all interferences, the NexION 2000 can be configured to provide the best results for any application.

The lowest maintenance requirements of any ICP-MS

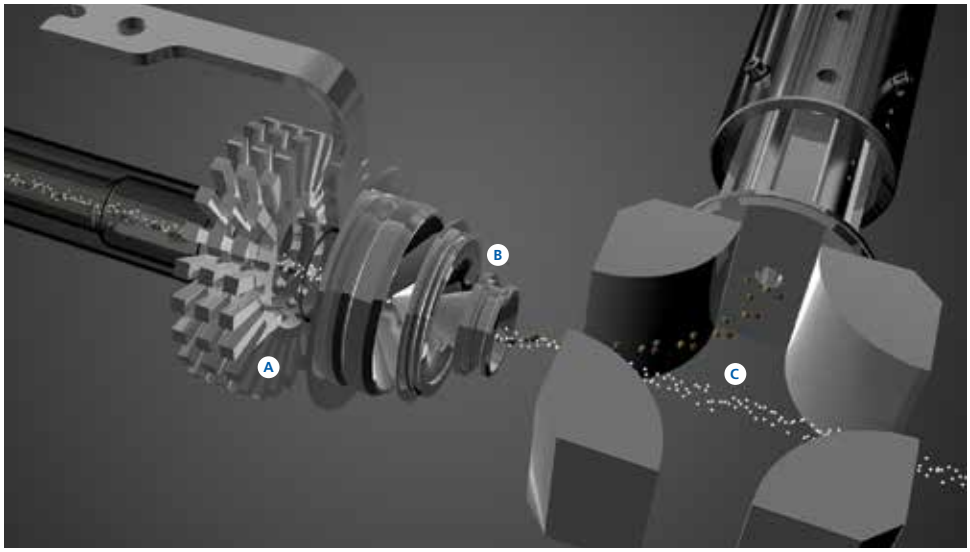
With a coil that never needs to be changed and a unique, tightly controlled ion path that creates the cleanest analytical environment of any ICP-MS, the NexION 2000 eliminates virtually all maintenance requirements, for unsurpassed instrument uptime.

LumiCoil™ Technology – Revolutionary, new RF coil that's guaranteed for life and requires no water or gas cooling.

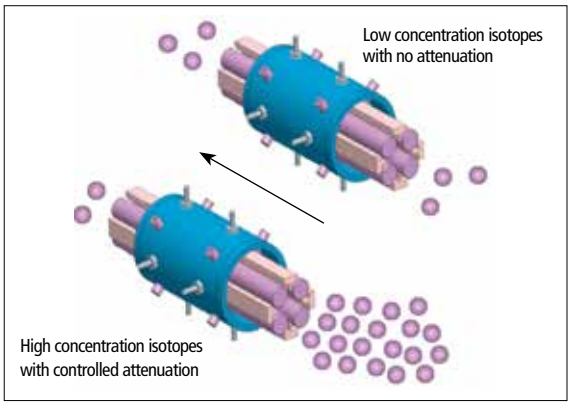
Triple Cone Interface – Features a unique, third cone to produce the most tightly defined ion beam in the industry. These cones are located outside the vacuum for quick and easy access.

Quadrupole Ion Deflector – Turns the ion beam 90° before it enters the Universal Cell, filtering off unionized material and reducing background and interferences for the most accurate results.

Together, the patented combination of the Triple Cone Interface and Quadrupole Ion Deflector controls and focuses the ion beam so effectively that the NexION 2000 is **the only ICP-MS with a cell designed to never need cleaning or replacing**.



The NexION 2000 is the lowest-maintenance ICP-MS on the market.
A: LumiCoil technology; B: Triple Cone Interface; C: Quadropole Ion Deflector



Extended Dynamic Range (EDR) controls the number of ions passing through the Universal Cell on an isotope by isotope basis.

The most efficient analysis every time

Unlike other ICP-MS systems, the NexION 2000, with EDR, lets you adjust signal transmission so you can measure elements with low and high concentrations – in the same sample in the same run. This extends your dynamic range up to 12 orders of magnitude and optimizes productivity while preserving the lifetime of the detector.

For improved accuracy and lower detection limits, the patented Dynamic Bandpass Tuning feature in Reaction mode allows you to adjust the ejection window, efficiently screening out precursor ions while maximizing analyte transmission.

With its powerful capability to address interferences using different modes of operation, the NexION 2000 preloaded methods provide a powerful solution, regardless of the challenge.

NexION's AMS system minimizes the need for dilution prior to analysis.

The highest flexibility regardless of matrix

The NexION 2000 allows you to run samples with high total dissolved solids without manual dilution, using a powerful All Matrix Solution (AMS) sample introduction system.

By providing intelligent dilution of your entire sample, AMS gives you the flexibility to handle high dissolved solids while still being able to measure both high- and low-level elements simultaneously, **reducing reruns by 50%.**

The instrument's matrix tolerance is further enhanced by a new solid-state, free-running RF generator designed by PerkinElmer's experts to deliver superior plasma power and stability. The plasma coupling is affected through a revolutionary, new LumiCoil technology that's guaranteed for life and requires no water or gas cooling.

Introducing more options for sample introduction

Versatile from the very start, the NexION 2000 ICP-MS can be configured with your choice of SMARTintro™ color-coded sample introduction modules to suit a specific application or analysis:

High matrix with AMS (green) – using argon for greater than 100x dilutions to minimize matrix suppression and reduce deposition on the cones when running samples with high total dissolved solids.

High throughput/high matrix with AMS and SC-FAST (black) – double or triple sample throughput with no loss of detection limits.

High purity with SilQ quartz (white) or HF resistance (platinum) – two sample introduction solutions for the ultimate detection limits.

SMALL IN SIZE BIG ON INNOVATION

Free-running RF Plasma Generator

Provides improved matrix tolerance

- Capable of handling the toughest matrices and solvents
- Ability to switch between cool and hot plasma in one run
- Innovative no cooling, no maintenance LumiCoil technology

Universal Cell Technology

Allows you to select your ideal method of interference removal and detection limits

- Three different modes of operation (Standard, Collision, Reaction) and three gas channels deliver complete analytical flexibility and minimized run times

Triple Cone Interface

Virtually eliminates cleaning and maintenance

- Produces the most tightly focused ion beam in the industry, eliminating sample deposition on internal components

Full-Color Plasma View

Enables the visual inspection of components without opening the instrument

- Quickly inspect the instrument's sampler cone, torch, and load coil
- Optimizes plasma sampling depths and simplifies analysis of organics

Quadrupole Ion Deflector

Maximizes uptime and productivity

- Completely removes unionized material, making NexION the only ICP-MS with a cell that never needs cleaning or replacing

Simultaneous Dual Mode Detector

Delivers the fastest data acquisition rates on the market

- 10x faster than competitive systems (100,000 data points/sec)
- Superior analysis times and single particle ICP-MS capability

Small Footprint

Saves valuable bench space

- Compact design features dimensions of just 81 x 69 x 75 cm (W x D x H)

Peripherals to Add Performance

From sample digestion ovens to sample preparation blocks, advanced automation and a complete array of consumables (including cones, torches, nebulizers, and standards), we have everything you need to get the most out of your instrument, your analyses, and your lab.




ROUTINE ANALYSES MADE EASY

Even complex analyses are streamlined and simplified with Syngistix™ for ICP-MS software. Designed to mirror your workflow, the intuitive interface features left-to-right, icon-based navigation that walks you through an analysis, simplifying every step – from startup to method development to data reporting.

Common look, uncommon results

A cross-platform software, Syngistix allows users to move from one technology to another around the lab – including AA, ICP, and ICP-MS – using a common, familiar, intuitive interface for enhanced speed, efficiency, and productivity.

Instrument startup/optimization

SmartTune™ Express – Automatically checks system specifications and tuning procedures before a run to ensure all parameters are met for faster startup and more accurate results.

Routine maintenance alerts – Raise alarms when preventative maintenance is due, helping you keep your instrument in peak operating conditions.

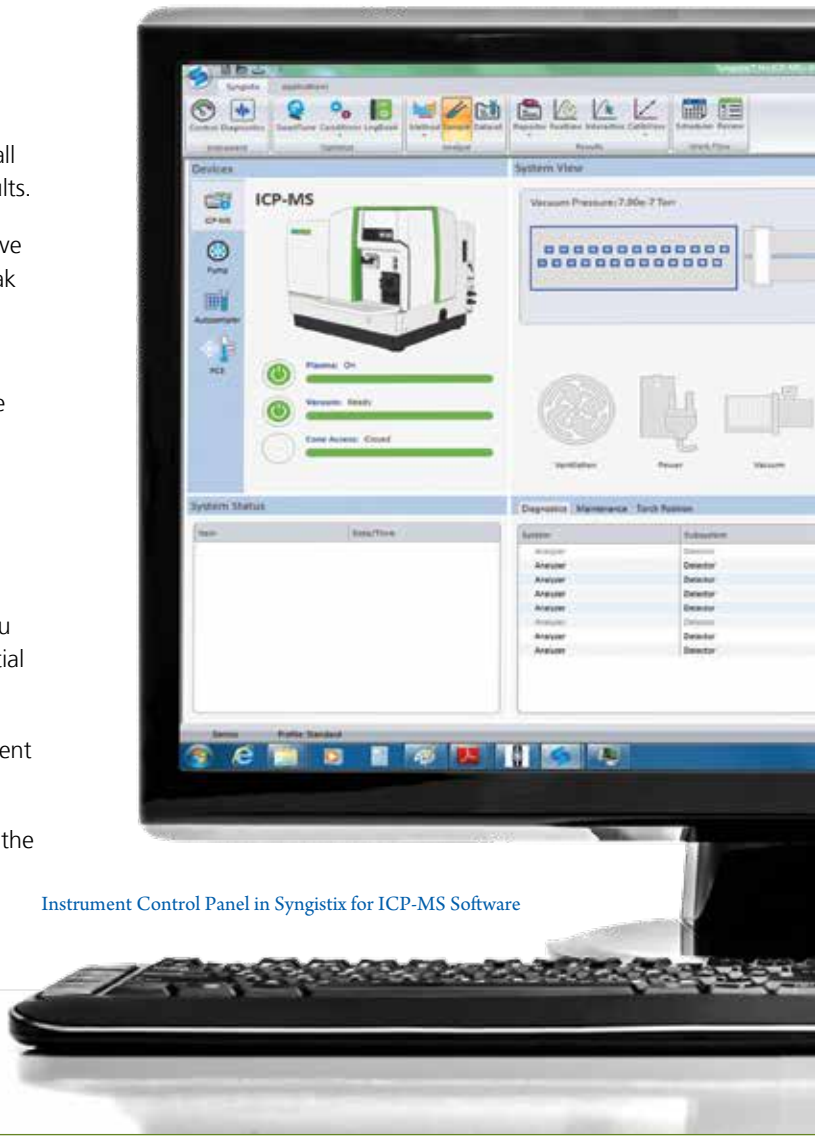
Instrument control panel – Displays real-time information on key instrument components so you can monitor the entire system at a glance.

Method development

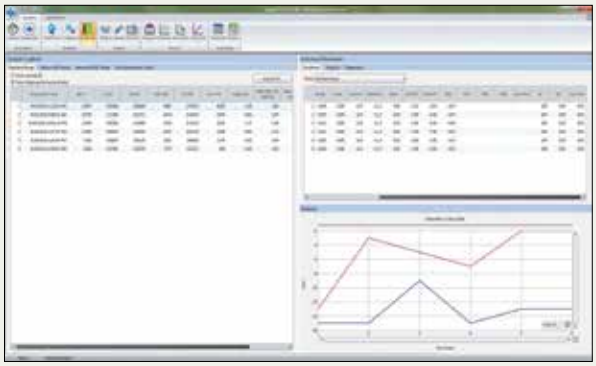
Method environment – Allows you to simply select the elements you want to measure and the software will help you pick the appropriate masses based on abundance and potential interferences.

Pre-set methods – Eliminate the need for method development in many applications.

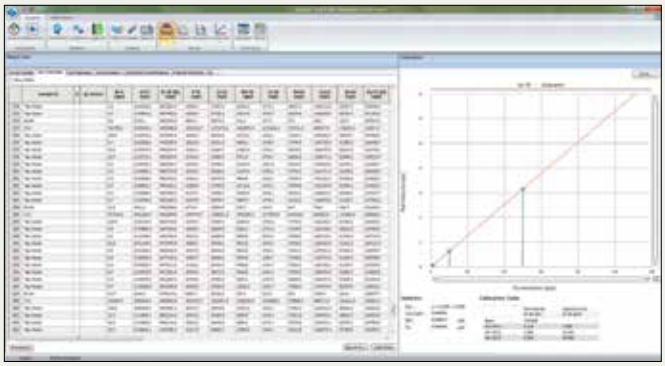
TotalQuant™ – Lets you quickly and simultaneously estimate the concentration of all elements in a sample.



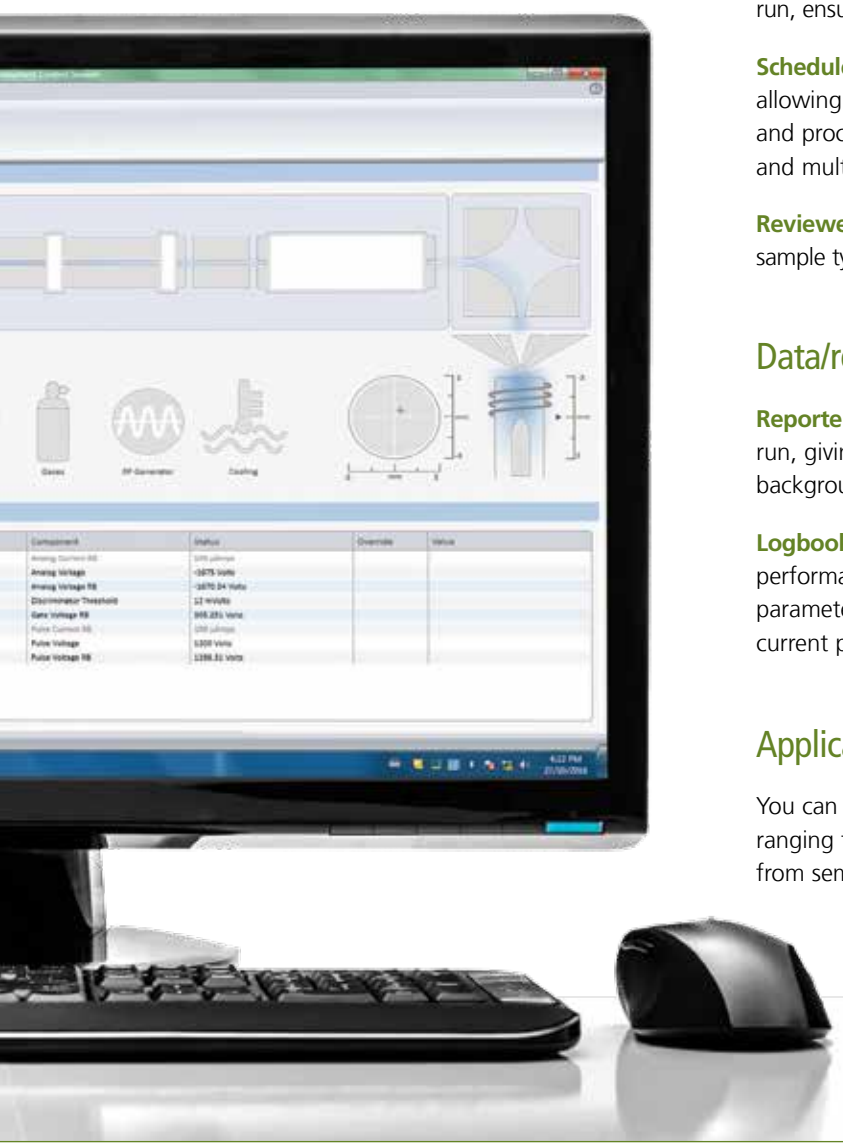
Instrument Control Panel in Syngistix for ICP-MS Software



Logbook feature in Syngistix for ICP-MS Software



Reporter feature in Syngistix for ICP-MS Software



Analysis/run

Flexible quality control checks – Automate the monitoring of everything from calibration to internal standard responses during a run, ensuring reliable data even during unattended operation.

Scheduler – Increases workflow efficiency and data reliability by allowing you to automatically schedule instrument optimizations and procedures, including auto-start and shut down, tuning, and multimethod analyses.

Reviewer – Displays the sample run list, including method and sample types, in a convenient dialog box before the start of a run.

Data/results

Reporter – Displays single- or multiview calibrations during a run, giving you real-time information on detection limits and background equivalent concentrations.

Logbook – Lets you review your complete instrument performance history in a single panel so you can quickly check parameters used on a specific day and track and compare current performance data in real time.

Application specific plug-ins

You can tailor your NexION 2000 ICP-MS to specialized workflows ranging from pharmaceutical testing to speciation analysis and from semiconductor testing to nanoparticle analysis.

ENVIRONMENTAL TESTING MADE SIMPLE

Since high levels of some trace elements can be toxic for humans, plants and animals, the detection of trace elements in environmental samples is essential to ensure that living species are not unduly exposed to toxic levels of any of these elements. Whether it is drinking water, effluents, wastewater, sediments or soil, the NexION 2000 ICP-MS is the complete instrument for the analysis of trace elements in environmental samples.

Speed of analysis meets low maintenance

With the NexION 2000 ICP-MS, you can improve your productivity by:

- Cutting delays between samples with the built-in sample delivery valve for fast uptake and washout times;
- Reducing the acquisition time of your method using the fast switching between gas flows;
- Speeding up the process of standard preparation and reducing preparation errors using the real-time preparation of calibration standards;
- Reducing your sample analyses through the detection of low and high concentration elements in the same run using the per-isotope electronic dilution capability (EDR);
- Optimizing your workflows through the no-maintenance LumiCoil RF coil;
- Minimizing deposits and eliminating cleaning beyond the cones using the three wide-aperture cones and a 90 degree quadrupole ion deflector.

Future proofing regardless of the application

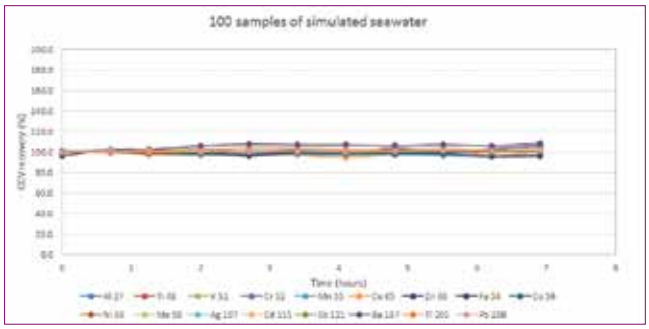
With the NexION 2000 ICP-MS, you'll be able to:

- Run high total dissolved solid samples with no manual dilution using the built-in AMS system;
- Protect your lab against any unexpected changes in regulations using the three gas channels;
- Offer more services leveraging the system's best-in-class nanoparticle detection capabilities.

Be ready for whatever trace element analysis challenges that the future might bring.

Compliance made easy

The NexION 2000 ICP-MS is the world's most robust and versatile ICP-MS, capable of handling harsh matrices as well as rapid changes in sample composition. Plus, you can leverage built-in methods for drinking water, soil, and seawater analysis for ease of implementation and compliance with international regulations such as U.S. EPA 6020, EPA 200.8, ISO 17294.



Long-term stability for the analysis of undiluted seawater.

YOUR PRESCRIPTION FOR ELEMENTAL IMPURITIES COMPLIANCE

Testing for elemental impurities in pharmaceutical products is essential to ensure no adverse effects of the drugs on patients. As such, specific regulations such as USP chapters 232/233 and ICH Q3D have been put in place to protect the consumer.

To address these demanding regulations, we've created a perfectly integrated, perfectly tailored solution – designed around the NexION 2000 ICP-MS – specifically for USP 232/233 and ICH Q3D compliance.

Sample preparation systems

- NexION 2000 can handle high-concentration DMSO for the analysis of samples readily soluble in an organic solvent
- Fast, safe, cost-effective microwave sample preparation for closed-vessel digestion with the Titan MPS

prepFAST auto-dilution systems

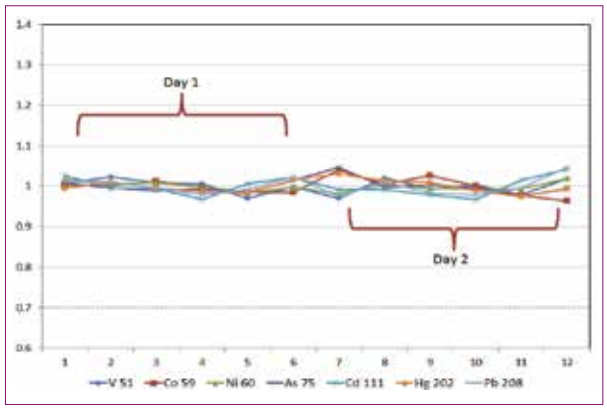
- Specifically designed for USP 233 methods for ultimate speed, control, and precision

Syngistix for ICP-MS software

- Features unique method templates for accurate measurement of metals in pharmaceutical products at the limits defined by USP 232
- Enhanced Security™ capabilities to help regulated laboratories comply with 21 CFR Part 11 and other regulations

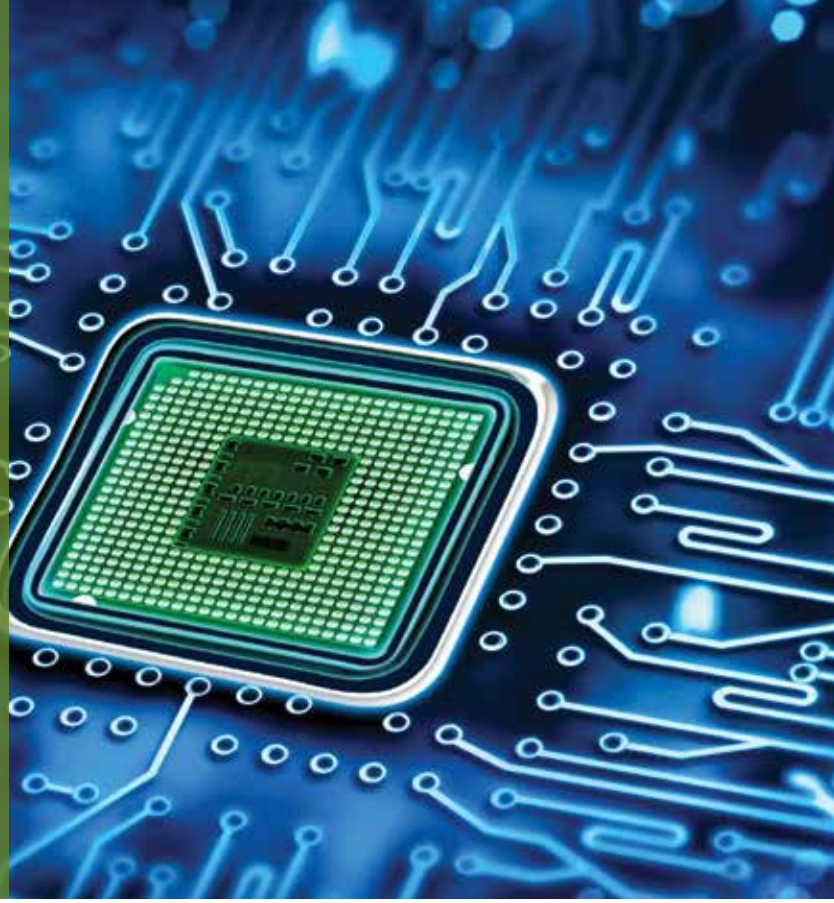
USP 232/233 and ICH Q3D toolkit

- Simplifies compliance with USP 232/233 and ICH Q3D and makes procedures easier with a range of features, including:
  - J value calculator and other tools to assist with standard preparation and method development
  - Method validation tool
  - Standard operating procedures (SOPs)
  - Sample preparation methods
  - Syngistix for ICP-MS Enhanced Security™ software information to assist in 21 CFR Part 11 compliance.



Ruggedness data - 6x stability data taken on two different days (N=12).

GIVING SEMICONDUCTOR TESTING A HELPING HAND



Since even ultratrace levels of impurities can cause defects in silicon-based semiconductor devices, detection and control is vital in the industry.

The unique combination of patented features and unrivaled detection limits in the tailor-made semiconductor version of the NexION 2000 ICP-MS ensures that your products meet the highest quality standards.

Optimized detection limits for every element

- Remove interferences with the only ICP-MS on the market capable of running pure ammonia
- Experience the best background equivalent concentrations for any semiconductor-grade material
- Reduce background and enhance signals with the highest quality quartz sample introduction system (SilQ)
- Dedicated silicon analyses with a hydrofluoric-acid-resistant sample introduction system

More uptime, less maintenance

- Simplify operation and accelerate run times with built-in automation tools
- Enhance productivity with the only ICP-MS that has no ion lens to clean

Space-saving, small footprint

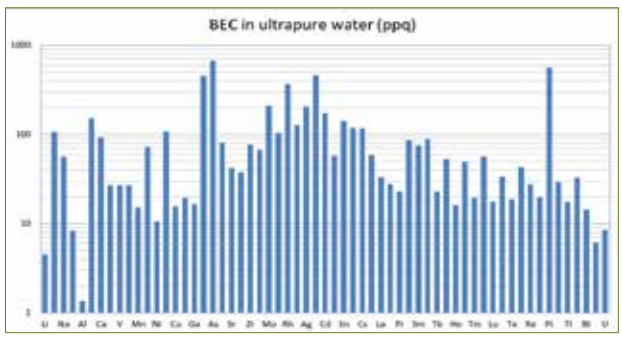
- Preserve precious space in your cleanroom with a compact design measuring just 81 x 69 x 75 cm (W x D x H)

Sub ppt-level analysis of critical elements

- Run your NexION 2000 ICP-MS with a revolutionary cool plasma to remove plasma-based interferences and accurately measure sub-ppt levels of critical trace elements such as Na, K, Ca, and Fe

Detection of metallic colloidal impurities with SP-ICP-MS

- Get greater sample insights with data acquisition rates 10x faster than any other ICP-MS
- Streamline and simplify nanomaterial characterization workflows with a dedicated software module.



Typical background equivalent concentration (BEC) in ultrapure water.

SINGLE CELLS AND NANOPARTICLES HAVE NOWHERE TO HIDE

Single Particle ICP-MS

Fast, accurate nanoparticle characterization is becoming increasingly important as nanotechnology becomes more prevalent in consumer, industrial, biotech, and healthcare products.

Analysts and researchers will benefit from our expertise and the power of the NexION 2000 ICP-MS. It's uniquely equipped to handle the challenges involved with nanoparticle detection and nanomaterial research, delivering the specificity, resolution, and sensitivity required to ensure fast, reliable results.

Single Cell ICP-MS

The transfer of analytes in and out of cells is key to many biological processes. By capturing the signal from a single cell bursting inside the ICP, the NexION 2000 permits scientists to study the cellular uptake of heteroatom-containing drugs, thereby understanding their efficacy.

With its single cell detection capabilities, the NexION 2000 ICP-MS offers a unique opportunity to study the uptake of metals into cells. It can also be used to determine the intrinsic metal content of the cells themselves in their natural environment.

Unmatched speed of acquisition

The fastest data acquisition system on the market captures readings at a rate of 100,000 points per second for precise single particle/cell analysis and allows researchers to look at information generated from each nanoparticle.

Industry-leading software

Best-in-class scanning and data acquisition speeds are combined with proprietary software-based algorithms to provide advanced characterization of nanoparticles and single cells. These modules are the first software solutions designed to handle large quantities of data, making it easy to transfer these efficiently and to interpret them accurately. They combine real-time single particle or single cell acquisition with fast data processing for routine analytical use.

Single Particle ICP-MS Software Module

- Determines the size of a specific nanoparticle
- Quantifies and differentiates between dissolved and particulate fractions of the same analyte
- Measures dissolved concentration, particle composition, particle concentration, size distribution, as well as dissolution and agglomeration tracking.

Single Cell ICP-MS Software Module

- Determines the element mass content in individual cells
- Maps cell populations based on mass content of a specific analyte
- Quantifies and differentiates between intracellular and extracellular metal content.

THE MOST TRUSTED NAME IN ELEMENTAL ANALYSIS

From Atomic Absorption to ICP-OES and ICP-MS, we have been at the forefront of elemental analysis for over 50 years.

Join forces with us and give your laboratory the benefits of cutting-edge instrumentation, consistently excellent consumables, and the industry's largest and most trusted service and knowledgeable support network.

The first company to bring together the simplicity of a collision cell and the detection limits of a true reaction cell in the same ICP-MS instrument, PerkinElmer continues to push the boundaries of the technique and technology with the NexION 2000.

Discover an instrument that offers unparalleled ease-of-use and all-matrix capability. Explore the effortless versatility of the NexION 2000 ICP-MS.

For more information, visit perkinelmer.com/NexION2000

For research use only. Not for use in diagnostic procedures.

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PREPARING YOUR LAB

NexION 2000 ICP-MS

ICP - Mass Spectrometry

Preparation Checklist

- Environmental conditions
- Electrical requirements
- Space requirements
- Exhaust ventilation
- Coolant requirements
- Argon gas requirements
- Cell gas requirements

Introduction

PerkinElmer ICP-MS instruments are complete systems with the exception of the following items which must be provided by the customer: electrical power, exhaust vents, argon gas supplies with approved regulator, cell gas supply with approved regulators for reactive gases, and coolant system.

Required Environmental Conditions

The laboratory environment in which the NexION® 2000 ICP-MS instrument is installed should meet the following conditions:

- The room temperature should be between 15 and 30 °C (59-86 °F) with a maximum rate of change of 3 °C (5 °F) per hour.
- The relative humidity should be between 20 and 80%, non-condensing. For optimum performance, the room temperature should be controlled at 20 ±2 °C (68 ± 3.6 °F), and the relative humidity should be between 35 and 50%.
- The instrument is certified for operation at elevations up to 2000 meters (6562 ft.) above sea level.

In addition, the NexION 2000 ICP-MS instrument should be located in an area that is:

- Indoors
- Free of smoke, dust and corrosive fumes
- Not prone to excessive vibration
- Out of direct sunlight
- Away from heat radiators

In order to minimize contamination problems, a dust-free environment is necessary. For ultra-trace techniques, environmental contamination becomes a limiting factor in the analysis. To quantitate ubiquitous elements such as Fe, Ca, K, Na, etc. below 1 ppb (µg/L), a class 1000 environment is necessary for sample preparation and analysis. This is not an indication of the performance limitations of the instrument, but a recommendation for an ultra-clean environment.

The NexION 2000 ICP-MS can be installed into a mobile laboratory if vibration is isolated.

PerkinElmer®
For the Better

Storage Conditions

- Ambient temperature: –20 °C to +60 °C (–4 °F to +140 °F).
- Relative humidity 20% to 80%, without condensation.
- Altitude: in the range 0 m to 12,000 m (sea level to 39,370 ft.).

NOTE: When you remove the instrument from storage and before you put it into operation, allow it to sit for at least a day under the required environmental conditions.

EXPLOSIVE ATMOSPHERE. *This instrument is not designed for operation in an explosive atmosphere.*

General Laboratory Requirements

Laboratory Hygiene

- Keep the work area scrupulously clean to avoid contaminating your samples and to maintain a safe working environment. Clean up spilled chemicals immediately and dispose of them properly.
- Do not allow waste to accumulate in the work area. Dispose of waste correctly.
- Do not allow smoking in the work area. Smoking is a source of significant contamination and also a potential route for ingesting harmful chemicals.
- Do not store, handle, or consume food in the work area.
- Ensure that the area around, under, and behind the instrument is clear of any dirt and dust to prevent their entry into the instrument's interior, which could cause a negative effect on performance.

Working with Chemicals

Some chemicals used with the instrument may be hazardous or may become hazardous after completion of an analysis.

- Use, store, and dispose of chemicals in accordance with the supplier's recommendations and the applicable national, state, and/or local regulations.
- Do NOT put open containers of solvent near the instrument.
- Store solvents in an approved cabinet (with the appropriate ventilation) away from the instrument.
- Wear appropriate eye protection at all times while handling chemicals. Depending on the types of chemicals you are handling, wear safety glasses with side shields, or goggles, or a full-face shield.
- Wear suitable protective clothing, including gloves if necessary, resistant to the chemicals you are handling.
- When preparing chemical solutions, always work in a fume hood that is suitable for the chemicals you are using.
- Perform sample preparation away from the instrument to minimize corrosion and contamination.
- Clean up spills immediately using the appropriate equipment and supplies, such as spill-cleanup kits.

Location and Space Requirements

Space Requirements

The system should be located near the required electrical and gas supplies as well as the coolant supply. The roughing pump can be located up to a distance of 2 meters (6.5 ft.) from the instrument – up to 3 meters (10 ft.) using optional kit. There can be no more than 2 to 3 bends or couplings in the vacuum hose over its entire length. The diameter of the hose must remain at least 25 mm (1 in.) ID.

The NexION 2000 ICP-MS is designed to operate on a bench 66-91 cm high (26-36 in. high). PerkinElmer offers a bench designed for the NexION 2000 ICP-MS (Part No. N8142011). This bench is 76 cm deep x 89 cm wide (135 cm with shelf extended) x 74 cm high (30 in. deep x 35 in. wide [53 in. with shelf extended] x 29 in. high). This bench has an acoustic barrier to muffle the sound of the roughing pump.

Allow space on the right and left sides of the instrument for the workstation or any accessories. The main air intake is on the left-hand side of the instrument and a minimum of 45 cm (18 in.) clearance is required. In operation, the NexION 2000 ICP-MS can be operated with the back within 1 inch from a wall. Access for most service procedures is through the front of the instrument. However, some infrequent service procedures may require a space of at least 30 cm (12 in.) behind the instrument.

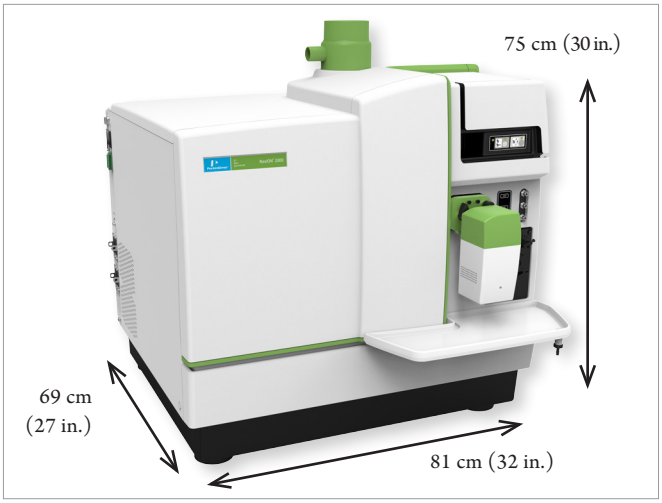


Figure 1. Dimensions of NexION 2000 ICP-MS spectrometer.

System Layout

The ICP-MS system consists of the main instrument, roughing pump, the computer controller assembly, and a printer. The dimensions of the instrument are given in Figure 1. Table 1 lists the dimensions of the instrument and the computer. Table 2 lists the dimensions of the peripherals and accessories.

Table 1. Dimensions of the Instrument and Computer.

Instrument	Width cm (in.)	Height cm (in.)	Depth cm (in.)	Weight kg (lb.)
NexION 2000 ICP-MS	81 (32)*	75 (30)	69 (27)	150 (330)
Computer	Dimensions will vary by model			
Monitor	Dimensions will vary by model			
Printer	Dimensions will vary by model			

**Width by Depth including the shipping handles is 105 cm (41 3/8 in.) x 76 cm (29 3/4 in.)*

The NexION 2000 ICP-MS can be positioned in either a linear or an L-shaped configuration. In the L-shaped configuration, the computer and printer are positioned on one leg of the L. The instrument and an accessory table make up the other leg. A recommended workstation layout is shown in Figure 2.

There should be sufficient space near the spectrometer for the various accessories (autosampler, laser etc.). It is recommended that the accessories be placed on a movable cart or table to allow for easy service access.

The system computer may be placed on the instrument bench or a separate computer table.

Table 2. Dimensions of the Peripherals and Accessories.

Peripherals	Width cm (in.)	Height cm (in.)	Depth cm (in.)	Weight kg (lb.)
Vacuum Roughing Pump	50 (20)	30 (12)	30 (12)	45 (100)
Cooling System Refrigerated Chiller (PolyScience® 6150 or 6160)	36.8 (14.5)	57.5 (22.5)	70.2 (27.6)	89 (196)
S10 Autosampler	44 (17)	37 (15)	34 (14)	4 (9)

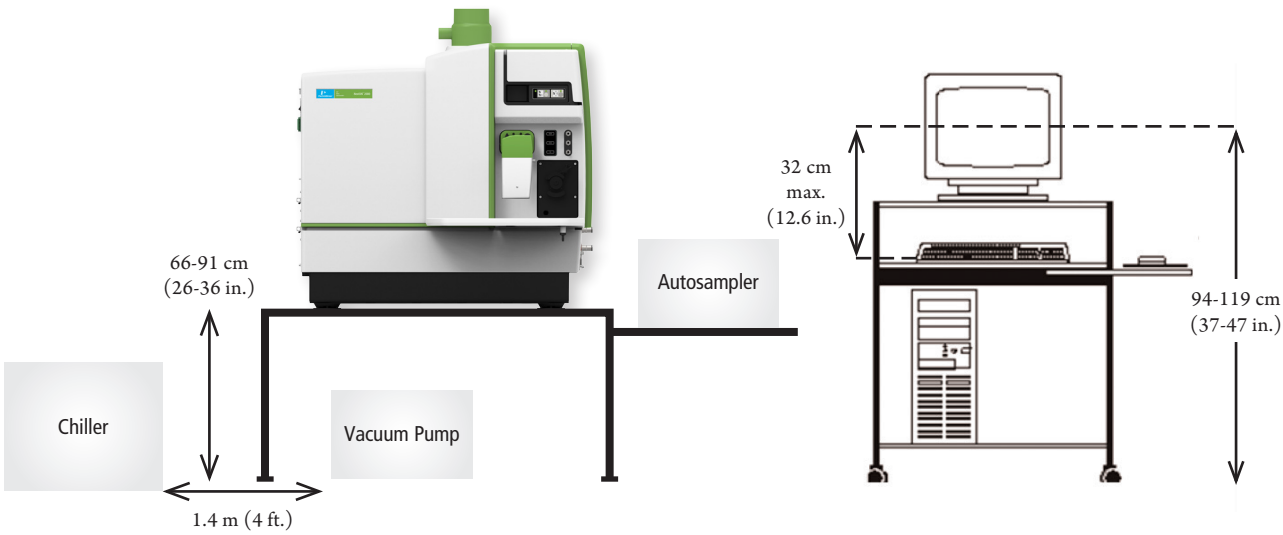


Figure 2. Recommended workstation layout.

Drain Vessels

A drain vessel is supplied with the NexION 2000 ICP-MS. The vessel is made of HDPE (high density polyethylene) and is used to collect the effluent from the ICP sample-introduction system. The NexION 2000 ICP-MS also has a torch box drain with a drain line and a small waste bottle. Any waste accumulated in either of these bottles should be disposed of in compliance with your local environmental regulations.

The drain vessel should be placed to the right of the instrument. The drain vessel should NOT be stored in an enclosed storage area. The drain system should be checked regularly and replaced when necessary. Should it become necessary to replace the drain vessel, it should be made from a material not likely to be impacted by samples being analyzed. Glass or other brittle materials must NOT be used.

Liquid waste should always be segregated and clearly labeled. Never mix organic and inorganic liquids in the same drain vessel. Organic and inorganic drain vessels should not be stored in the same area.

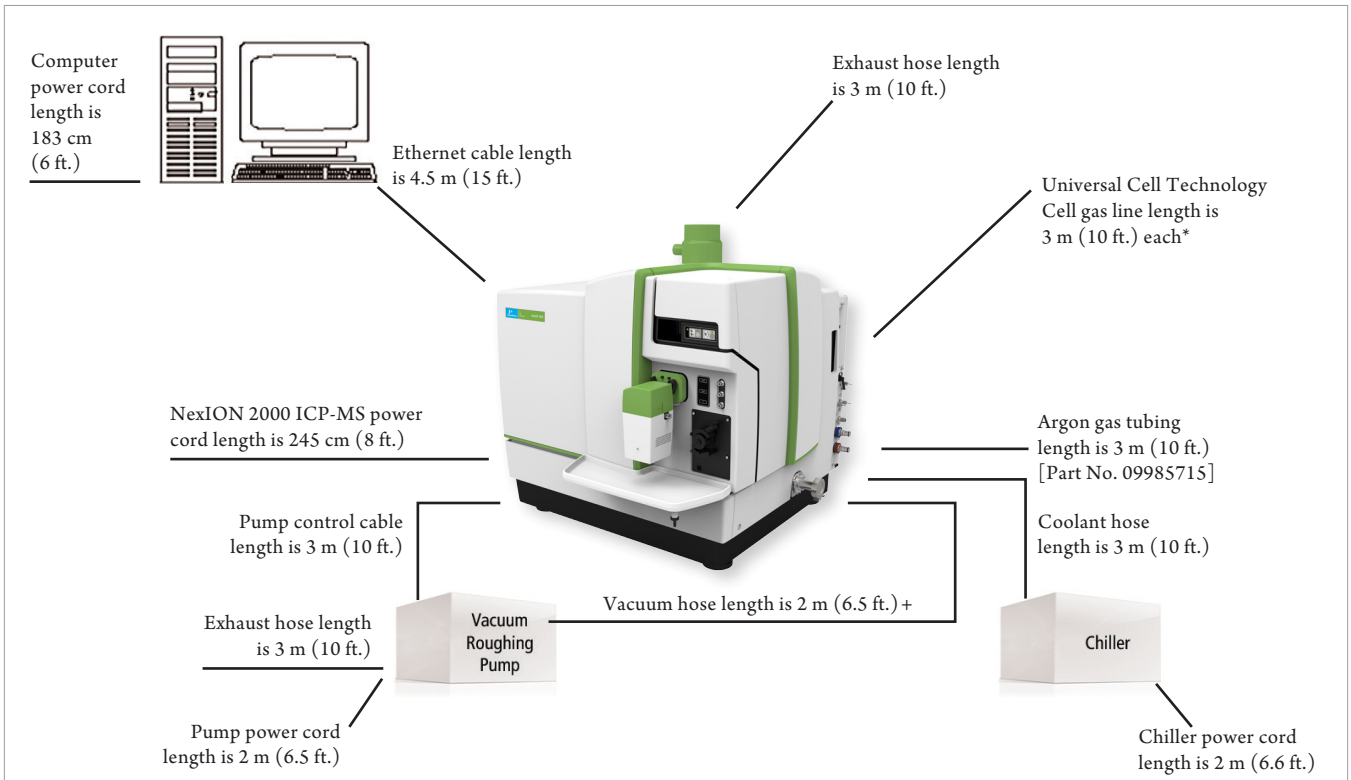
Connections

Illustrated below are the connection locations and lengths.

Safe Handling of Gas Cylinders

NOTE: The permanent installation of gas supplies is the responsibility of the user and should conform to local safety and building codes.

- Fasten all gas cylinders securely to an immovable bulkhead or a permanent wall.
- When gas cylinders are stored in confined areas, such as a room, ventilation should be adequate to prevent toxic or explosive accumulations. Move or store gas cylinders only in a vertical position with the valve cap in place.
- Locate gas cylinders away from heat or ignition sources, including heat lamps. Cylinders have a pressure-relief device that will release the contents of the cylinder if the temperature exceeds 52 °C (125 °F).
- When storing cylinders external to a building, the cylinders should be stored so that they are protected against temperature extremes (including the direct rays of the sun) and should be stored above ground on a suitable floor.
- Mark gas cylinders clearly to identify the contents and status (full, empty, etc.).
- Do NOT attempt to refill gas cylinders yourself.



* Cell gas tubing is 3 m long (10 ft.) stainless steel. Four lengths are shipped with each instrument. Additional cell gas tubing 3 m (10 ft.) lengths can be ordered using Part No. N8141269.

\+ Optional 3 m vacuum hose (Part No. WE024084) and pump control cable (Part No. N8140195).

Figure 3. Location and length of connections.

- Use only approved regulators and hose connectors. Left-hand thread fittings are used for fuel gas tank connections, whereas right-hand fittings are used for oxidant and support gas connections.
- Arrange gas hoses where they will not be damaged or stepped on and where things will not be dropped on them.
- It is strongly recommended that Universal Cell Technology™ (UCT) gases are installed in a gas cabinet with adequate ventilation and located within 3 m (10 ft.) from the instrument.

Facilities Requirements

Table 3 provides information on the gas and liquid services required for the NexION 2000 ICP-MS. Tables 4 and 5 show the electrical supply requirements and approximate power consumption of the NexION 2000 ICP-MS and its major accessories.

Table 3. Gas and Liquid Services Required for the NexION 2000 ICP-MS.

Gases	Operating Pressure	Flow at Operating Pressure
Argon (for purity, see Page 8)	586 – 690 kPa (85 – 100 psig) min-max	14-20 L/min (typical)
Ammonia ≥ 99.999% pure (for UCT instruments only)	@ 103 ± 34 kPa (15 ± 5 psig) operating	0.6 mL/min (typical)
Helium ≥ 99.9999% pure (for UCT instruments only)	@ 172 ± 14 kPa (25 ± 2 psig) operating	5 mL/min (typical)
Cooling Liquid	344 ± 14 kPa (60 ± 2 psig)	3.8 L/min (1.0 gpm) minimum 4.7 L/min (1.25 gpm) typical

Electrical Requirements

Power to NexION 2000 ICP-MS shall meet the requirements specified in Table 4. Table 5 provides the electrical supply requirements and approximate power consumption of the peripherals. If the power line is unstable, fluctuates, or is subject to surges, additional control of the incoming power may be required.

PerkinElmer instruments will normally operate within a ±10% range of the specified voltage and within ±1 Hz of the specified frequency, unless otherwise noted. If the power line is unstable, fluctuates in frequency, or is subject to surges or sags, additional control of the incoming power may be required. A means of electrically grounding the instruments and accessories must be available. Power to the instrument should be clean from excessive high frequency noise.

The ANSI-IEEE C62.41* recommends <10 volts normal mode (signal to ground) and <1/2 volt common mode** (neutral to ground). Can be verified by an oscilloscope or power meter.

* *American National Standards Institute (ANSI) is a private, non-profit organization that administers and coordinates the U.S. voluntary standards.*

* *Institute of Electrical and Electronics Engineers (IEEE) is a professional association with its corporate office in New York City.*

** *Excessive common mode (neutral to ground) noise can be caused by a poor building ground. The NEC (National Electrical Code) requires that the building ground resistance does not exceed 25 ohms. This can be verified with an earth ground test.*

The vacuum roughing pump is provided with a mains supply plug suitable for the country of installation (shown in Figure 4) and must be connected to a separate branch circuit/wall outlet. It requires one 12A single-phase 200-240V outlet – see Table 5. See Figure 3 (Page 4) for the location and lengths of hoses, lines, cords, and cables.

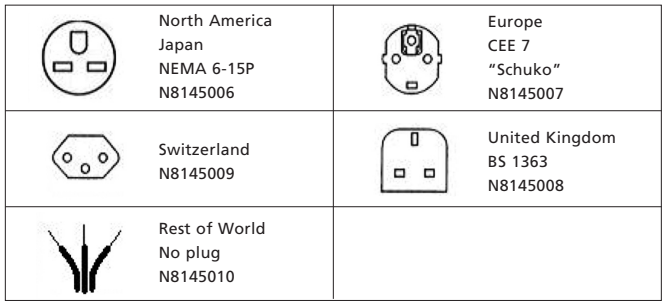


Figure 4. Vacuum roughing pump mains supply plugs.

WARNING

MAGNETIC SUSCEPTIBILITY. *Do NOT place NexION 2000 ICP-MS close to any other instrumentation or equipment that emits high magnetic fields. External magnetic field strength must not exceed 10 Gauss at NexION 2000 ICP-MS.*

Table 4. NexION 2000 ICP-MS Power Specifications.

Power Consumption:	
Maximum Volt Amperes (total)	3200 VA
Maximum Continuous Current	16A
Voltage Amplitude Specification:	
Operating Voltage	200-240 V
Allowable Voltage Variance	±10%
Maximum Allowable Percent Sag	5%
Maximum Allowable Percent Swell	5%
Frequency Specification:	
Operating Frequency	50/60 Hz

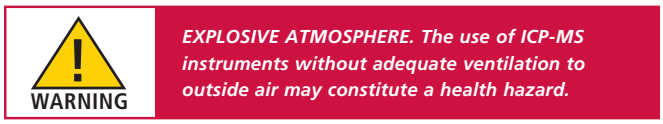
Table 5. Electrical Requirements for NexION 2000 ICP-MS Peripherals.

Equipment	Voltage (AC)	Power
Computer	100-127V/200-240V, 50/60Hz	800W typical
Printer	100-127V/220-240V, 50/60Hz	800W typical
Roughing Pump	200-240V, 50/60Hz 12A	1500W
Cooling System Refrigerated Chiller PolyScience® 6150 or PolyScience® 6160	 240V, 50Hz, 12.2A 230V, 60Hz, 12.2A	 2400W 2400W

Mains Connection

The instrument is shipped with one 2.4-meter (8 ft.) mains cord terminated by an IEC 60309 connector rated 30A by UL (North America) and 32A by VDE (International) for 250V as shown in Figure 5.

Figure 5. IEC 60309 connector.



Exhaust and Ventilation Requirements

Figure 6. Location of exhaust ports.

The NexION 2000 ICP-MS has a single exhaust port.

The NexION 2000 ICP-MS exhaust port is located on the top of the instrument (see Figure 6). The center of the exhaust port is located 35.5 cm (14 in.) from the right side of the instrument and 35.5 cm (14 in.) from the back of the instrument.

The exhaust port exhausts the following:

- Plasma heat and fumes
- Vacuum pump – including cell gases
- Cell gas assembly manual vent/purge switch

The exhaust venting system is required to remove combustion fumes and vapors from the torch housing, and to remove reaction cell gas. Exhaust venting is important for four reasons:

- It protects laboratory personnel from toxic vapors that may be produced by some samples.
- It minimizes the effects of room drafts and the laboratory atmosphere on ICP torch stability.
- It helps protect the instrument from corrosive vapors which may originate from the samples.
- It removes dissipated heat which is produced by the ICP torch.

The exhaust port always has 1.25 cm (0.5 in.) of water (125 Pa) static pressure. The exhaust ports should be connected directly to flexible exhaust hoses. Use the vent adapter to attach the roughing pump exhaust hose to the torch box exhaust port.

The torch box exhaust must be connected and set to the correct exhaust flow rate or the NexION 2000 ICP-MS will not ignite the plasma.

We recommend using the 100-mm (4 in.) exhaust hose shipped with the instrument. The NexION 2000 ICP-MS is supplied with 3 meters (11 ft.) of 100-mm (4 in.) flexible tubing. This tubing permits the movement of the instrument without disconnecting the vents from the laboratory system. See Tables 6 and 7 for vent specifications.

In operation, the roughing pump produces 1200-1500W (4100-5100 BTU/hr.) of heat. The heat from the roughing pump is released into the laboratory. Proper ventilation is required to remove this heat from the room or any enclosure in which the pump is situated. There must be a minimum of 15 cm (6 in.) clearance between the rear of the pump and any vertical surface as well as a minimum of 35 cm (14 in.) clearance in the front. It should be located away from other heat-generating sources such as the liquid cooling system. The ambient air temperature must NOT exceed 40 °C at the roughing pump control electronics.

The heat from the refrigerated chiller is also released into the laboratory during operation. The refrigerated chiller will produce a maximum of 3000W (10,000 BTU/hr.) of heat. Proper ventilation is required to remove this heat from the room or any enclosure in which the liquid cooling system is situated. Adequate clearance should be allowed on the front, sides, and rear of the unit for access to connections and components. The front and rear vents of the unit must be a minimum of 61 cm (2 ft.) away from walls or vertical surfaces so air flow is not restricted. It should be installed at least 1.4 meters (4 ft.) away from any heat-generating sources such as the roughing pump or other instruments. Proper ventilation is critical for the chiller – its ambient air temperature must never exceed 30 °C.

Venting System Recommendations

The exhaust flow rate at the instrument (the ability to vent the system) is dependent on customer-provided blower, the duct length, material, and the number of elbows or bends used. If an excessively long duct system or a system with many bends is used, a stronger blower may be necessary to provide sufficient exhaust volume at the instrument. Smooth stainless steel tubing should be used instead of flexible stainless steel tubing, where flexibility is not required, to reduce system friction loss or "drag." A length of smooth stainless steel ducting has 20-30% less friction loss than a comparable length of flexible ducting. When smooth stainless steel tubing is used, elbows must be used to turn corners. These elbows should turn at no more than 45 degrees between straight sections to reduce friction losses, and the number of elbows should be minimized.

Additional recommendations on the venting system include:

- The duct casing and venting system should be made of materials suitable for temperatures as high as 70 °C and be installed to meet local building code requirements.
- Locate the blower as close to the discharge outlet as possible. All joints on the discharge side should be airtight, especially if toxic vapors are being carried.
- Equip the outlet end of the system with a backdraft damper and take the necessary precautions to keep the exhaust outlet away from open windows or inlet vents and to extend it above the roof of the building for proper dispersal of the exhaust.
- Equip the exhaust end of the system with an exhaust stack to improve the overall efficiency of the system.
- For best efficiency, make sure the length of the duct that enters into the blower is a straight length at least ten times the duct diameter. An elbow entrance into the blower inlet causes a loss in efficiency.
- Provide make-up air in the same quantity as is exhausted by the system. An airtight lab causes an efficiency loss in the exhaust system.
- Ensure that the system is drawing properly by placing a piece of cardboard over the mouth of the vent.
- Equip the blower with an indicator light located near the instrument to indicate to the operator when the blower is on.

Cleaning the Instrument

Before using any cleaning or decontamination methods, except those specified by the manufacturer, users should check with the manufacturer that the proposed method will not damage the equipment.

Cleaning procedures can be found in the NexION 2000 ICP-MS Maintenance Guide.

Coolant Requirements

The NexION 2000 ICP-MS system requires a regulated source of filtered coolant. PerkinElmer coolant (Part No. WE016558) must be used on the NexION 2000 ICP-MS instrument. The chiller operating pressure should be 413 ±13 kPa (60 ±2 psi). A coolant flow of at least 3.8 L/min (1.0 gpm) is required.

A cooling fluid containing a corrosion inhibitor is specified to protect the aluminum components of the cooling system and the interface. Ten liters of pre-mixed coolant (Part No. WE016558) is supplied for the refrigerated chiller. A refrigerated chiller is required. A simple heat exchanger cannot be used.

The 60 Hz refrigerated chiller comes with a NEMA L6-15P connector.

For 50 Hz installations, the refrigerated chiller comes with a CEE 7 connector.

Table 6. Instrument Exhaust Ventilation Requirements.

	Required airflow measured with hose connected to NexION	Required air velocity measured with hose connected to NexION	Reference airflow measured with hose disconnected from NexION	Reference air velocity measured with hose disconnected from NexION
Instrument Exhaust Port	73 – 100 ft^3/min @ 0.5" H_2O (35 – 47 L/sec @ 125 Pa)	836 – 1145 ft/min @ 0.5" H_2O (4.3 – 5.8 m/sec @ 125 Pa)	110 – 150 cfm @ 0" H_2O (52 – 71 L/sec @ 0 Pa)	1260 – 1719 ft/min @ 0" H_2O (6.4 – 8.7 m/sec @ 0 Pa)

Table 7. Hose Diameter and Venting Capabilities.*

Hose	Hose Diameter	Heat Vented Outside Lab Watts (BTU/hr)
Instrument Exhaust	100 mm (4 in.)	1800 (6142)

Gas Requirements

Argon Gas Requirements

Argon is used as the ICP torch gas with the NexION 2000 ICP-MS. The argon-purity criteria are listed below.

Purity	≥ 99.996%
Oxygen	< 5 ppm
Hydrogen	< 1 ppm
Nitrogen	< 20 ppm
Water	< 4 ppm

It is also important to note that the amount of krypton impurity in the argon gas will negatively affect the ability of the instrument to quantitate selenium. The best selenium detection limits are achieved when krypton < 0.1 ppb (0.0001 ppm).

Either liquid or gaseous argon can be used with an ICP-MS system. The choice of liquid argon or gaseous argon tanks is determined primarily by the availability of each and the usage rate. Liquid argon is usually less expensive per unit volume to purchase, but cannot be stored for extended periods. If liquid argon is used, the tank should be fitted with an over-pressure regulator which will vent the tank as necessary in order to prevent the tank from becoming a safety hazard.

Gaseous argon tanks do not require venting and consequently can be stored for extended periods without loss. A tank of liquid argon, which will produce 4300 ft^3 of argon gas, will last for approximately 100 hours of continuous ICP running time. A tank of gaseous argon will last 5 to 6 hours of ICP running time. The normal argon gas usage is 14-20 L/min.

A cylinder regulator (Part No. 03030284), which can be used with argon, is available from PerkinElmer. The regulator can be used with CGA 580 fittings and includes a color-coded hose with 1/4-inch Swagelok® fittings to permit direct connection to the regulator and to the instrument gas controls. Liquid argon may be purchased from your gas supplier.

PerkinElmer ICP-MS instruments include 3 meters (10 ft.) of the tubing necessary for connecting argon to the instrument (Part No. 09985715).

Cell Gas Requirements

The NexION 2000 ICP-MS systems are equipped with three (3) Universal Cell Technology channels. The customer is required to supply the reaction and/or collision gas (also referred to as cell gas) for introduction into the Universal Cell. The type of gas used varies with the customer application, but the most common cell gases used with the NexION 2000 ICP-MS are ultra-pure helium and anhydrous ammonia.

Depending on the NexION 2000 ICP-MS configuration, PerkinElmer provides the pressure regulator(s), gas delivery tubing, and purifier for use with UHP helium and/or UHP anhydrous ammonia. The pressure regulators are capable of supplying the cell gases at the working pressures listed in Table 8.

The NexION 2000 ICP-MS is shipped with the regulator-to-cylinder fittings shown in Table 8. The cell gas cylinders should use this type of fitting when ordered from your local gas supplier. The cleanliness of the cell gas lines is critical for analytical performance. There should be no additional fittings between the regulator, purifier, and the instrument.

The NexION 2000 ICP-MS requires specially cleaned stainless steel cell gas lines (included). Additional 3-meter lengths of specially cleaned cell gas tubing are available from PerkinElmer (Part No. N8141269).

The cell gases used by the universal cell must meet the specifications as shown in Table 9. The purity of helium entering the instrument must be ≥ 99.9999% pure. This can be accomplished by using a gas cylinder with a built-in purifier, or by using ≥ 99.999% pure helium cylinder together with the special gas purifier provided with each instrument. A dedicated UHP helium cylinder is required; house helium supplies must not be used. The purity of any other cell gas must be ≥ 99.999% pure.

The ammonia gas is consumed at a typical rate of 0.6 mL/min; therefore, only a very small cylinder (60 L, 2 ft^3) of gas is required. Cylinders should be secured upright in a ventilated enclosure such as a cabinet or fume hood. For additional types of cell gases not listed in Table 8, the customer must purchase a UHP double-stage regulator capable of supplying up to 7 mL/min at 103 kPa (15 psig). A suitable double-stage regulator with the correct cylinder fittings can be purchased from your local gas supplier.

Table 8. Cell Gas Requirements for the NexION 2000 ICP-MS.

Cell Gas Regulator Supplied	Regulator-to-Cylinder Connection	Cell Gases Used at Installation	Operating Flow Rate and Pressure
UHP dual stage for He (Part No. N8145021)	CGA 580	UHP He ≥ 99.9999% pure	5 mL/min @ 172 ± 14 kPa (25 ± 2 psig)
UHP dual stage for NH_3 (Part No. N8152490) Must be purchased separately – does not ship with the instrument	CGA 660	UHP NH_3 ≥ 99.999% pure	0.6 mL/min @ 103 ± 34 kPa (15 ± 5 psig)

Table 9. Cell Gas Purity Requirements.

Gas	Purity Grade	Impurity	Specification	Notes
Helium (He)	≥ 99.9999%	O_2 H_2O THC N_2	< 0.01 ppm < 0.02 ppm < 0.1 ppm < 5 ppm	This grade of gas can be input directly into the NexION ICP-MS. External purifier not required.
Helium (He)	≥ 99.999%	O_2 H_2O THC N_2	< 4 ppm < 5 ppm < 0.5 ppm < 8 ppm	This grade of gas requires the use of an external gas purifier (supplied).
Ammonia (NH_3)	≥ 99.999%	O_2 H_2O THC N_2	< 4 ppm < 2 ppm < 3 ppm < 6 ppm	This grade of gas can be input directly into the NexION ICP-MS.

PerkinElmer, Inc.
940 Winter Street
Waltham, MA 02451 USA
P: (800) 762-4000 or
(+1) 203-925-4602
www.perkinelmer.com

PerkinElmer®

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

012773_01 09931198A PKI

DX Family of Autosamplers

All DX autosampler components are composed of inert, chemically resistant materials for extended lifespan. Dual X-rails and large-diameter Z-rail provide precise sampling, virtually eliminating missed samples–even on microtiter plates.

Benefits:

- Robust dual rail system
- Dual flowing rinse station
- Precision sampling
- Reset probe - prevents probe damage
- Flexible rack configurations

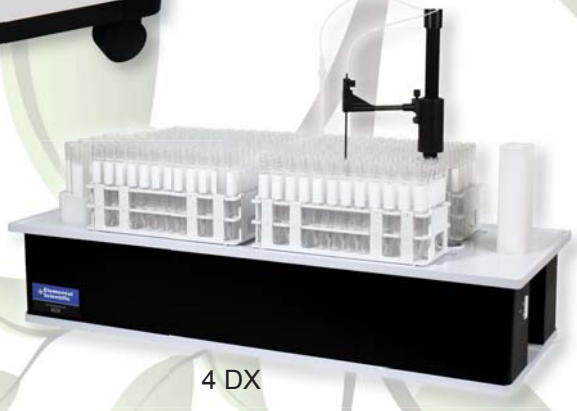
DX Autosamplers Include:

2 Sample Probes
Standards Rack (10 positions)
4 Large Racks (21, 40, 60, 90 positions)
Pk (10 ea) 50 mL Standards Vials
Pk (60 ea) 15 mL Sample Vials
Rinse Bottle

Specialty autosamplers include different equipment. Contact your sales representative for details.


14 DX

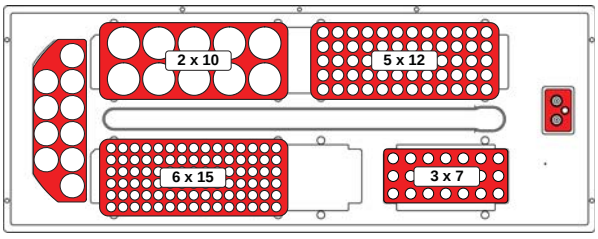
8 DX


4 DX


2 DX


Micro DX

Example of 4 DX Rack Configuration



40, 60 and 90 position large racks, 21 position micro rack

DX Autosamplers		
Autosampler	**Description**	**Part Number**
2 DX	2 DX autosampler with dual, flowing rinse	N0777212
4 DX	4 DX autosampler with dual, flowing rinse	N0777213
8 DX	8 DX autosampler with dual, flowing rinse	N0777342
8 DX Benchtop	8 DX benchtop autosampler with dual, flowing rinse	N8145400
14 DX	14 DX autosampler with dual, flowing rinse	N0777319
14 DX Benchtop	14 DX benchtop autosampler with dual, flowing rinse	N8145329
Specialty DX Autosamplers		
2 DX Semi	2 DX Semiconductor ultrapure autosampler with PTFE autosampler deck and 2 independent rinse control valves	N0777348
SC-Micro DX	Micro DX autosampler with instrument-pumped, dual, flowing rinse stations and a small footprint	N8145071

See **page 2** for ordering information and a complete listing of PerkinElmer offices.

Purchasing Divison
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

State of West Virginia
Request for Quotation
13 — Equipment

Proc Folder: 317430

Doc Description: Inductively Coupled Plasma Mass Spectrometry (ICP-MS)

Proc Type: Central Purchase Order

Date Issued	Solicitation Closes	Solicitation No	Version
2017-05-01	2017-05-18 13:30:00	CRFQ 1400 AGR1700000016	1

BID RECEIVING LOCATION

BID CLERK
DEPARTMENT OF ADMINISTRATION
PURCHASING DIVISION
2019 WASHINGTON ST E
CHARLESTON WV 25305
US

VENDOR

Vendor Name, Address and Telephone Number:

PerkinElmer Health Sciences, Inc.
710 Bridgeport Ave.
Shelton, CT 06484
Phone number: 800-762-4000

FOR INFORMATION CONTACT THE BUYER

Tara Lyle
(304) 558-2544
tara.l.lyle@wv.gov

Signature X **FEIN #** 04-3361624 **DATE** May 12th, 2017

All offers subject to all terms and conditions contained in this solicitation

Bid in accordance with PerkinElmer Health Sciences, Inc. Quotation 21268907 attached.

ADDITIONAL INFORMAITON:

The West Virginia Purchasing Division for the agency, the West Virginia Department of Agriculture, is soliciting bids for a one-time purchase of an Inductively Coupled Plasma Mass Spectrometry (ICP-MS), workstation PC, and software with shipping, installation, validation, warranty, training, and service, per the attached documentation.

INVOICE TO	SHIP TO
PROCUREMENT OFFICER 304-558-2221 AGRICULTURE DEPARTMENT OF ADMINISTRATIVE SERVICES 1900 KANAWHA BLVD E CHARLESTON WV25305-0173 US	AUTHORIZED RECEIVER 304-558-2227 AGRICULTURE DEPARTMENT OF REGULATORY PROTECTION DIVISION 313 GUS R DOUGLAS LN, BLDG 11 CHARLESTON WV 25312 US

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
1	ICP-MS Autosampler, computer, software	1.00000	EA	132,067.65	132,067.65

Comm Code	Manufacturer	Specification	Model #
41000000	PerkinElmer Health Sciences, Inc.	NexION 2000B ICP-MS	N8150044

Extended Description :
ICP-MS Autosampler, computer, software

INVOICE TO	SHIP TO
PROCUREMENT OFFICER 304-558-2221 AGRICULTURE DEPARTMENT OF ADMINISTRATIVE SERVICES 1900 KANAWHA BLVD E CHARLESTON WV25305-0173 US	AUTHORIZED RECEIVER 304-558-2227 AGRICULTURE DEPARTMENT OF REGULATORY PROTECTION DIVISION 313 GUS R DOUGLAS LN, BLDG 11 CHARLESTON WV 25312 US

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
2	Shipping Charges & Inside Delivery	1.00000	EA	3,072.00	3,072.00

Comm Code	Manufacturer	Specification	Model #
78121603	N/A	Delivery including Liftgate and Inside delivery	N/A

Extended Description :
Shipping Charges & Inside Delivery

INVOICE TO	SHIP TO
PROCUREMENT OFFICER 304-558-2221 AGRICULTURE DEPARTMENT OF ADMINISTRATIVE SERVICES 1900 KANAWHA BLVD E CHARLESTON WV25305-0173 US	AUTHORIZED RECEIVER 304-558-2227 AGRICULTURE DEPARTMENT OF REGULATORY PROTECTION DIVISION 313 GUS R DOUGLAS LN, BLDG 11 CHARLESTON WV 25312 US

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
3	Installation/Validation	1.00000	EA		

Comm Code	Manufacturer	Specification	Model #
73171605	PerkinElmer Health Sciences, Inc.	Included	N/A

Extended Description :
Installation/Validation

INVOICE TO	SHIP TO
PROCUREMENT OFFICER 304-558-2221 AGRICULTURE DEPARTMENT OF ADMINISTRATIVE SERVICES 1900 KANAWHA BLVD E CHARLESTON WV25305-0173 US	AUTHORIZED RECEIVER 304-558-2227 AGRICULTURE DEPARTMENT OF REGULATORY PROTECTION DIVISION 313 GUS R DOUGLAS LN, BLDG 11 CHARLESTON WV 25312 US

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
4	Training/Warranty	1.00000	EA	2,880.00	2,880.00

Comm Code	Manufacturer	Specification	Model #
73171605	PerkinElmer Health Sciences, Inc.	On - Site Training	N0200088

Extended Description :
Training/Warranty

INVOICE TO	SHIP TO
PROCUREMENT OFFICER 304-558-2221 AGRICULTURE DEPARTMENT OF ADMINISTRATIVE SERVICES 1900 KANAWHA BLVD E CHARLESTON WV25305-0173 US	AUTHORIZED RECEIVER 304-558-2227 AGRICULTURE DEPARTMENT OF REGULATORY PROTECTION DIVISION 313 GUS R DOUGLAS LN, BLDG 11 CHARLESTON WV 25312 US

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
5	Preventative maintenance	1.00000	EA	2,500.00	2,500.00

Comm Code	Manufacturer	Specification	Model #
81101706	PerkinElmer Health Sciences. Inc.	PM Visit	N0207132

Extended Description :
Preventative maintenance

Total of the quote: $140,519.65 (including freight and discounts).

SCHEDULE OF EVENTS

Line	Event	Event Date
1	Technical questions due by 4:00 pm	2017-05-09

ADDITIONAL TERMS AND CONDITIONS

See attached document(s) for additional Terms and Conditions

INSTRUCTIONS TO VENDORS SUBMITTING BIDS

1. REVIEW DOCUMENTS THOROUGHLY: The attached documents contain a solicitation for bids. Please read these instructions and all documents attached in their entirety. These instructions provide critical information about requirements that if overlooked could lead to disqualification of a Vendor's bid. All bids must be submitted in accordance with the provisions contained in these instructions and the Solicitation. Failure to do so may result in disqualification of Vendor's bid.

2. MANDATORY TERMS: The Solicitation may contain mandatory provisions identified by the use of the words "must," "will," and "shall." Failure to comply with a mandatory term in the Solicitation will result in bid disqualification.

3. PREBID MEETING: The item identified below shall apply to this Solicitation.

☑ A pre-bid meeting will not be held prior to bid opening

☐ A **NON-MANDATORY PRE-BID** meeting will be held at the following place and time:

☐ A **MANDATORY PRE-BID** meeting will be held at the following place and time:

All Vendors submitting a bid must attend the mandatory pre-bid meeting. Failure to attend the mandatory pre-bid meeting shall result in disqualification of the Vendor's bid. No one person attending the pre-bid meeting may represent more than one Vendor.

An attendance sheet provided at the pre-bid meeting shall serve as the official document verifying attendance. The State will not accept any other form of proof or documentation to verify attendance. Any person attending the pre-bid meeting on behalf of a Vendor must list on the attendance sheet his or her name and the name of the Vendor he or she is representing.

Additionally, the person attending the pre-bid meeting should include the Vendor's E-Mail address, phone number, and Fax number on the attendance sheet. It is the Vendor's responsibility to locate the attendance sheet and provide the required information. Failure to complete the attendance sheet as required may result in disqualification of Vendor's bid.

All Vendors should arrive prior to the starting time for the pre-bid. Vendors who arrive after the starting time but prior to the end of the pre-bid will be permitted to sign in, but are charged with knowing all matters discussed at the pre-bid.

Questions submitted at least five business days prior to a scheduled pre-bid will be discussed at the pre-bid meeting if possible. Any discussions or answers to questions at the pre-bid meeting are preliminary in nature and are non-binding. Official and binding answers to questions will be published in a written addendum to the Solicitation prior to bid opening.

4. VENDOR QUESTION DEADLINE: Vendors may submit questions relating to this Solicitation to the Purchasing Division. Questions must be submitted in writing. All questions must be submitted on or before the date listed below and to the address listed below in order to be considered. A written response will be published in a Solicitation addendum if a response is possible and appropriate. Non-written discussions, conversations, or questions and answers regarding this Solicitation are preliminary in nature and are nonbinding.

Submitted e-mails should have solicitation number in the subject line.

Question Submission Deadline: May 9, 2017 by 4:00 pm

Submit Questions to: Tara Lyle
2019 Washington Street, East
Charleston, WV 25305
Fax: (304) 558-4115 (Vendors should not use this fax number for bid submission)
Email: Tara.L.Lyle@wv.gov

5. VERBAL COMMUNICATION: Any verbal communication between the Vendor and any State personnel is not binding, including verbal communication at the mandatory pre-bid conference. Only information issued in writing and added to the Solicitation by an official written addendum by the Purchasing Division is binding.

6. BID SUBMISSION: All bids must be submitted electronically through wvOASIS or signed and delivered by the Vendor to the Purchasing Division at the address listed below on or before the date and time of the bid opening. Any bid received by the Purchasing Division staff is considered to be in the possession of the Purchasing Division and will not be returned for any reason. The Purchasing Division will not accept bids, modification of bids, or addendum acknowledgment forms via e-mail. Acceptable delivery methods include electronic submission via wvOASIS, hand delivery, delivery by courier, or facsimile.

The bid delivery address is:
Department of Administration, Purchasing Division
2019 Washington Street East
Charleston, WV 25305-0130

A bid that is not submitted electronically through wvOASIS should contain the information listed below on the face of the envelope or the bid may be rejected by the Purchasing Division.:

SEALED BID:
BUYER:
SOLICITATION NO.:
BID OPENING DATE:
BID OPENING TIME:
FAX NUMBER:

The Purchasing Division may prohibit the submission of bids electronically through wvOASIS at its sole discretion. Such a prohibition will be contained and communicated in the wvOASIS system resulting in the Vendor's inability to submit bids through wvOASIS. Submission of a response to an Expression or Interest or Request for Proposal is not permitted in wvOASIS.

For Request For Proposal ("RFP") Responses Only: In the event that Vendor is responding to a request for proposal, the Vendor shall submit one original technical and one original cost proposal plus N/A convenience copies of each to the Purchasing Division at the address shown above. Additionally, the Vendor should identify the bid type as either a technical or cost proposal on the face of each bid envelope submitted in response to a request for proposal as follows:

BID TYPE: (This only applies to CRFP)
☐ Technical
☐ Cost

7. BID OPENING: Bids submitted in response to this Solicitation will be opened at the location identified below on the date and time listed below. Delivery of a bid after the bid opening date and time will result in bid disqualification. For purposes of this Solicitation, a bid is considered delivered when confirmation of delivery is provided by wvOASIS (in the case of electronic submission) or when the bid is time stamped by the official Purchasing Division time clock (in the case of hand delivery).

Bid Opening Date and Time: May 18, 2017 at 1:30 pm

Bid Opening Location: Department of Administration, Purchasing Division
2019 Washington Street East
Charleston, WV 25305-0130

8. ADDENDUM ACKNOWLEDGEMENT: Changes or revisions to this Solicitation will be made by an official written addendum issued by the Purchasing Division. Vendor should acknowledge receipt of all addenda issued with this Solicitation by completing an Addendum Acknowledgment Form, a copy of which is included herewith. Failure to acknowledge addenda may result in bid disqualification. The addendum acknowledgement should be submitted with the bid to expedite document processing.

9. BID FORMATTING: Vendor should type or electronically enter the information onto its bid to prevent errors in the evaluation. Failure to type or electronically enter the information may result in bid disqualification.

10. ALTERNATES: Any model, brand, or specification listed in this Solicitation establishes the acceptable level of quality only and is not intended to reflect a preference for, or in any way favor, a particular brand or vendor. Vendors may bid alternates to a listed model or brand provided that the alternate is at least equal to the model or brand and complies with the required specifications. The equality of any alternate being bid shall be determined by the State at its sole discretion. Any Vendor bidding an alternate model or brand should clearly identify the alternate items in its bid and should include manufacturer's specifications, industry literature, and/or any other relevant documentation demonstrating the equality of the alternate items. Failure to provide information for alternate items may be grounds for rejection of a Vendor's bid.

11. EXCEPTIONS AND CLARIFICATIONS: The Solicitation contains the specifications that shall form the basis of a contractual agreement. Vendor shall clearly mark any exceptions, clarifications, or other proposed modifications in its bid. Exceptions to, clarifications of, or modifications of a requirement or term and condition of the Solicitation may result in bid disqualification.

12. COMMUNICATION LIMITATIONS: In accordance with West Virginia Code of State Rules §148-1-6.6, communication with the State of West Virginia or any of its employees regarding this Solicitation during the solicitation, bid, evaluation or award periods, except through the Purchasing Division, is strictly prohibited without prior Purchasing Division approval. Purchasing Division approval for such communication is implied for all agency delegated and exempt purchases.

13. REGISTRATION: Prior to Contract award, the apparent successful Vendor must be properly registered with the West Virginia Purchasing Division and must have paid the $125 fee, if applicable.

14. UNIT PRICE: Unit prices shall prevail in cases of a discrepancy in the Vendor's bid.

15. PREFERENCE: Vendor Preference may only be granted upon written request and only in accordance with the West Virginia Code § 5A-3-37 and the West Virginia Code of State Rules. A Vendor Preference Certificate form has been attached hereto to allow Vendor to apply for the preference. Vendor's failure to submit the Vendor Preference Certificate form with its bid will result in denial of Vendor Preference. Vendor Preference does not apply to construction projects.

16. SMALL, WOMEN-OWNED, OR MINORITY-OWNED BUSINESSES: For any solicitations publicly advertised for bid, in accordance with West Virginia Code §5A-3-37(a)(7) and W. Va. CSR § 148-22-9, any non-resident vendor certified as a small, women-owned, or minority-owned business under W. Va. CSR § 148-22-9 shall be provided the same preference made available to any resident vendor. Any non-resident small, women-owned, or minority-owned business must identify itself as such in writing, must submit that writing to the Purchasing Division with its bid, and must be properly certified under W. Va. CSR § 148-22-9 prior to contract award to receive the preferences made available to resident vendors. Preference for a non-resident small, women-owned, or minority owned business shall be applied in accordance with W. Va. CSR § 148-22-9.

17. WAIVER OF MINOR IRREGULARITIES: The Director reserves the right to waive minor irregularities in bids or specifications in accordance with West Virginia Code of State Rules § 148-1-4.6.

18. ELECTRONIC FILE ACCESS RESTRICTIONS: Vendor must ensure that its submission in wvOASIS can be accessed and viewed by the Purchasing Division staff immediately upon bid opening. The Purchasing Division will consider any file that cannot be immediately accessed and viewed at the time of the bid opening (such as, encrypted files, password protected files, or incompatible files) to be blank or incomplete as context requires, and are therefore unacceptable. A vendor will not be permitted to unencrypt files, remove password protections, or resubmit documents after bid opening to make a file viewable if those documents are required with the bid. A Vendor may be required to provide document passwords or remove access restrictions to allow the Purchasing Division to print or electronically save documents provided that those documents are viewable by the Purchasing Division prior to obtaining the password or removing the access restriction.

19. NON-RESPONSIBLE: The Purchasing Division Director reserves the right to reject the bid of any vendor as Non-Responsible in accordance with W. Va. Code of State Rules § 148-1-5.3, when the Director determines that the vendor submitting the bid does not have the capability to fully perform, or lacks the integrity and reliability to assure good-faith performance."

20. ACCEPTANCE/REJECTION: The State may accept or reject any bid in whole, or in part in accordance with W. Va. Code of State Rules § 148-1-4.5. and § 148-1-6.4.b."

21. YOUR SUBMISSION IS A PUBLIC DOCUMENT: Vendor's entire response to the Solicitation and the resulting Contract are public documents. As public documents, they will be disclosed to the public following the bid/proposal opening or award of the contract, as required by the competitive bidding laws of West Virginia Code §§ 5A-3-1 et seq., 5-22-1 et seq., and 5G-1-1 et seq. and the Freedom of Information Act West Virginia Code §§ 29B-1-1 et seq.

DO NOT SUBMIT MATERIAL YOU CONSIDER TO BE CONFIDENTIAL, A TRADE SECRET, OR OTHERWISE NOT SUBJECT TO PUBLIC DISCLOSURE.

Submission of any bid, proposal, or other document to the Purchasing Division constitutes your explicit consent to the subsequent public disclosure of the bid, proposal, or document. The Purchasing Division will disclose any document labeled "confidential," "proprietary," "trade secret," "private," or labeled with any other claim against public disclosure of the documents, to include any "trade secrets" as defined by West Virginia Code § 47-22-1 et seq. All submissions are subject to public disclosure without notice.

GENERAL TERMS AND CONDITIONS:

1. CONTRACTUAL AGREEMENT: Issuance of a Award Document signed by the Purchasing Division Director, or his designee, and approved as to form by the Attorney General's office constitutes acceptance of this Contract made by and between the State of West Virginia and the Vendor. Vendor's signature on its bid signifies Vendor's agreement to be bound by and accept the terms and conditions contained in this Contract.

2. DEFINITIONS: As used in this Solicitation/Contract, the following terms shall have the meanings attributed to them below. Additional definitions may be found in the specifications included with this Solicitation/Contract.

2.1. "Agency" or **"Agencies"** means the agency, board, commission, or other entity of the State of West Virginia that is identified on the first page of the Solicitation or any other public entity seeking to procure goods or services under this Contract.

2.2. "Bid" or **"Proposal"** means the vendors submitted response to this solicitation.

2.3. "Contract" means the binding agreement that is entered into between the State and the Vendor to provide the goods or services requested in the Solicitation.

2.4. "Director" means the Director of the West Virginia Department of Administration, Purchasing Division.

2.5. "Purchasing Division" means the West Virginia Department of Administration, Purchasing Division.

2.6. "Award Document" means the document signed by the Agency and the Purchasing Division, and approved as to form by the Attorney General, that identifies the Vendor as the contract holder.

2.7. "Solicitation" means the official notice of an opportunity to supply the State with goods or services that is published by the Purchasing Division.

2.8. "State" means the State of West Virginia and/or any of its agencies, commissions, boards, etc. as context requires.

2.9. "Vendor" or **"Vendors"** means any entity submitting a bid in response to the Solicitation, the entity that has been selected as the lowest responsible bidder, or the entity that has been awarded the Contract as context requires.

3. CONTRACT TERM; RENEWAL; EXTENSION: The term of this Contract shall be determined in accordance with the category that has been identified as applicable to this Contract below:

☐ **Term Contract**

Initial Contract Term: This Contract becomes effective on _____ and extends for a period of _____year(s).

Renewal Term: This Contract may be renewed upon the mutual written consent of the Agency, and the Vendor, with approval of the Purchasing Division and the Attorney General's office (Attorney General approval is as to form only). Any request for renewal should be submitted to the Purchasing Division thirty (30) days prior to the expiration date of the initial contract term or appropriate renewal term. A Contract renewal shall be in accordance with the terms and conditions of the original contract. Renewal of this Contract is limited to _____ successive one (1) year periods or multiple renewal periods of less than one year, provided that the multiple renewal periods do not exceed _____ months in total. Automatic renewal of this Contract is prohibited. Notwithstanding the foregoing, Purchasing Division approval is not required on agency delegated or exempt purchases. Attorney General approval may be required for vendor terms and conditions.

Delivery Order Limitations: In the event that this contract permits delivery orders, a delivery order may only be issued during the time this Contract is in effect. Any delivery order issued within one year of the expiration of this Contract shall be effective for one year from the date the delivery order is issued. No delivery order may be extended beyond one year after this Contract has expired.

☐ **Fixed Period Contract:** This Contract becomes effective upon Vendor's receipt of the notice to proceed and must be completed within _____days.

☐ **Fixed Period Contract with Renewals:** This Contract becomes effective upon Vendor's receipt of the notice to proceed and part of the Contract more fully described in the attached specifications must be completed within _____ days.

Upon completion, the vendor agrees that maintenance, monitoring, or warranty services will be provided for one year thereafter with an additional _____ successive one year renewal periods or multiple renewal periods of less than one year provided that the multiple renewal periods do not exceed _____ months in total. Automatic renewal of this Contract is prohibited.

☑ **One Time Purchase:** The term of this Contract shall run from the issuance of the Award Document until all of the goods contracted for have been delivered, but in no event will this Contract extend for more than one fiscal year.

☐ **Other:** See attached.

4. NOTICE TO PROCEED: Vendor shall begin performance of this Contract immediately upon receiving notice to proceed unless otherwise instructed by the Agency. Unless otherwise specified, the fully executed Award Document will be considered notice to proceed.

5. QUANTITIES: The quantities required under this Contract shall be determined in accordance with the category that has been identified as applicable to this Contract below.

☐ **Open End Contract:** Quantities listed in this Solicitation are approximations only, based on estimates supplied by the Agency. It is understood and agreed that the Contract shall cover the quantities actually ordered for delivery during the term of the Contract, whether more or less than the quantities shown.

☐ **Service:** The scope of the service to be provided will be more clearly defined in the specifications included herewith.

☑ **Combined Service and Goods:** The scope of the service and deliverable goods to be provided will be more clearly defined in the specifications included herewith.

☐ **One Time Purchase:** This Contract is for the purchase of a set quantity of goods that are identified in the specifications included herewith. Once those items have been delivered, no additional goods may be procured under this Contract without an appropriate change order approved by the Vendor, Agency, Purchasing Division, and Attorney General's office.

6. EMERGENCY PURCHASES: The Purchasing Division Director may authorize the Agency to purchase goods or services in the open market that Vendor would otherwise provide under this Contract if those goods or services are for immediate or expedited delivery in an emergency. Emergencies shall include, but are not limited to, delays in transportation or an unanticipated increase in the volume of work. An emergency purchase in the open market, approved by the Purchasing Division Director, shall not constitute of breach of this Contract and shall not entitle the Vendor to any form of compensation or damages. This provision does not excuse the State from fulfilling its obligations under a One Time Purchase contract.

7. REQUIRED DOCUMENTS: All of the items checked below must be provided to the Purchasing Division by the Vendor as specified below.

☐ **BID BOND (Construction Only):** Pursuant to the requirements contained in W. Va. Code § 5-22-1(c), All Vendors submitting a bid on a construction project shall furnish a valid bid bond in the amount of five percent (5%) of the total amount of the bid protecting the State of West Virginia. The bid bond must be submitted with the bid.

☐ **PERFORMANCE BOND:** The apparent successful Vendor shall provide a performance bond in the amount of _____. The performance bond must be received by the Purchasing Division prior to Contract award. On construction contracts, the performance bond must be 100% of the Contract value.

☐ **LABOR/MATERIAL PAYMENT BOND:** The apparent successful Vendor shall provide a labor/material payment bond in the amount of 100% of the Contract value. The labor/material payment bond must be delivered to the Purchasing Division prior to Contract award.

In lieu of the Bid Bond, Performance Bond, and Labor/Material Payment Bond, the Vendor may provide certified checks, cashier's checks, or irrevocable letters of credit. Any certified check, cashier's check, or irrevocable letter of credit provided in lieu of a bond must be of the same amount and delivered on the same schedule as the bond it replaces. A letter of credit submitted in lieu of a performance and labor/material payment bond will only be allowed for projects under $100,000. Personal or business checks are not acceptable. Notwithstanding the foregoing, West Virginia Code § 5-22-1 (d) mandates that a vendor provide a performance and labor/material payment bond for construction projects. Accordingly, substitutions for the performance and labor/material payment bonds for construction projects is not permitted.

☐ **MAINTENANCE BOND:** The apparent successful Vendor shall provide a two (2) year maintenance bond covering the roofing system. The maintenance bond must be issued and delivered to the Purchasing Division prior to Contract award.

☐ **LICENSE(S) / CERTIFICATIONS / PERMITS:** In addition to anything required under the Section entitled Licensing, of the General Terms and Conditions, the apparent successful Vendor shall furnish proof of the following licenses, certifications, and/or permits prior to Contract award, in a form acceptable to the Purchasing Division.

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The apparent successful Vendor shall also furnish proof of any additional licenses or certifications contained in the specifications prior to Contract award regardless of whether or not that requirement is listed above.

8. INSURANCE: The apparent successful Vendor shall furnish proof of the insurance identified by a checkmark below prior to Contract award. Subsequent to contract award, and prior to the insurance expiration date, Vendor shall provide the Agency with proof that the insurance mandated herein has been continued. Vendor must also provide Agency with immediate notice of any changes in its insurance policies mandated herein, including but not limited to, policy cancelation, policy reduction, or change in insurers. The insurance coverages identified below must be maintained throughout the life of this contract. The apparent successful Vendor shall also furnish proof of any additional insurance requirements contained in the specifications prior to Contract award regardless of whether or not that insurance requirement is listed in this section.

Vendor must maintain:

☐ **Commercial General Liability Insurance** in at least an amount of:

_____

_____

☐ **Automobile Liability Insurance** in at least an amount of: _____

☐ **Professional/Malpractice/Errors and Omission Insurance** in at least an amount of:

_____

☐ **Commercial Crime and Third Party Fidelity Insurance** in an amount of:

_____

☐ **Cyber Liability Insurance** in an amount of: _____

☐ **Builders Risk Insurance** in an amount equal to 100% of the amount of the Contract.

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9. WORKERS' COMPENSATION INSURANCE: The apparent successful Vendor shall comply with laws relating to workers compensation, shall maintain workers' compensation insurance when required, and shall furnish proof of workers' compensation insurance upon request.

10. LITIGATION BOND: The Director reserves the right to require any Vendor that files a protest of an award to submit a litigation bond in the amount equal to one percent of the lowest bid submitted or $5,000, whichever is greater. The entire amount of the bond shall be forfeited if the hearing officer determines that the protest was filed for frivolous or improper purpose, including but not limited to, the purpose of harassing, causing unnecessary delay, or needless expense for the Agency. All litigation bonds shall be made payable to the Purchasing Division. In lieu of a bond, the protester may submit a cashier's check or certified check payable to the Purchasing Division. Cashier's or certified checks will be deposited with and held by the State Treasurer's office. If it is determined that the protest has not been filed for frivolous or improper purpose, the bond or deposit shall be returned in its entirety.

11. LIQUIDATED DAMAGES: Vendor shall pay liquidated damages in the amount of

_____

for _____.

This clause shall in no way be considered exclusive and shall not limit the State or Agency's right to pursue any other available remedy.

12. ACCEPTANCE: Vendor's signature on its bid, or on the certification and signature page, constitutes an offer to the State that cannot be unilaterally withdrawn, signifies that the product or service proposed by vendor meets the mandatory requirements contained in the Solicitation for that product or service, unless otherwise indicated, and signifies acceptance of the terms and conditions contained in the Solicitation unless otherwise indicated.

13. PRICING: The pricing set forth herein is firm for the life of the Contract, unless specified elsewhere within this Solicitation/Contract by the State. A Vendor's inclusion of price adjustment provisions in its bid, without an express authorization from the State in the Solicitation to do so, may result in bid disqualification.

14. PAYMENT: Payment in advance is prohibited under this Contract. Payment may only be made after the delivery and acceptance of goods or services. The Vendor shall submit invoices, in arrears.

15. PURCHASING CARD ACCEPTANCE: The State of West Virginia currently utilizes a Purchasing Card program, administered under contract by a banking institution, to process payment for goods and services. The Vendor must accept the State of West Virginia's Purchasing Card for payment of all orders under this Contract unless the box below is checked.

☐ Vendor is not required to accept the State of West Virginia's Purchasing Card as payment for all goods and services.

16. TAXES: The Vendor shall pay any applicable sales, use, personal property or any other taxes arising out of this Contract and the transactions contemplated thereby. The State of West Virginia is exempt from federal and state taxes and will not pay or reimburse such taxes.

17. ADDITIONAL FEES: Vendor is not permitted to charge additional fees or assess additional charges that were not either expressly provided for in the solicitation published by the State of West Virginia or included in the unit price or lump sum bid amount that Vendor is required by the solicitation to provide. Including such fees or charges as notes to the solicitation may result in rejection of vendor's bid. Requesting such fees or charges be paid after the contract has been awarded may result in cancellation of the contract.

18. FUNDING: This Contract shall continue for the term stated herein, contingent upon funds being appropriated by the Legislature or otherwise being made available. In the event funds are not appropriated or otherwise made available, this Contract becomes void and of no effect beginning on July 1 of the fiscal year for which funding has not been appropriated or otherwise made available.

19. CANCELLATION: The Purchasing Division Director reserves the right to cancel this Contract immediately upon written notice to the vendor if the materials or workmanship supplied do not conform to the specifications contained in the Contract. The Purchasing Division Director may also cancel any purchase or Contract upon 30 days written notice to the Vendor in accordance with West Virginia Code of State Rules § 148-1-6.1.e.

20. TIME: Time is of the essence with regard to all matters of time and performance in this Contract.

21. APPLICABLE LAW: This Contract is governed by and interpreted under West Virginia law without giving effect to its choice of law principles. Any information provided in specification manuals, or any other source, verbal or written, which contradicts or violates the West Virginia Constitution, West Virginia Code or West Virginia Code of State Rules is void and of no effect.

22. COMPLIANCE: Vendor shall comply with all applicable federal, state, and local laws, regulations and ordinances. By submitting a bid, Vendor acknowledges that it has reviewed, understands, and will comply with all applicable laws, regulations, and ordinances.

23. ARBITRATION: Any references made to arbitration contained in this Contract, Vendor's bid, or in any American Institute of Architects documents pertaining to this Contract are hereby deleted, void, and of no effect.

24. MODIFICATIONS: This writing is the parties' final expression of intent. Notwithstanding anything contained in this Contract to the contrary no modification of this Contract shall be binding without mutual written consent of the Agency, and the Vendor, with approval of the Purchasing Division and the Attorney General's office (Attorney General approval is as to form only). Any change to existing contracts that adds work or changes contract cost, and were not included in the original contract, must be approved by the Purchasing Division and the Attorney General's Office (as to form) prior to the implementation of the change or commencement of work affected by the change.

25. WAIVER: The failure of either party to insist upon a strict performance of any of the terms or provision of this Contract, or to exercise any option, right, or remedy herein contained, shall not be construed as a waiver or a relinquishment for the future of such term, provision, option, right, or remedy, but the same shall continue in full force and effect. Any waiver must be expressly stated in writing and signed by the waiving party.

26. SUBSEQUENT FORMS: The terms and conditions contained in this Contract shall supersede any and all subsequent terms and conditions which may appear on any form documents submitted by Vendor to the Agency or Purchasing Division such as price lists, order forms, invoices, sales agreements, or maintenance agreements, and includes internet websites or other electronic documents. Acceptance or use of Vendor's forms does not constitute acceptance of the terms and conditions contained thereon.

27. ASSIGNMENT: Neither this Contract nor any monies due, or to become due hereunder, may be assigned by the Vendor without the express written consent of the Agency, the Purchasing Division, the Attorney General's office (as to form only), and any other government agency or office that may be required to approve such assignments. Notwithstanding the foregoing, Purchasing Division approval may or may not be required on certain agency delegated or exempt purchases.

28. WARRANTY: The Vendor expressly warrants that the goods and/or services covered by this Contract will: (a) conform to the specifications, drawings, samples, or other description furnished or specified by the Agency; (b) be merchantable and fit for the purpose intended; and (c) be free from defect in material and workmanship.

29. STATE EMPLOYEES: State employees are not permitted to utilize this Contract for personal use and the Vendor is prohibited from permitting or facilitating the same.

30. BANKRUPTCY: In the event the Vendor files for bankruptcy protection, the State of West Virginia may deem this Contract null and void, and terminate this Contract without notice.

31. PRIVACY, SECURITY, AND CONFIDENTIALITY: The Vendor agrees that it will not disclose to anyone, directly or indirectly, any such personally identifiable information or other confidential information gained from the Agency, unless the individual who is the subject of the information consents to the disclosure in writing or the disclosure is made pursuant to the Agency's policies, procedures, and rules. Vendor further agrees to comply with the Confidentiality Policies and Information Security Accountability Requirements, set forth in http://www.state.wv.us/admin/purchase/privacy/default.html.

32. YOUR SUBMISSION IS A PUBLIC DOCUMENT: Vendor's entire response to the Solicitation and the resulting Contract are public documents. As public documents, they will be disclosed to the public following the bid/proposal opening or award of the contract, as required by the competitive bidding laws of West Virginia Code §§ 5A-3-1 et seq., 5-22-1 et seq., and 5G-1-1 et seq. and the Freedom of Information Act West Virginia Code §§ 29B-1-1 et seq.

DO NOT SUBMIT MATERIAL YOU CONSIDER TO BE CONFIDENTIAL, A TRADE SECRET, OR OTHERWISE NOT SUBJECT TO PUBLIC DISCLOSURE.

Submission of any bid, proposal, or other document to the Purchasing Division constitutes your explicit consent to the subsequent public disclosure of the bid, proposal, or document. The Purchasing Division will disclose any document labeled "confidential," "proprietary," "trade secret," "private," or labeled with any other claim against public disclosure of the documents, to include any "trade secrets" as defined by West Virginia Code § 47-22-1 et seq. All submissions are subject to public disclosure without notice.

33. LICENSING: In accordance with West Virginia Code of State Rules § 148-1-6.1.e, Vendor must be licensed and in good standing in accordance with any and all state and local laws and requirements by any state or local agency of West Virginia, including, but not limited to, the West Virginia Secretary of State's Office, the West Virginia Tax Department, West Virginia Insurance Commission, or any other state agency or political subdivision. Upon request, the Vendor must provide all necessary releases to obtain information to enable the Purchasing Division Director or the Agency to verify that the Vendor is licensed and in good standing with the above entities.

34. ANTITRUST: In submitting a bid to, signing a contract with, or accepting a Award Document from any agency of the State of West Virginia, the Vendor agrees to convey, sell, assign, or transfer to the State of West Virginia all rights, title, and interest in and to all causes of action it may now or hereafter acquire under the antitrust laws of the United States and the State of West Virginia for price fixing and/or unreasonable restraints of trade relating to the particular commodities or services purchased or acquired by the State of West Virginia. Such assignment shall be made and become effective at the time the purchasing agency tenders the initial payment to Vendor.

35. VENDOR CERTIFICATIONS: By signing its bid or entering into this Contract, Vendor certifies (1) that its bid or offer was made without prior understanding, agreement, or connection with any corporation, firm, limited liability company, partnership, person or entity submitting a bid or offer for the same material, supplies, equipment or services; (2) that its bid or offer is in all respects fair and without collusion or fraud; (3) that this Contract is accepted or entered into without any prior understanding, agreement, or connection to any other entity that could be considered a violation of law; and (4) that it has reviewed this Solicitation in its entirety; understands the requirements, terms and conditions, and other information contained herein.

Vendor's signature on its bid or offer also affirms that neither it nor its representatives have any interest, nor shall acquire any interest, direct or indirect, which would compromise the performance of its services hereunder. Any such interests shall be promptly presented in detail to the Agency. The individual signing this bid or offer on behalf of Vendor certifies that he or she is authorized by the Vendor to execute this bid or offer or any documents related thereto on Vendor's behalf; that he or she is authorized to bind the Vendor in a contractual relationship; and that, to the best of his or her knowledge, the Vendor has properly registered with any State agency that may require registration.

36. VENDOR RELATIONSHIP: The relationship of the Vendor to the State shall be that of an independent contractor and no principal-agent relationship or employer-employee relationship is contemplated or created by this Contract. The Vendor as an independent contractor is solely liable for the acts and omissions of its employees and agents. Vendor shall be responsible for selecting, supervising, and compensating any and all individuals employed pursuant to the terms of this Solicitation and resulting contract. Neither the Vendor, nor any employees or subcontractors of the Vendor, shall be deemed to be employees of the State for any purpose whatsoever. Vendor shall be exclusively responsible for payment of employees and contractors for all wages and salaries, taxes, withholding payments, penalties, fees, fringe benefits, professional liability insurance premiums, contributions to insurance and pension, or other deferred compensation plans, including but not limited to, Workers' Compensation and Social Security obligations, licensing fees, etc. and the filing of all necessary documents, forms, and returns pertinent to all of the foregoing.

Vendor shall hold harmless the State, and shall provide the State and Agency with a defense against any and all claims including, but not limited to, the foregoing payments, withholdings, contributions, taxes, Social Security taxes, and employer income tax returns.

37. INDEMNIFICATION: The Vendor agrees to indemnify, defend, and hold harmless the State and the Agency, their officers, and employees from and against: (1) Any claims or losses for services rendered by any subcontractor, person, or firm performing or supplying services, materials, or supplies in connection with the performance of the Contract; (2) Any claims or losses resulting to any person or entity injured or damaged by the Vendor, its officers, employees, or subcontractors by the publication, translation, reproduction, delivery, performance, use, or disposition of any data used under the Contract in a manner not authorized by the Contract, or by Federal or State statutes or regulations; and (3) Any failure of the Vendor, its officers, employees, or subcontractors to observe State and Federal laws including, but not limited to, labor and wage and hour laws.

38. PURCHASING AFFIDAVIT: In accordance with West Virginia Code § 5A-3-10a, all Vendors are required to sign, notarize, and submit the Purchasing Affidavit stating that neither the Vendor nor a related party owe a debt to the State in excess of $1,000. The affidavit must be submitted prior to award, but should be submitted with the Vendor's bid. A copy of the Purchasing Affidavit is included herewith.

39. ADDITIONAL AGENCY AND LOCAL GOVERNMENT USE: This Contract may be utilized by other agencies, spending units, and political subdivisions of the State of West Virginia; county, municipal, and other local government bodies; and school districts ("Other Government Entities"). Any extension of this Contract to the aforementioned Other Government Entities must be on the same prices, terms, and conditions as those offered and agreed to in this Contract, provided that such extension is in compliance with the applicable laws, rules, and ordinances of the Other Government Entity. If the Vendor does not wish to extend the prices, terms, and conditions of its bid and subsequent contract to the Other Government Entities, the Vendor must clearly indicate such refusal in its bid. A refusal to extend this Contract to the Other Government Entities shall not impact or influence the award of this Contract in any manner.

40. CONFLICT OF INTEREST: Vendor, its officers or members or employees, shall not presently have or acquire an interest, direct or indirect, which would conflict with or compromise the performance of its obligations hereunder. Vendor shall periodically inquire of its officers, members and employees to ensure that a conflict of interest does not arise. Any conflict of interest discovered shall be promptly presented in detail to the Agency.

41. REPORTS: Vendor shall provide the Agency and/or the Purchasing Division with the following reports identified by a checked box below:

☐ Such reports as the Agency and/or the Purchasing Division may request. Requested reports may include, but are not limited to, quantities purchased, agencies utilizing the contract, total contract expenditures by agency, etc.

☐ Quarterly reports detailing the total quantity of purchases in units and dollars, along with a listing of purchases by agency. Quarterly reports should be delivered to the Purchasing Division via email at purchasing.requisitions@wv.gov.

42. BACKGROUND CHECK: In accordance with W. Va. Code § 15-2D-3, the Director of the Division of Protective Services shall require any service provider whose employees are regularly employed on the grounds or in the buildings of the Capitol complex or who have access to sensitive or critical information to submit to a fingerprint-based state and federal background inquiry through the state repository. The service provider is responsible for any costs associated with the fingerprint-based state and federal background inquiry.

After the contract for such services has been approved, but before any such employees are permitted to be on the grounds or in the buildings of the Capitol complex or have access to sensitive or critical information, the service provider shall submit a list of all persons who will be physically present and working at the Capitol complex to the Director of the Division of Protective Services for purposes of verifying compliance with this provision. The State reserves the right to prohibit a service provider's employees from accessing sensitive or critical information or to be present at the Capitol complex based upon results addressed from a criminal background check.

Service providers should contact the West Virginia Division of Protective Services by phone at (304) 558-9911 for more information.

43. PREFERENCE FOR USE OF DOMESTIC STEEL PRODUCTS: Except when authorized by the Director of the Purchasing Division pursuant to W. Va. Code § 5A-3-56, no contractor may use or supply steel products for a State Contract Project other than those steel products made in the United States. A contractor who uses steel products in violation of this section may be subject to civil penalties pursuant to W. Va. Code § 5A-3-56. As used in this section:

a. "State Contract Project" means any erection or construction of, or any addition to, alteration of or other improvement to any building or structure, including, but not limited to, roads or highways, or the installation of any heating or cooling or ventilating plants or other equipment, or the supply of and materials for such projects, pursuant to a contract with the State of West Virginia for which bids were solicited on or after June 6, 2001.
b. "Steel Products" means products rolled, formed, shaped, drawn, extruded, forged, cast, fabricated or otherwise similarly processed, or processed by a combination of two or more or such operations, from steel made by the open heath, basic oxygen, electric furnace, Bessemer or other steel making process. The Purchasing Division Director may, in writing, authorize the use of foreign steel products if:
c. The cost for each contract item used does not exceed one tenth of one percent (.1%) of the total contract cost or two thousand five hundred dollars ($2,500.00), whichever is greater. For the purposes of this section, the cost is the value of the steel product as delivered to the project; or
d. The Director of the Purchasing Division determines that specified steel materials are not produced in the United States in sufficient quantity or otherwise are not reasonably available to meet contract requirements.

44. PREFERENCE FOR USE OF DOMESTIC ALUMINUM, GLASS, AND STEEL: In Accordance with W. Va. Code § 5-19-1 et seq., and W. Va. CSR § 148-10-1 et seq., for every contract or subcontract, subject to the limitations contained herein, for the construction, reconstruction, alteration, repair, improvement or maintenance of public works or for the purchase of any item of machinery or equipment to be used at sites of public works, only domestic aluminum, glass or steel products shall be supplied unless the spending officer determines, in writing, after the receipt of offers or bids, (1) that the cost of domestic aluminum, glass or steel products is unreasonable or inconsistent with the public interest of the State of West Virginia, (2) that domestic aluminum, glass or steel products are not produced in sufficient quantities to meet the contract requirements, or (3) the available domestic aluminum, glass, or steel do not meet the contract specifications. This provision only applies to public works contracts awarded in an amount more than fifty thousand dollars ($50,000) or public works contracts that require more than ten thousand pounds of steel products.

The cost of domestic aluminum, glass, or steel products may be unreasonable if the cost is more than twenty percent (20%) of the bid or offered price for foreign made aluminum, glass, or steel products. If the domestic aluminum, glass or steel products to be supplied or produced in a "substantial labor surplus area", as defined by the United States Department of Labor, the cost of domestic aluminum, glass, or steel products may be unreasonable if the cost is more than thirty percent (30%) of the bid or offered price for foreign made aluminum, glass, or steel products. This preference shall be applied to an item of machinery or equipment, as indicated above, when the item is a single unit of equipment or machinery manufactured primarily of aluminum, glass or steel, is part of a public works contract and has the sole purpose or of being a permanent part of a single public works project. This provision does not apply to equipment or machinery purchased by a spending unit for use by that spending unit and not as part of a single public works project.

All bids and offers including domestic aluminum, glass or steel products that exceed bid or offer prices including foreign aluminum, glass or steel products after application of the preferences provided in this provision may be reduced to a price equal to or lower than the lowest bid or offer price for foreign aluminum, glass or steel products plus the applicable preference. If the reduced bid or offer prices are made in writing and supersede the prior bid or offer prices, all bids or offers, including the reduced bid or offer prices, will be reevaluated in accordance with this rule.

DESIGNATED CONTACT: Vendor appoints the individual identified in this Section as the Contract Administrator and the initial point of contact for matters relating to this Contract.

Anna Boyle, Contract Administator
(Name, Title)
Anna Boyle, Contract Administrator
(Printed Name and Title)
710 Bridgeport Ave. Shelton, CT 06484
(Address)
203-712-8478 Fax: 203-944-4914
(Phone Number) / (Fax Number)
Anna.Boyle@perkinelmer.com ContractsShelton@perkinelmer.com
(email address)

CERTIFICATION AND SIGNATURE: By signing below, or submitting documentation through wvOASIS, I certify that I have reviewed this Solicitation in its entirety; that I understand the requirements, terms and conditions, and other information contained herein; that this bid, offer or proposal constitutes an offer to the State that cannot be unilaterally withdrawn; that the product or service proposed meets the mandatory requirements contained in the Solicitation for that product or service, unless otherwise stated herein; that the Vendor accepts the terms and conditions contained in the Solicitation, unless otherwise stated herein; that I am submitting this bid, offer or proposal for review and consideration; that I am authorized by the vendor to execute and submit this bid, offer, or proposal, or any documents related thereto on vendor's behalf; that I am authorized to bind the vendor in a contractual relationship; and that to the best of my knowledge, the vendor has properly registered with any State agency that may require registration.

PerkinElmer Health Sciences, Inc.
(Company)

(Authorized Signature) (Representative Name, Title)

Judith Albrecht, Assistant Secretary
(Printed Name and Title of Authorized Representative)

May 12th, 2017
(Date)

Phone: 800-762-4000 Fax: 203-944-4914
(Phone Number) (Fax Number)

REQUEST FOR QUOTATION
CRFQ AGR1700000016
Inductively Coupled Plasma Mass Spectrometry (ICP-MS) Instrument

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SPECIFICATIONS

1. **PURPOSE AND SCOPE:** The West Virginia Purchasing Division is soliciting bids on behalf of West Virginia Department of Agriculture to establish a contract for the one-time purchase of an **Inductively Coupled Plasma Mass Spectrometry (ICP-MS), workstation PC, and software with shipping, installation, validation, warranty, training, and service.**

2. **DEFINITIONS:** The terms listed below shall have the meanings assigned to them below. Additional definitions can be found in section 2 of the General Terms and Conditions.

   2.1 **"Contract Services"** means the ICP-MS with inside delivery, installation, validation, warranty, and training.

   2.2 **"Deliverables"** means all items being purchased through this RFQ.

   2.3 **"Preventative Maintenance Plan"** means routine service conducted by the Vendor that is recommended to keep the instrument fully operational.

   2.4 **"Pricing Page"** means the pages, contained in wvOASIS or attached as Exhibit A, upon which Vendor should list its proposed price for the Contract Items.

   2.5 **"Solicitation"** means the official notice of an opportunity to supply the State with goods or services that is published by the Purchasing Division.

   2.6 **"Validation"** means is the process used to confirm that the analytical procedure employed for a specific test or matrices is suitable for its intended use.

   2.7 **"Installation"** means unpacking and setting instrumentation in place with all connections secured for the instrument(s) to be in working order including software installation on the computer connected to the instrument.

   2.8 **"Warranty"** means the written warranty of the manufacturer of a new instrument of its condition and fitness for use, including any terms or conditions precedent to the enforcement of obligations under that warranty.

   2.9 **"Training"** means teaching staff on-site on how to use, and maintain the instrument and software.

   2.10 **"Service"** means performing routine maintenance work or repair to the instrument or software.

3. GENERAL REQUIREMENTS:

3.1 Mandatory Contract Item Requirements: Contract Item must meet or exceed the mandatory requirements listed below for the **Inductively Coupled Plasma Mass Spectrometry (ICP-MS).**

3.1.1 Inductively Coupled Plasma Mass Spectrometry (ICP-MS).

3.1.1.1 The ICP-MS must have an RF (radio frequency) plasma ion source, a quadrupole based universal cell, a quadrupole mass filter, a quadrupole ion deflector, dual stage discrete dynode detector, a triple cone interface and all under computer control. Additional equipment required is an autosampler (60 sample minimum), computer, monitor, and software for the quantitation of metals.

3.1.1.2 ICP-MS must be equipped with universal cell technology able to operate in standard mode, collision mode, and reaction mode.

3.1.1.3 Must be capable of detecting trace metals in matrices such as foods, soil, vegetation, animal feed, fertilizer and water.

3.1.1.4 The quadrupole must be able to scan a minimum of 5000 amu/sec.

3.1.1.5 High mass range must be 285 amu or greater.

3.1.1.6 Must have full compliance or exceed performance of US EPA methodology for Method 200.8; Method SW 846-6020; FDA Forensic Chemistry Center SOP T026 (002); AOAC 968.08D; AOAC 985.01; AOAC 2006.03; AOAC 965.09; AOAC 982.01.

3.1.1.7 The instrument operates in helium collision cell mode to eliminate interference for isobaric polyatomic species via kinetic energy discrimination.

3.1.1.8 Tuning for low oxide and low double charged species is important for minimizing interference.

3.1.1.9 Capable to switch between hydrogen and helium reaction gas

3.1.1.10 All analytical system operations from component optimization to methods development, calibration, analysis and to reports must be able to be performed using a single software program.

3.1.1.11 System must have a full color plasma view window for useful visuals on the sampler cone, plasma color and injector tip.

3.1.2.2 Capable of manually entering weights, volumes and a unique run label.

3.1.2.3 Automatically calculates dilution factor.

3.1.2.4 Operating system must be fully integrated to control ICP-MS.

3.1.2.5 Software updates will be provided at no additional cost.

3.1.2.6 Computer includes mouse, minimum 19 inch color monitor, keyboard, DVD-RW drive, at least 2 USB ports, and printing capabilities.

3.1.3 Shipping

3.1.3.1 Equipment must be delivered within 90 Days after receipt of order.

3.1.3.2 The bidder must explain the details of its proposed packaging sizes for the deliverable(s). All equipment must be packaged and capable of fitting through access doors.

3.1.4 Installation

3.1.4.1 Vendor must be on-site for delivery and perform the installation (labor and supplies included) of the ICP-MS.

3.1.4.2 The vendor must provide a written validation of the instrument's performance after installation.

3.1.4.3 Installation shall be performed by the Vendor who shall agree to have an adequate number of trained staff and materials within 30 days of completion of the installation checklist.

3.1.5 Validation

3.1.5.1 The vendor must provide a written validation of the instrument's performance after installation.

3.1.6 Warranty

3.1.6.1 Vendor will provide a full one-year parts and labor warranty on all items, including preventative maintenances that are recommended by the Vendor's preventative maintenance service plans.

3.1.7 Training

3.1.7.1 Vendor will provide on-site training (labor and non-consumable supplies included) for all instruments and software.

3.1.8 Preventative Maintenance

3.1.8.1 Preventative maintenance services shall be performed by the Vendor who shall agree to have an adequate number of trained staff and replacement parts available in order to comply with the requirements in 3.1.8.2 and 3.1.8.3.

3.1.8.2 Vendor must respond to service calls within 24 hours.

3.1.8.3 Vendor must be capable of performing all requests for repairs and/or service within three business days of request.

3.1.8.4 After any preventative maintenance or repairs have been completed on a particular instrument, the Vendor shall guarantee the accuracy and precision of the instrument at the location where the instrument will be used.

3.1.8.5 Reports of service will be signed by State of WV authorized laboratory personnel to ensure work has been completed.

4. CONTRACT AWARD:

4.1 Contract Award: The Contract is intended to provide Agencies with a purchase price for the Contract Items. The Contract shall be awarded to the Vendor that provides the Contract Items meeting the required specifications for the lowest overall total cost as shown on the Pricing Pages.

4.2 Pricing Page: Vendor should complete the Pricing Page by placing all inclusive information in each column for item number, model/brand name, unit price and extended amount. There should be a price for the ICP-MS, autosampler, workstation, software, shipping/inside delivery, installation, validation, warranty, there is no charge for any deliverable, indicate in the cell with "no charge". The bidder/vendor information must be completed and include an authorize signature. Vendor should complete the Pricing Page in full as failure to complete the Pricing Page in its entirety may result in Vendor's bid being disqualified.

Vendor should type or electronically enter the information into the Pricing Page to prevent errors in the evaluation.

5. PAYMENT:

5.1 Payment: Vendor shall accept payment in accordance with the payment procedures of the State of West Virginia.

6. DELIVERY AND RETURN:

6.1 Shipment and Delivery: Vendor should ship the Contract Items within 90 days after being awarded this Contract and receiving a purchase order or notice to proceed. Contract Items must be delivered to Agency at 313 Gus R. Douglass Lane, Charleston, WV 25312.

6.2 Late Delivery: The Agency placing the order under this Contract must be notified in writing if the shipment of the Contract Items will be delayed for any reason. Any delay in delivery that could cause harm to an Agency will be grounds for cancellation of the Contract, and/or obtaining the Contract Items from a third party.

Any Agency seeking to obtain the Contract Items from a third party under this provision must first obtain approval of the Purchasing Division.

6.3 Delivery Payment/Risk of Loss: Vendor shall deliver the Contract Items F.O.B. destination to the Agency's location.

6.4 Return of Unacceptable Items: If the Agency deems the Contract Items to be unacceptable, the Contract Items shall be returned to Vendor at Vendor's expense and with no restocking charge. Vendor shall either make arrangements for the return within five (5) days of being notified that items are unacceptable, or permit the Agency to arrange for the return and reimburse Agency for delivery expenses. If the original packaging cannot be utilized for the return, Vendor will supply the Agency with appropriate return packaging upon request. All returns of unacceptable items shall be F.O.B. the Agency's location. The returned product shall either be replaced, or the Agency shall receive a full credit or refund for the purchase price, at the Agency's discretion.

6.5 Return Due to Agency Error: Items ordered in error by the Agency will be returned for credit within 30 days of receipt, F.O.B. Vendor's location. Vendor shall not charge a restocking fee if returned products are in a resalable condition. Items shall be deemed to be in a resalable condition if they are unused and in the original packaging. Any restocking fee for items not in a resalable condition shall be the lower of the Vendor's customary restocking fee or 5% of the total invoiced value of the returned items.

7 VENDOR DEFAULT:

7.1 The following shall be considered a vendor default under this Contract.

7.1.1 Failure to provide Contract Items in accordance with the requirements contained herein.

7.1.2 Failure to comply with other specifications and requirements contained herein.

7.1.3 Failure to comply with any laws, rules, and ordinances applicable to the Contract Services provided under this Contract.

7.1.4 Failure to remedy deficient performance upon request.

7.2 The following remedies shall be available to Agency upon default.

7.2.1 Immediate cancellation of the Contract.

7.2.2 Immediate cancellation of one or more release orders issued under this Contract.

7.2.3 Any other remedies available in law or equity.

8 FACILITIES ACCESS:

Performance of Services will require access to the facility.

8.1 Vendor must identify principal service personnel who will be asked for identification upon entrance to the facility.

8.2 Anyone performing under this Contract will be subject to Agency's security protocol and procedures.

CRFQ AGR1700000016 - PRICING PAGE					
Item No.	**Description**	**Model No/Brand Name**	**Quanity**	**Unit Price**	**Extended Amount**
3.1.1	ICP-MS, autosampler,computer, software		1 ea	132,067.65	132,067.65
3.1.1	Shipping charges and inside delivery		1 ea	3,072.00	3,072.00
3.1.4	Installation/validation		1 ea	-	-
3.1.7	Training/warranty		1 ea	2,880.00	2,880.00
3.1.8	Preventative maintenance		1 ea	2,500.00	2,500.00
	Failure to use this form may result in disqualification			OVERALL TOTAL COST:	140,519.65 Total amount including freight and discounts.
	Bidder / Vendor Information				

Name:	PerkinElmer Health Sciences, Inc.
Address:	710 Bridgeport Avenue
	Shelton, CT
	06484
Phone:	800-762-4000
Email Address:	ContractsShelton@perkinelmer.com
Authorized Signature:	

Bid in accordance with PerkinElmer Health Sciences, Inc. Quotation 21268907 attached.

STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

MANDATE: Under W. Va. Code §5A-3-10a, no contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and: (1) the debt owed is an amount greater than one thousand dollars in the aggregate; or (2) the debtor is in employer default.

EXCEPTION: The prohibition listed above does not apply where a vendor has contested any tax administered pursuant to chapter eleven of the W. Va. Code, workers' compensation premium, permit fee or environmental fee or assessment and the matter has not become final or where the vendor has entered into a payment plan or agreement and the vendor is not in default of any of the provisions of such plan or agreement.

DEFINITIONS:

"Debt" means any assessment, premium, penalty, fine, tax or other amount of money owed to the state or any of its political subdivisions because of a judgment, fine, permit violation, license assessment, defaulted workers' compensation premium, penalty or other assessment presently delinquent or due and required to be paid to the state or any of its political subdivisions, including any interest or additional penalties accrued thereon.

"Employer default" means having an outstanding balance or liability to the old fund or to the uninsured employers' fund or being in policy default, as defined in W. Va. Code § 23-2c-2, failure to maintain mandatory workers' compensation coverage, or failure to fully meet its obligations as a workers' compensation self-insured employer. An employer is not in employer default if it has entered into a repayment agreement with the Insurance Commissioner and remains in compliance with the obligations under the repayment agreement.

"Related party" means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceed five percent of the total contract amount.

AFFIRMATION: By signing this form, the vendor's authorized signer affirms and acknowledges under penalty of law for false swearing (*W. Va. Code* §61-5-3) that neither vendor nor any related party owe a debt as defined above and that neither vendor nor any related party are in employer default as defined above, unless the debt or employer default is permitted under the exception above.

WITNESS THE FOLLOWING SIGNATURE:

Vendor's Name: PerkinElmer Health Sciences, Inc.

Authorized Signature: _____ Date: May 12, 2017

State of Connecticut

County of Fairfield, to-wit:

Taken, subscribed, and sworn to before me this 12th day of May, 2017.

My Commission expires AUGUST 31, 2017.

AFFIX SEAL HERE

NOTARY PUBLIC Julia A Hamilton

JULIA A. HAMILTON NOTARY PUBLIC STATE OF CONNECTICUT

Julia A. Hamilton
NOTARY PUBLIC
State of Connecticut
My Commission Expires
August 31, 2018

WV-10
Approved / Revised
12/16/15

State of West Virginia
VENDOR PREFERENCE CERTIFICATE

Certification and application is hereby made for Preference in accordance with ***West Virginia Code***, §5A-3-37. (Does not apply to construction contracts). ***West Virginia Code***, §5A-3-37, provides an opportunity for qualifying vendors to request (at the time of bid) preference for their residency status. Such preference is an evaluation method only and will be applied only to the cost bid in accordance with the ***West Virginia Code***. This certificate for application is to be used to request such preference. The Purchasing Division will make the determination of the Vendor Preference, if applicable.

1. **Application is made for 2.5% vendor preference for the reason checked:**
☐ Bidder is an individual resident vendor and has resided continuously in West Virginia for four (4) years immediately preceding the date of this certification; **or,**

☐ Bidder is a partnership, association or corporation resident vendor and has maintained its headquarters or principal place of business continuously in West Virginia for four (4) years immediately preceding the date of this certification;

☐ Bidder is a resident vendor partnership, association, or corporation with at least eighty percent of ownership interest of bidder held by another entity that meets the applicable four year residency requirement; **or,**

☐ Bidder is a nonresident vendor which has an affiliate or subsidiary which employs a minimum of one hundred state residents and which has maintained its headquarters or principal place of business within West Virginia continuously for the four (4) years immediately preceding the date of this certification; **or,**

2. **Application is made for 2.5% vendor preference for the reason checked:**
☐ Bidder is a resident vendor who certifies that, during the life of the contract, on average at least 75% of the employees working on the project being bid are residents of West Virginia who have resided in the state continuously for the two years immediately preceding submission of this bid; **or,**

3. **Application is made for 2.5% vendor preference for the reason checked:**
☐ Bidder is a nonresident vendor that employs a minimum of one hundred state residents, or a nonresident vendor which has an affiliate or subsidiary which maintains its headquarters or principal place of business within West Virginia and employs a minimum of one hundred state residents, and for purposes of producing or distributing the commodities or completing the project which is the subject of the bidder's bid and continuously over the entire term of the project, on average at least seventy-five percent of the bidder's employees or the bidder's affiliate's or subsidiary's employees are residents of West Virginia who have resided in the state continuously for the two immediately preceding years and the vendor's bid; **or,**

4. **Application is made for 5% vendor preference for the reason checked:**
☐ Bidder meets either the requirement of both subdivisions (1) and (2) or subdivision (1) and (3) as stated above; **or,**

5. **Application is made for 3.5% vendor preference who is a veteran for the reason checked:**
☐ Bidder is an individual resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard and has resided in West Virginia continuously for the four years immediately preceding the date on which the bid is submitted; **or,**

6. **Application is made for 3.5% vendor preference who is a veteran for the reason checked:**
☐ Bidder is a resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard, if, for purposes of producing or distributing the commodities or completing the project which is the subject of the vendor's bid and continuously over the entire term of the project, on average at least seventy-five percent of the vendor's employees are residents of West Virginia who have resided in the state continuously for the two immediately preceding years.

7. **Application is made for preference as a non-resident small, women- and minority-owned business, in accordance with *West Virginia Code* §5A-3-59 and *West Virginia Code of State Rules*.**
☐ Bidder has been or expects to be approved prior to contract award by the Purchasing Division as a certified small, women- and minority-owned business.

Bidder understands if the Secretary of Revenue determines that a Bidder receiving preference has failed to continue to meet the requirements for such preference, the Secretary may order the Director of Purchasing to: (a) rescind the contract or purchase order; or (b) assess a penalty against such Bidder in an amount not to exceed 5% of the bid amount and that such penalty will be paid to the contracting agency or deducted from any unpaid balance on the contract or purchase order.

By submission of this certificate, Bidder agrees to disclose any reasonably requested information to the Purchasing Division and authorizes the Department of Revenue to disclose to the Director of Purchasing appropriate information verifying that Bidder has paid the required business taxes, provided that such information does not contain the amounts of taxes paid nor any other information deemed by the Tax Commissioner to be confidential.

Bidder hereby certifies that this certificate is true and accurate in all respects; and that if a contract is issued to Bidder and if anything contained within this certificate changes during the term of the contract, Bidder will notify the Purchasing Division in writing immediately.

Bidder: _____ **Signed:** _____

Date: _____ **Title:** _____

**Check any combination of preference consideration(s) indicated above, which you are entitled to receive.*

710 Bridgeport Ave.
Shelton, CT 06484-4794

Bob Stroyne

Sr. Sales Specialist
Phone 412-491-4266
Fax: 203-944-4914
Email:
robert.stroyne@perkinelmer.com

Tara Lyle
Dept. of Administration
Purchasing Division
2109 Washington Street East
Charleston, WV 25305-0130

re: CRFQ 1400 AGR1700000016

Tara,

I would like to thank you on behalf of PerkinElmer for the opportunity to provide a response for CRFQ 1400 AGR1700000016.

This response is for the PerkinElmer NexION 2000B ICP/MS, and its peripherals, as per your request. This instrument meets the entire set of mandatory instrument specifications called out in the RFQ. Brochures and Laboratory requirements are also included in our response package. The pricing for the Instrument, Autosampler, Chiller, PC, Monitor, 2nd Ethernet port, and Software are listed on Line 1.

Installation, Validation, and One Year Warranty are included in the price of the NexION 2000B System and as such, are listed at no charge on your pricing sheet on Line 3.

The price listed for the “Training/Warranty” on line 4 is for On-Site Training by one of our Field Application Scientists, and this is highly recommended when a customer buys their first ICP/MS Instrument. There is no hard time limit for this training, but we recommend 2-3 days depending on the complexity of your applications for the instrument. The Service Specialist that installs the instrument will also start you off with basic training during installation and before the advanced on-site field training occurs. Also included, at no charge, is the tuition to an in-depth 5-day training course at one of our field application labs across the US.

The cost for a Preventative Maintenance visit for the system during the One-Year warranty has also been added to the pricing sheet as per your request on Line 5.

Please feel free to contact me with any questions that you may have.

Thank you and best regards,

Bob

Bob Stroyne
Sr. Sales Specialist
Chromatography Products
PerkinElmer Life and Analytical Sciences
412-491-4266
robert.stroyne@perkinelmer.com

Purchasing Divison
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

State of West Virginia
Request for Quotation
13 — Equipment

Proc Folder: 317430

Doc Description: Inductively Coupled Plasma Mass Spectrometry (ICP-MS)

Proc Type: Central Purchase Order

Date Issued	Solicitation Closes	Solicitation No	Version
2017-05-01	2017-05-18 13:30:00	CRFQ 1400 AGR1700000016	1

BID RECEIVING LOCATION

BID CLERK
DEPARTMENT OF ADMINISTRATION
PURCHASING DIVISION
2019 WASHINGTON ST E
CHARLESTON WV 25305
US

VENDOR

Vendor Name, Address and Telephone Number:

PerkinElmer Health Sciences, Inc.
710 Bridgeport Ave.
Shelton, CT 06484
Phone number: 800-762-4000

FOR INFORMATION CONTACT THE BUYER

Tara Lyle
(304) 558-2544
tara.l.lyle@wv.gov

Signature X **FEIN #** 04-3361624 **DATE** May 12th, 2017

All offers subject to all terms and conditions contained in this solicitation

Bid in accordance with PerkinElmer Health Sciences, Inc. Quotation 21268907 attached.

ADDITIONAL INFORMAITON:

The West Virginia Purchasing Division for the agency, the West Virginia Department of Agriculture, is soliciting bids for a one-time purchase of an Inductively Coupled Plasma Mass Spectrometry (ICP-MS), workstation PC, and software with shipping, installation, validation, warranty, training, and service, per the attached documentation.

INVOICE TO	SHIP TO
PROCUREMENT OFFICER 304-558-2221 AGRICULTURE DEPARTMENT OF ADMINISTRATIVE SERVICES 1900 KANAWHA BLVD E CHARLESTON WV25305-0173 US	AUTHORIZED RECEIVER 304-558-2227 AGRICULTURE DEPARTMENT OF REGULATORY PROTECTION DIVISION 313 GUS R DOUGLAS LN, BLDG 11 CHARLESTON WV 25312 US

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
1	ICP-MS Autosampler, computer, software	1.00000	EA	132,067.65	132,067.65

Comm Code	Manufacturer	Specification	Model #
41000000	PerkinElmer Health Sciences, Inc.	NexION 2000B ICP-MS	N8150044

Extended Description :
ICP-MS Autosampler, computer, software

INVOICE TO	SHIP TO
PROCUREMENT OFFICER 304-558-2221 AGRICULTURE DEPARTMENT OF ADMINISTRATIVE SERVICES 1900 KANAWHA BLVD E CHARLESTON WV25305-0173 US	AUTHORIZED RECEIVER 304-558-2227 AGRICULTURE DEPARTMENT OF REGULATORY PROTECTION DIVISION 313 GUS R DOUGLAS LN, BLDG 11 CHARLESTON WV 25312 US

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
2	Shipping Charges & Inside Delivery	1.00000	EA	3,072.00	3,072.00

Comm Code	Manufacturer	Specification	Model #
78121603	N/A	Delivery including Liftgate and Inside delivery	N/A

Extended Description :
Shipping Charges & Inside Delivery

INVOICE TO	SHIP TO
PROCUREMENT OFFICER 304-558-2221 AGRICULTURE DEPARTMENT OF ADMINISTRATIVE SERVICES 1900 KANAWHA BLVD E CHARLESTON WV25305-0173 US	AUTHORIZED RECEIVER 304-558-2227 AGRICULTURE DEPARTMENT OF REGULATORY PROTECTION DIVISION 313 GUS R DOUGLAS LN, BLDG 11 CHARLESTON WV 25312 US

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
3	Installation/Validation	1.00000	EA		

Comm Code	Manufacturer	Specification	Model #
73171605	PerkinElmer Health Sciences, Inc.	Included	N/A

Extended Description :
Installation/Validation

INVOICE TO	SHIP TO
PROCUREMENT OFFICER 304-558-2221 AGRICULTURE DEPARTMENT OF ADMINISTRATIVE SERVICES 1900 KANAWHA BLVD E CHARLESTON WV25305-0173 US	AUTHORIZED RECEIVER 304-558-2227 AGRICULTURE DEPARTMENT OF REGULATORY PROTECTION DIVISION 313 GUS R DOUGLAS LN, BLDG 11 CHARLESTON WV 25312 US

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
4	Training/Warranty	1.00000	EA	2,880.00	2,880.00

Comm Code	Manufacturer	Specification	Model #
73171605	PerkinElmer Health Sciences, Inc.	On - Site Training	N0200088

Extended Description :
Training/Warranty

INVOICE TO	SHIP TO
PROCUREMENT OFFICER 304-558-2221 AGRICULTURE DEPARTMENT OF ADMINISTRATIVE SERVICES 1900 KANAWHA BLVD E CHARLESTON WV25305-0173 US	AUTHORIZED RECEIVER 304-558-2227 AGRICULTURE DEPARTMENT OF REGULATORY PROTECTION DIVISION 313 GUS R DOUGLAS LN, BLDG 11 CHARLESTON WV 25312 US

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
5	Preventative maintenance	1.00000	EA	2,500.00	2,500.00

Comm Code	Manufacturer	Specification	Model #
81101706	PerkinElmer Health Sciences. Inc.	PM Visit	N0207132

Extended Description :
Preventative maintenance

Total of the quote: $140,519.65 (including freight and discounts).

SCHEDULE OF EVENTS

Line	Event	Event Date
1	Technical questions due by 4:00 pm	2017-05-09

ADDITIONAL TERMS AND CONDITIONS

See attached document(s) for additional Terms and Conditions

PerkinElmer®
For the Better

Quotation

PerkinElmer Health Sciences Inc.
710 Bridgeport Avenue
Shelton, CT 06484-4794

Phone: 1-800-762-4000
Fax: (203) 944-4914

To: TARA LYLE
STATE OF WEST VIRGINIA
313 GUS R. DOUGLASS LANE
CHARLESTON WV 25312

QUOTE NO.: 21268907
QUOTE VALID TO: 07/10/2017
QUOTE DATE: 05/12/2017
PAY. TERMS: Net 30 days
FREIGHT TERMS: FOB Destination - Frt Quoted
ULTIMATE DEST.: UNITED STATES OF AMERICA

TELEPHONE NO. 304-558-2544
FAX NO.
YOUR REFERENCE

ITEM	MATERIAL	DESCRIPTION	QTY/EA	UNIT PRICE	TOTAL
1	N8150044	NexION 2000B ICP-MS Configuration	1	182,800.00	182,800.00
		Sales Discount			63,980.00-

NexION 2000B ICP-MS Configuration

The NexION 2000 is a fully computer controlled, benchtop ICP-MS system consisting of the NexION spectrometer and Syngistix for ICP-MS software which runs under the Windows 7 operating system. It includes an installation kit with installation solutions, gas lines, a high purity He gas regulator, cooling lines, flexible vent tubing, waste container, sample introduction, torch and interface cones.

The PerkinElmer NexION 2000 ICP Mass Spectrometer (ICP-MS) features an array of unique technologies that combine to deliver the highest performance no matter what your analytical challenge. Its versatility makes it easy to handle any sample matrix and address any interferences; detect any particle size through industry-best data acquisition speeds (100,000 points/sec); and optimize productivity with the lowest maintenance ICP-MS on the market.

With a patented LumiCoil RF coil that never needs to be changed and a unique, tightly controlled ion path that creates the cleanest analytical environment of any ICP-MS, the NexION 2000 eliminates virtually all maintenance requirements, for unsurpassed instrument uptime.

The NexION 2000 features include:
- An integrated 4-channel low-pulse peristaltic pump;
- a cyclonic sample introduction system with a MEINHARD concentric

SEND PURCHASE ORDERS TO:

PerkinElmer Health Sciences, Inc.
710 Bridgeport Ave.
Shelton, CT 06484-4794
Phone: 1-800-762-4000
Fax: (203) 944-4904
Email: USInstrumentOrders@perkinelmer.com

SALES REPRESENTATIVE: ROBERT STROYNE
PREPARED BY: Elsa Cordero

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For the Better

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QUOTE DATE: 05/12/2017

To: TARA LYLE
STATE OF WEST VIRGINIA

ITEM	MATERIAL	DESCRIPTION	QTY/EA	UNIT PRICE	TOTAL
		nebulizer; - a built-in 34 MHz free-running ICP source with PlasmaLok technology to control ion energies; - color coded cassette torch mount that provides one-handed removal and replacement; - a quadruple-stage vacuum system utilizing a triple inlet turbomolecular pump; - a triple cone interface to collimate the ion beam; - a system of three quadrupoles where: - the first is a Quadrupole Ion Deflector (QID) that selectively turns the beam 90 degrees and reduces neutrals and polyatomics; - the second quadrupole is a patented Universal Cell (UCT) designed to offer unsurpassed flexibility for interference removal. The cell can operate in Standard mode (for samples with no significant interferences); Collision mode (for samples with simple polyatomic interferences); and two different Reaction modes (for high-sensitivity elemental analyses involving intense spectral interferences). The performance of the UCT is boosted by linearly accelerating axial field (AFT) to eliminate matrix effects; a scanning quadrupole to reject reaction by-products and ensure clean and controlled reactions; three cell gas channels for ultimate versatility to target the various interferences by using any gas (even 100% pure ammonia); - a third quadrupole made of a unique metal alloy, with exceptional thermal stability, and a 2.5 MHz thermally stabilized quadrupole power supply producing hyperbolic fields for excellent abundance sensitivity, on-the-fly variable resolution and outstanding mass stability. The NexION 2000B Base instrument simplifies ICP-MS by providing an easy-to-use, easy-to-maintain tool for ultratrace elemental analysis. The 2000B instrument is ideal for environmental, biomonitoring, geochemical and general testing laboratories with moderate to heavy loads of samples comprising a wide range of concentrations. The SMARTintro sample introduction cassette (Blue) includes a 2.0 mm fixed injector which provides simple maintenance when replacing glassware. Power Requirements: Instrument: 200-240 V (+/- 10%), 50/60 Hz, single phase. Vacuum pump: 12A single-phase 200-240V outlet. Power Cords included: One 2.4-meter (8 ft.) mains cord terminated by an IEC 60309 connector rated 30A by UL (North America) and 32A by VDE (International) for 250V Dimensions: Width 81 cm, Depth 69 cm, Height 75 cm Product Weight: 150 kg Warranty: Includes PerkinElmer 1 year warranty			

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ITEM	MATERIAL	DESCRIPTION	QTY/EA	UNIT PRICE	TOTAL
		Installation: Included Requires but not included: Computer, monitor, mouse, and keyboard			
2	N8140504	NexION Cell Solution Kit	1	904.00	904.00
		Mat'l Disc Exculsiv			904.00-
3	09406459	Lenovo M800 Win 7 - 64 Tower USA	1	1,029.00	1,029.00
4	09406020	24 Inch LCD Widescreen Monitor (Non-ATO)	1	504.00	504.00
5	09406322	PCIE Network Card	1	92.00	92.00
6	N0772046	WhisperCool 1 HP Chiller 208-230 V 60 Hz	1	5,100.00	5,100.00
		Sales Discount			1,785.00-
		1HP Whispercool™ Chiller Cooling Capacity @ 20C: 2650 watts on 50Hz; 2900 watts on 60Hz Pump Flow: 3.5 gpm / 13.2 lpm Pump Pressure (adjustable): 90 psi maximum / 6.9 bar maximum (preset at 55 psi) Microprocessor-based temperature controller Large, easy to read digital temperature display (°C or °F) Cool Command™ modulated refrigeration system for enhanced temperature stability and extended compressor life Chiller is designed for indoor installation in ambient temperatures between 5° and 30°C (41° and 86°F); relative humidity should not exceed 80% (non-condensing) Sound measurement @ 1 meter away: 65dBA (full load) / 62dBA (no load) Electrical Requirements: 50Hz: 240V / 1PH / 12.2 Amps Electrical Requirements: 60Hz: 208-230V/ 1PH / 12.2 Amps Dimensions: 27.6" L x 14.5" W x 22.6" H / 70.2cm L x 36.8cm W x 57.5cm H Shipping Weight: 99 lbs / 90 kgs Manufacturer's Warranty: 2 years parts & labor			
7	N8150390	2DXX FAST Dual Rinse Autosampler	1	10,300.00	10,300.00
		Sales Discount			3,605.00-
8	N8150320	Syngistix for ICP-MS Version 2.2	1	2,481.00	2,481.00
		Sales Discount			868.35-
9	N0200193	NexION Operator Training	1	3,150.00	3,150.00
		New Inst Train Disc			3,150.00-

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ITEM	MATERIAL	DESCRIPTION	QTY/EA	UNIT PRICE	TOTAL
10	N0200088	Onsite Scientific Consulting Service MAS	1	3,200.00	3,200.00
		Sales Discount			320.00-
		This service is a customized service provided at the facility of the purchaser. The service can include, but is not limited to system applications training , method development, application assistance, method transfer from previous instrumentation, productivity improvements, sample introduction optimizations, and implementation of new methodology. All travel costs are included in this item. The item is sold on a per day basis with per day being defined as a typical 8 hour period."			
11	N0207132	PREVENTIVE MAINTENANCE VISIT ON NEXION 2000B-ICP MS	1	2,500.00	2,500.00
12	REGDELMAS	Regular Delivery	1	2,772.00	2,772.00
13	SDS-IDMAS	Inside Delivery	1	150.00	150.00
14	SDS-ASMAS	Lift Gate Required	1	150.00	150.00

Total Net Price in USD: 140,519.65

For your convenience, most orders placed with PerkinElmer can be easily tracked using our Self Service Portal located at http://selfservice.perkinelmer.com/. Simply enter your sales order number (provided with your order confirmation information) in combination with your purchase order number or postal code, and discover the current status of your shipment!

Customized Financing Solutions are available - We offer competitive rates with a wide range of structures to assist in acquiring your PerkinElmer technology - Speak to your Sales Engineer.

Did you know that you can order selected products online at www.perkinelmer.com/shop?

Please when submitting your order include our Quotation or Reference number.
*
The amount displayed does not include tax charges.
These charges will be added to the invoice if applicable.
*

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ITEM	MATERIAL	DESCRIPTION	QTY/EA	UNIT PRICE	TOTAL
		Includes installation and one year warranty (parts, labor and travel).			
		*			
		Terms subject to credit approval.			

_____ _____

ROBERT STROYNE

PERKINELMER HEALTH SCIENCES, INC.
STANDARD TERMS AND CONDITIONS OF SALE

1. **Delivery Dates and Prices**

   a) All delivery and shipment dates indicated on the face hereof are approximate and subject to Seller's availability schedule. Seller will make reasonable efforts to meet the delivery date(s) quoted. However, Seller will not be liable for its failure to meet the quoted delivery dates or for any delay in performance hereunder due to unforeseen circumstances or shortages, due to causes beyond its control, or due to its voluntary or mandatory compliance with any governmental act, regulation, or request. If, by reason of such circumstances, Seller's supplies of the equipment or service (hereinafter the "Product(s)") covered hereby are limited, Seller shall have the right to allocate the available supply among its customers in such manner as it, in its sole discretion, determines appropriate.

   b) All orders are priced on the basis of an estimated shipment date within ninety (90) days of the date of order to the stated destination. Should Buyer request a change in the estimated shipment date or otherwise cause delay in delivery beyond ninety (90) days from the date of order or request that the Products be shipped outside the country of original delivery, the prices established by this quote shall no longer apply, and Seller's list prices in effect on the actual date of shipment shall be used in determining the price to be paid. Except as provided above, if the price is stated by reference to a published price list, then the price shall be the price on the published price list in effect at the time Seller receives Buyer's purchase order, without regard to the requested delivery date. However, if any Product is ordered prior to the effective date of a published price change and the delivery date is rescheduled, the price in effect at the time of the initial delivery date shall apply.

   c) If Buyer requests shipment to a country other than the country originally requested, and if Seller elects not to cancel the order pursuant to Paragraph 12 hereof, Seller’s applicable surcharge for the actual country of delivery shall be added to the price.

   d) Notwithstanding any provision to the contrary herein, all prices are subject to increase without notice to reflect changes in: (1) Federal or State laws taxing raw material or processed materials; (2) applicable laws or regulations governing working hours or compensation of labor; and/or (3) freight charges, insurance costs, duty or other factors affecting costs of shipment.

2. **Packing and Loss or Damage in Transit.** Products will be packed for shipment in a manner suitable to the method of shipment specified by Buyer, or to the method selected by Seller in the absence of instructions. Unless otherwise indicated on the face hereof, all sales hereunder are f.o.b. shipping point, and all risk of loss or damage to equipment in transit is upon Buyer. Payment will be made in accordance with Paragraph 5 below.

3. **Payment Due For Partial Deliveries.** Seller may, in its sole discretion, deliver any portion of the Products ordered, regardless of utility to Buyer in the absence of the undelivered portion, and all such partial deliveries shall be accepted and paid for in accordance with the terms of Paragraphs 4 and 5 below. Likewise, completion of any installation services shall not be a condition to Buyer's obligation to remit payment. The making of a partial delivery that, to any extent, is not in accordance with the contract of sale shall not affect the Buyer's obligation hereunder to remit payment.

4. **Inspection, Acceptance and Return of Products or Trade-Ins.** Buyer shall inspect the Products immediately upon receipt and shall, within five (5) business days after receipt, give written notice to Seller of any claim for shortage or that the Products do not conform with the terms of the contract of sale. If Buyer shall fail to give such notice, the Products shall be deemed accepted and to conform with the terms of the contract of sale, and Buyer shall be bound to pay for the Products in accordance with the terms of Paragraph 5 below. Return of Products, defective or otherwise, will not be accepted by Seller without (i) written notification from Buyer to Seller within 30 days of receipt of invoice and (ii)

receipt of a return authorization number from Seller. Products authorized to be returned shall be shipped f.o.b. destination, freight pre-paid. When return of nonconforming goods has been accepted by Seller, conforming shipment may be made in accordance with Paragraph 1 above and Paragraph 8 below without further liability on Seller's part. Buyer will be liable for restocking charges in the event Products are returned to the Seller which are not defective and are in accordance with these terms. When a trade-in is authorized by Seller, Buyer shall ship, f.o.b. destination, freight pre-paid, the material or equipment so authorized for trade-in, to Seller's specified location.

5. **Payment and Credit Terms.** Unless otherwise indicated on the face hereof, Buyer agrees to remit payment in full to the address provided on the face of Seller's invoice for all shipments, including shipments of any portion of the Products ordered, upon receipt of invoice. This obligation shall not be contingent upon the completion of any installation services included in the purchase price. No cash discounts will be granted. Account balances not paid in accordance with these terms are subject to the maximum prevailing legal interest rate calculated from date of delinquency. In the event Seller finds it necessary to refer an account to an attorney or an agent for collection of delinquent accounts, Buyer shall pay all costs of collection including, without limitation, reasonable attorneys' fees. Buyer agrees that Seller shall retain a security interest in the Products sold hereunder to secure any portion of the price not paid on delivery and will, on request, execute a security agreement in such form as is required by Seller, which, at Seller's option, may be filed with appropriate local, state, or other relevant authorities. Should Buyer become delinquent in the payment of any sum due hereunder, or if Buyer becomes insolvent, or if any proceedings are commenced under any bankruptcy or similar laws for Buyer's reorganization or other debt adjustment, Seller will not be obligated to continue performance. Seller reserves the right to change the credit terms provided herein when, in Seller's opinion, the financial condition or previous payment record of Buyer so warrants. If, within thirty (30) days of receipt of written notice of such change, Buyer fails to agree and comply with different terms of credit, and/or fails to give adequate assurance of due performance, Seller may (a) by notice to Buyer, treat such failure or refusal as a repudiation by Buyer of the portion of the purchase order not then fully performed, whereupon Seller may cancel all further deliveries and any amounts unpaid hereunder shall immediately become due and payable; or (b) make shipments under reservation of a demand for advance payment or payment against tender of documents of title. Buyer's acceptance of delivery of any Products shall constitute a representation that Buyer is solvent.

6. **Taxes.** Buyer is responsible for the ultimate payment of all taxes which may be assessed or levied on or on account of Products sold hereunder to Buyer, whether termed a gross receipts tax, use tax, property tax, sales tax or otherwise. Where Buyer claims that a transaction is not subject to any such tax, that Buyer is exempt, or that Seller is not required to collect such tax, Buyer agrees to provide Seller with any documentation necessary to support such a claim, to allow Seller to document its decision not to collect such tax(es), and to indemnify and hold Seller harmless from and against any and all fines, penalties, interest, taxes, and other expenses, including, without limitation, reasonable attorney's fees, incurred by Seller as a result of reliance upon Buyer's position.

7. **Installation and Site Preparation.** Installation services are included in the purchase price of the Products sold hereunder only if expressly so stated on the face of Seller's quotation or in Seller's applicable price list. Installation services for Products transferred outside the country of original delivery by Buyer's actions may be subject to additional charges based on the actual installation site location. For Products requiring installation by Seller's service personnel, it is the responsibility of Buyer to prepare the site environmentally and provide the required services, power, water, drain, air, bottled gases, permits, licenses, approvals, etc., as well as whatever is required to uncrate and transport the Product to its appropriate location for use. Failure to do so, prior to Seller's service personnel arriving at Buyer's site on the mutually agreed upon installation date, will result in a service charge by Seller to cover the lost time of its service personnel. Should Seller be unable to perform the required installation services within twelve months of a Product's shipment date as a result of Buyer's inability to prepare the site as required, Buyer may be responsible for additional costs associated with required hardware, software and firmware updates. Because Seller's service personnel may be required to enter upon Buyer's premises for the purpose of providing service to the Products sold hereunder, Buyer hereby undertakes to maintain its premises in a safe condition and to

comply with all applicable laws, statutes and regulations governing workplace health and safety, and hereby accepts full responsibility for any harm or injury to, or liability arising from work performed by, Seller's personnel while on Buyer's premises, except to the extent caused solely by the gross negligence or willful misconduct of Seller's personnel. Seller's sales and service personnel are not authorized to enter into any indemnity or hold harmless agreements on behalf of Seller.

8. **Limited Warranty.**

a) Warranty.

i) Seller warrants to Buyer that the Products sold to Buyer are, at the time of shipment to Buyer from Seller, free from defects in materials and workmanship.
ii) This warranty shall be valid for a period of 90 days from the date of shipment to Buyer, unless a different period is specified herein, or in Seller's applicable price list in which case such specified period shall apply. Notwithstanding anything to the contrary contained herein, the warranty period for data processing equipment, including data storage devices, processors, printers, terminals, communication interfaces, tape drives and all similar devices, is in all cases limited to ninety (90) days from the date of shipment to Buyer.
iii) Except in the case of an authorized distributor of Seller, authorized in writing by Seller to extend this warranty to distributor's customers, the warranty herein applies only to Buyer as the original purchaser from Seller and may not be assigned, sold or otherwise transferred to any third party.
iv) As Buyer's sole and exclusive remedy under this warranty, Seller agrees either to repair or replace, at Seller's sole option, any part or parts of such Products which, under proper and normal conditions of use, prove(s) to be defective within the applicable warranty period. Alternatively, Seller may at any time, in its sole discretion, elect to discharge its warranty obligation hereunder by accepting the return of any defective Product pursuant to the terms set forth herein and refunding the purchase price paid by Buyer.

b) Exclusions and Limitations.

i) It is recognized that some parts by their nature may not function for the warranty period applicable to the Product. Therefore, expressly excluded from the warranty herein are chromatography columns, filaments, energy sources, lamps, power amplifier tubes, graphite tubes, sample cell holders, burner and furnace chambers, nebulizers, and other similar parts referenced in the Product's applicable operating manual.
ii) The warranty herein excludes any equipment or accessories which are identified on applicable price lists, quotations, special promotional materials, or on the face hereof, for which this limited warranty may be further limited. Included within this category are items produced by third party manufacturers (as to which Seller passes to Buyer the warranty it has been provided by the manufacturer) and items which are sold at specially reduced prices with reduced warranty protection (in some cases, extended warranty protection may be available at an increased price).
iii) This warranty does not cover loss, damage, or defects resulting from: transportation to the Buyer's facility, improper or inadequate maintenance by Buyer, Buyer-supplied software or interfacing, unauthorized modification or misuse, operation outside of the environmental specifications for the Product or improper site preparation or maintenance.
iv) No warranty is made with respect to used, reconstructed, refurbished or previously owned Products, which will be so marked on the face hereof and, unless otherwise indicated on the face hereof, shall be sold "As Is".
v) The warranty herein applies only to Products within the country of original delivery. Products transferred outside the country of original delivery, either by Seller at the direction of Buyer or by Buyer's actions subsequent to delivery, may be subject to additional charges prior to warranty repair or replacement of such Products based on the actual location of such Products and Seller's warranty and/or service surcharges for such location(s).

c) Place of Service. Except when otherwise provided in Seller's current applicable price list, Seller shall use reasonable efforts to perform all warranty services hereunder at Buyer's facility, as soon as reasonably practicable after notification by Buyer of a possible defect; provided, however, that Seller reserves the right to require that Buyer return the Product to Seller's production facility, transportation charges prepaid, when necessary to provide proper warranty service.

d) Software and Firmware Products. The sole and exclusive warranty applicable to software and firmware products provided by Seller for use with a processor is as follows: Seller warrants that such software and firmware will conform to Seller's program manuals current at the time of shipment to Buyer when properly installed on the processor, provided, however, that Seller does not warrant that the operation of the processor or software or firmware will be uninterrupted or error-free.

SELLER MAKES NO OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED, WITH RESPECT TO THE PRODUCTS, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

9. **Exclusive Remedies.**

THE REMEDIES PROVIDED HEREIN ARE BUYER'S SOLE AND EXCLUSIVE REMEDIES. SELLER SHALL NOT BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL, CONSEQUENTIAL OR PUNITIVE DAMAGES, WHETHER BASED ON CONTRACT, TORT, STRICT LIABILITY OR OTHERWISE, ARISING OUT OF THE DESIGN, MANUFACTURE, SALE, DELIVERY, INSTALLATION, SERVICE OR USE OF THE PRODUCTS. SELLER NEITHER ASSUMES NOR AUTHORIZES ANY OTHER PERSON TO ASSUME FOR IT ANY OTHER LIABILITY IN CONNECTION WITH THE DESIGN, MANUFACTURE, SALE, DELIVERY, INSTALLATION, SERVICE OR USE OF THE PRODUCTS.

10. **Patent Indemnity.**
Seller agrees to defend, at its own expense, any suit or legal proceeding which may be brought against Buyer alleging infringement by Buyer of any patent of the United States, as a result of Buyer's use of the Product sold hereunder for its intended purposes, provided that Buyer shall give Seller prompt written notice of any claim, threat, or institution of any such suit or legal proceeding, and provided further that Seller shall then have the sole right to control and conduct the defense and/or settlement of such claim, threat, suit or legal proceeding, either in the name of Seller or Buyer or both, and Buyer shall, at Seller's request and expense, provide relevant information and reasonable cooperation. Seller shall pay all final judgments and all costs and attorney's fees assessed against Buyer in any such suit or legal proceeding, provided Buyer has complied with the conditions hereof with respect to prompt notice and cooperation in connection with such suit or legal proceeding and given exclusive control thereof to Seller. Notwithstanding the foregoing, Seller shall not be liable for any attorney's fees or other legal expenses incurred by Buyer without the knowledge and prior written consent of Seller. Seller shall have the right, at its own expense, to procure for Buyer the right to continue using the Product claimed to infringe, replace said Product with an equally satisfactory non-infringing Product, modify said Product so that it becomes non-infringing, or remove such Product and refund the purchase price thereof less a reasonable amount for use, damage or obsolescence.

The foregoing indemnity fully defines Seller's obligation for patent infringement. Such obligations shall specifically not apply to:

a) an infringement claim resulting from additions or changes in or to the Product made by Buyer or any third party or from use in combination with other equipment; or

b) an infringement claim which is settled without the prior written consent of Seller; or

c) an infringement claim which results from compliance by Seller with specifications furnished by Buyer.

The total amount of Seller's obligation and liability under this Section shall not exceed the price paid by Buyer to Seller for the Product held to infringe, and in no event will Seller be held accountable for consequential damages under this indemnity, such as loss of business profits or goodwill. With respect to any infringement claim arising from Product manufactured in whole or in part to Buyer's specifications or from use of such Product in conjunction with any other goods , Buyer will indemnify and hold harmless Seller from and against all such claims for damages or profits arising from infringement of patents, designs, copyrights or trademarks.

11. **Modification of Terms.**

BUYER'S ACCEPTANCE OF ANY QUOTATION IS EXPRESSLY SUBJECT TO BUYER'S ASSENT TO EACH AND ALL OF THE TERMS AND CONDITIONS SET FORTH IN SELLER'S QUOTATION, AND BUYER'S ASSENT TO THESE TERMS AND CONDITIONS OF SALE SHALL BE CONCLUSIVELY PRESUMED FROM BUYER'S SUBMISSION OF ITS PURCHASE ORDER. NO ADDITION TO OR MODIFICATION OF SAID TERMS AND CONDITIONS SHALL BE BINDING UPON SELLER UNLESS SPECIFICALLY AGREED TO BY SELLER IN WRITING. IF BUYER'S PURCHASE ORDER OR OTHER CORRESPONDENCE CONTAINS TERMS OR CONDITIONS CONTRARY TO OR IN ADDITION TO THE TERMS AND CONDITIONS CONTAINED HEREIN OR IN SELLER'S QUOTATION, ACCEPTANCE OF ANY ORDER BY SELLER SHALL NOT BE CONSTRUED AS ASSENT TO SUCH CONTRARY OR ADDITIONAL TERMS AND CONDITIONS OR CONSTITUTE A WAIVER BY SELLER OF ANY OF THE TERMS AND CONDITIONS CONTAINED HEREIN OR IN SELLER'S QUOTATION. SELLER'S ACCEPTANCE OF BUYER'S PURCHASE ORDER IS EXPRESSLY CONDITIONED ON BUYER'S ASSENT TO THESE TERMS AND CONDITIONS.NO MODIFICATION OR WAIVER OF THESE TERMS AND CONDITIONS IS VALID, UNLESS CONFIRMED IN WRITING BY AN AUTHORIZED REPRESENTATIVE OF SELLER.

12. **Authority to Export.**

ALL ORDERS ACCEPTED FOR EXPORT (AND/OR RE-EXPORT) ARE SUBJECT TO: 1) UNITED STATES GOVERNMENT EXPORT REGULATIONS; AND 2) BUYER PROVIDING SELLER WITH ALL DOCUMENTATION NECESSARY FOR SHIPMENT TO THE DESTINATION COUNTRY.

13. **Software Licenses and Copyrighted Material.**

a) Seller provides software products by license only. The terms of the license are available from Seller and are deemed accepted by Buyer on delivery of licensed software.

b) Unless otherwise specified, Seller's copyrighted material (software, firmware, and printed documentation) may not be copied except for archive purposes, to replace a defective copy, or for program error verification by Buyer.

14. **Miscellaneous.**

a) Excusable Delays. Seller shall not be liable for delays in delivery or failure to manufacture or deliver goods due to acts of God, acts or failures to act of Buyer, acts of civil military authority, fires, strikes, floods, epidemics, attack, war, delays in transportation or other causes beyond Seller's reasonable control, including, without limitation, delays in obtaining or inability to obtain necessary labor, materials, components, or manufacturing facilities.

b) Governing Law. The contract of sale shall be governed by and construed in accordance with the laws of the Commonwealth of Massachusetts, U.S.A. without regard to its principles of conflict of laws. Any disputes relating to the contract of sale between Buyer and Seller shall be adjudicated in the state or federal courts in the Commonwealth of Massachusetts, U.S.A., and both parties hereby consent to the exclusive jurisdiction of said courts for purposes of any such litigation. The parties expressly agree to waive application of the United Nations Convention on Contracts for the International Sale of Goods.

c) Confidential Data and Information. If, in connection with the sale, purchase, use, or maintenance of the Products, Seller is requested, required, or deems it advisable to furnish data or information which it, in its sole discretion, deems proprietary, confidential, or both, Seller shall not, in any event, submit or be required to furnish such data or information unless Buyer enters into an agreement concerning the handling, use, copying, retention and return of such information, the form of which agreement is available to Buyer on request. Seller does not agree to accept any proprietary or confidential information of Buyer in the absence of such a written agreement signed by an authorized representative of Seller.

d) Assignment. Buyer may not assign, transfer or delegate any of its rights or obligations herein without the prior written consent of Seller, and any purported assignment of such rights or obligations without such consent shall be null and void.

e) Severability. If any provision herein is deemed unenforceable by a court of competent jurisdiction, the other provisions shall remain in full force and effect as if the unenforceable provision had not been included.