



State of West Virginia
 Department of Administration
 Purchasing Division
 2019 Washington Street East
 Post Office Box 50130
 Charleston, WV 25305-0130

Solicitation

NUMBER
LBS14051

PAGE
1

ADDRESS CORRESPONDENCE TO ATTENTION OF:
ROBERTA WAGNER
304-558-0067

RFQ COPY

TYPE NAME/ADDRESS HERE

Shimadzu Scientific Instruments, Inc.
 7102 Riverwood Drive
 Columbia, MD 21046

VENDOR

HEALTH AND HUMAN RESOURCES

SIIS COMPONENT 2
 ROOM 319
 350 CAPITOL STREET
 CHARLESTON, WV
 25301-0000 304-558-2975

SHIP TO

11/26/13 10:00:36AM
 West Virginia Purchasing Division

DATE PRINTED
10/25/2013

BID OPENING DATE: 12/03/2013

BID OPENING TIME 1:30PM

LINE	QUANTITY	UOP	CAT. NO.	ITEM NUMBER	UNIT PRICE	AMOUNT
THE WEST VIRGINIA PURCHASING DIVISION IS SOLICITING BIDS ON BEHALF OF THE WEST VIRGINIA DEPARTMENT OF HEALTH AND HUMAN RESOURCES (DHHR), OFFICE OF THE LABORATORY SERVICES, ENVIRONMENTAL CHEMISTRY SECTION TO ESTABLISH A CONTRACT FOR THE ONE-TIME PURCHASE OF ONE BENCH STYLE FLAME ATOMIC ABSORPTION SPECTROMETER INSTRUMENT SYSTEM FOR THE ANALYSIS OF SODIUM, IRON, MAGNESIUM AND MANGANESE IN DRINKING WATER SAMPLES PER THE ATTACHED SPECIFICATIONS & INSTRUCTIONS TO BIDDERS.						
0001	1	EA		998-53-97-000	\$28,259.00	\$20,901.05
				FLAME ATOMIC ABSORPTION SPECTROMETER		
0002	1	JB		998-53-97-000	0.00	0.00
				SETUP AND INSTALLATION		
				FREIGHT	\$300	\$300
0003	1	JB		924-35	0.00	0.00
				2 DAY TRAINING ONSITE		

SIGNATURE <i>[Signature]</i>	TELEPHONE 410-381-1227	DATE 11/12/13
TITLE Field Sales Engineer	FEIN 52-1035956	ADDRESS CHANGES TO BE NOTED ABOVE

WHEN RESPONDING TO SOLICITATION, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'



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LINE	QUANTITY	UOP	CAT. NO.	ITEM NUMBER	UNIT PRICE	AMOUNT
	*****	THIS	IS	THE	END	OF RFQ
				LBS14051	*****	TOTAL:
						<u>21,201.05</u>

SIGNATURE <i>Weather</i>	TELEPHONE 40-381-1227	DATE 11/12/13
TITLE Field Sales Engineer	FEIN 52-1035956	ADDRESS CHANGES TO BE NOTED ABOVE

WHEN RESPONDING TO SOLICITATION, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'

REQUEST FOR QUOTATION
LBS14051 - Flame Atomic Absorption Spectrometer Instrument System

9. MISCELLANEOUS:

- 9.1 Contract Manager:** During its performance of this Contract, Vendor must designate and maintain a primary contract manager responsible for overseeing Vendor's responsibilities under this Contract. The Contract manager must be available during normal business hours to address any customer service or other issues related to this Contract. Vendor should list its Contract manager and his or her contact information below.

Contract Manager: Heather Juzwa
Telephone Number: cell: 617-293-8279
Fax Number: 410-290-9140
Email Address: hljuzwa@shimadzu.com

REQUEST FOR QUOTATION
LBS14051 - Flame Atomic Absorption Spectrometer Instrument System

PRICING PAGE

Contract Item #	Quantity	Description	Unit Price	Extended Price
3.1.1	1 Each	Flame Atomic Absorption Spectrometer Instrument System that meets the mandatory requirements described in Section 3.1.1.1 through 3.1.1.12 herein.	\$28,259.00	\$20,901.05
3.1.2	1 Each	Setup and Installation of Flame Atomic Absorption Instrument System, including spectrometer, software, computer, monitor, and laser printer within 30 days of delivery at the Office of Laboratory Services, Environmental Chemistry Section, 4710 Chimney Drive, Suite G, Charleston, West Virginia 25302.	\$0.00	\$0.00
3.1.3	One, 2-Day Session	One, 2-Day Onsite Flame Atomic Absorption Instrument System Training Session at the Office of Laboratory Services, Environmental Chemistry Section, 4710 Chimney Drive, Suite G, Charleston, West Virginia 25302. Vendor will be responsible for all costs incurred for its staff to attend the training session; including travel expenses, lodging, and meals.	\$0.00	\$0.00
		FREIGHT	\$300.00	\$300.00
GRAND TOTAL COST:				\$21,201.05

REQUEST FOR QUOTATION
LBS14051 - Flame Atomic Absorption Spectrometer Instrument System

The Contract will be awarded to the Vendor that provides the Contract Items meeting the required specifications at the lowest grand cost.

VENDOR'S SECTION:

Vendor Name: Shimadzu Scientific Instruments, Inc. _____

Vendor Address: 7102 Riverwood Drive _____

Columbia, MD 21046 _____

Vendor Telephone Number: 410-381-1227 _____

Vendor Fax Number: 410-290-9140 _____

Vendor Email: hljuzwa@dhimadzu.com _____

Vendor Authorized Representative: Heather Juzwa _____

(Please Print)

Vendor Authorized Representative Signature: _____

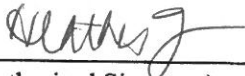
Date: 11/12/13 _____

CERTIFICATION AND SIGNATURE PAGE

By signing below, I certify that I have reviewed this Solicitation in its entirety; understand the requirements, terms and conditions, and other information contained herein; that I am submitting this bid or proposal for review and consideration; that I am authorized by the bidder to execute this bid or any documents related thereto on bidder's behalf; that I am authorized to bind the bidder in a contractual relationship; and that to the best of my knowledge, the bidder has properly registered with any State agency that may require registration.

Shimadzu Scientific Instruments, Inc.

(Company)



(Authorized Signature)

Heather Juzwa, Field Sales Engineer

(Representative Name, Title)

410-381-1227

410-290-9140

(Phone Number)

(Fax Number)

11/12/13

(Date)

RFQ No. LBS14051

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.

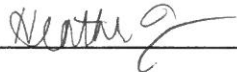
"Employer default" means having an outstanding balance or liability to the old fund or to the uninsured employers' fund or being in policy default, as defined in W. Va. Code § 23-2c-2, failure to maintain mandatory workers' compensation coverage, or failure to fully meet its obligations as a workers' 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 exceeds 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: Shimadzu Scientific Instruments Inc.

Authorized Signature:  Date: 11/18/13

State of MARYLAND

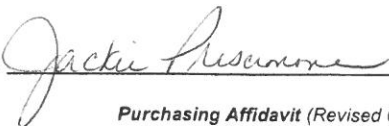
County of Howard, to-wit:

Taken, subscribed, and sworn to before me this 18 day of November, 2013.

My Commission expires MARCH 14, 2017.

AFFIX SEAL HERE

NOTARY PUBLIC


Purchasing Affidavit (Revised 07/01/2012)

Rev. 07/12

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 Resident Vendor Preference, if applicable.

1. Application is made for 2.5% resident 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; or 80% of the ownership interest of Bidder is held by another individual, partnership, association or corporation resident vendor who has maintained its headquarters or principal place of business continuously in West Virginia for four (4) years immediately preceding the date of this certification; **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% resident 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% resident vendor preference for the reason checked:

- ____ Bidder is a nonresident vendor employing a minimum of one hundred state residents or is a nonresident vendor with an affiliate or subsidiary which maintains its headquarters or principal place of business within West Virginia employing a minimum of one hundred state residents who certifies that, during the life of the contract, on average at least 75% of the employees or Bidder's affiliate's or subsidiary's employees are residents of West Virginia who have resided in the state continuously for the two years immediately preceding submission of this bid; **or**,

4. Application is made for 5% resident 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% resident 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% resident 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.

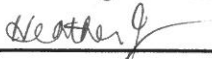
- ____ Bidder has been or expects to be approved prior to contract award by the Purchasing Division as a certified small, women- and minority-owned business.

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) reject the bid; 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.

Under penalty of law for false swearing (West Virginia Code, §61-5-3), 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: Shimadzu Scientific Instruments, Inc.

Signed: 

Date: 11/12/13

Title: Field Sales Engineer

ADDENDUM ACKNOWLEDGEMENT FORM
SOLICITATION NO.: LBS14051

Instructions: Please acknowledge receipt of all addenda issued with this solicitation by completing this addendum acknowledgment form. Check the box next to each addendum received and sign below. Failure to acknowledge addenda may result in bid disqualification.

Acknowledgment: I hereby acknowledge receipt of the following addenda and have made the necessary revisions to my proposal, plans and/or specification, etc.

Addendum Numbers Received:

(Check the box next to each addendum received)

- | | |
|---|--|
| <input type="checkbox"/> Addendum No. 1 | <input type="checkbox"/> Addendum No. 6 |
| <input type="checkbox"/> Addendum No. 2 | <input type="checkbox"/> Addendum No. 7 |
| <input type="checkbox"/> Addendum No. 3 | <input type="checkbox"/> Addendum No. 8 |
| <input type="checkbox"/> Addendum No. 4 | <input type="checkbox"/> Addendum No. 9 |
| <input type="checkbox"/> Addendum No. 5 | <input type="checkbox"/> Addendum No. 10 |

I understand that failure to confirm the receipt of addenda may be cause for rejection of this bid. I further understand that any verbal representation made or assumed to be made during any oral discussion held between Vendor's representatives and any state personnel is not binding. Only the information issued in writing and added to the specifications by an official addendum is binding.

Shimadzu Scientific Instruments, Inc.

Company



Authorized Signature

11/12/13

Date

NOTE: This addendum acknowledgement should be submitted with the bid to expedite document processing.

November 12, 2013

Ms. Roberta Wagner
State of West Virginia
PO Box 50130
Charleston, WV 25305
Re: LBS14051 Bench Style Flame Atomic Absorption Spectrometer

Dear Ms. Wagner,

I am writing in regards to bid LBS14051 Bench Style Flame Atomic Absorption Spectrometer (AA). Thank you in advance for reading this proposal in its entirety.

For the convenience of the end-users, a breakdown of the bid specifications and our submitted bid follows.

3.1.1 Contract Item #1 – Quantity: 1 - Flame Atomic Absorption Spectrometer Instrument System

3.1.1.1 Flame Atomic Absorption Spectrometer Instrument System must include a bench style spectrometer that meets the requirements for Iron, Manganese, Magnesium, and Sodium using the Flame Atomic Absorption methodology of the Code of Federal Regulations titled, *40CFR141, Subpart C, Appendix A, Alternative Testing Methods Approved for Analysis Under the Safe Drinking Water Act*. 40CFR141, Subpart C, Appendix A is hereto attached as Exhibit A.

MEETS

3.1.1.2 Flame Atomic Absorption Spectrometer Instrument System must have double-beam optics covering the wavelength range of a minimum of 190nm and a maximum of 900nm.

EXCEEDS: The Shimadzu AA-7000 Spectrometer has a range of 185 nm – 900 nm.

3.1.1.3 Flame Atomic Absorption Spectrometer Instrument System must have a deuterium background corrector with a wavelength range of 185-425nm.

EXCEEDS: The Shimadzu AA-7000 Spectrometer has two types of background correction. In addition to D2 background correction of 185 nm – 430 nm, Shimadzu offers an additional background correction, called Self-Reversal that covers the entire wavelength range of the instrument and also permits spectral interference correction. This will be useful for Na, which has absorbance above 420 nm.

3.1.1.4 Flame Atomic Absorption Spectrometer Instrument System must have automatic wavelength, and slit selection Slit shall be at a minimum 0.2, 0.5, and 1.0nm full height.

EXCEPTION: The Shimadzu AA-7000 Spectrometer has automatic slit selection options of 0.2 nm, 0.7 nm, 1.3 nm, and 2 nm.

3.1.1.5 Flame Atomic Absorption Spectrometer Instrument System must include a hollow-cathode lamp for Sodium, Iron, Magnesium, and Manganese.

MEETS.

3.1.1.6 Flame Atomic Absorption Spectrometer Instrument System must have a minimum of a four fixed lamp position with automatic computer controlled lamp selection and automatic optimization of energy.

EXCEEDS: The Shimadzu AA-7000 has 6 fixed lamp positions with automatic computer control and automatic optimization of energy.

3.1.1.7 Flame Atomic Absorption Spectrometer Instrument System must measure a minimum of four analytes in a single solution before proceeding to the next solution.

EXCEPTION: The Shimadzu AA-7000 spectrometer does not have fast sequential technique. Rather, the AA-7000 optimizes the conditions of each element before moving to the next element. Fast sequential use a compromised method for multiple elements where full sequential utilizes optimized conditions for each element to ensure maximum sensitivity and accuracy. A batch table can be created, and the instrument can automatically move from one optimized element to the next. Both fast sequential and Shimadzu's technology are not realized without the use of an autosampler, which does not appear on the bid.

3.1.1.8 Flame Atomic Absorption Spectrometer Instrument System must operate on a 110-120 V AC.

MEETS.

3.1.1.9 Flame Atomic Absorption Spectrometer Instrument System must include a computer, monitor, laser printer, and software necessary for System to operate properly.

MEETS.

3.1.1.10 Flame Atomic Absorption Spectrometer Instrument System must include a minimum one (1) year manufacturer warranty that covers the entire system, including all components of the spectrometer, software, computer, monitor, and laser printer.

EXCEEDS: The Shimadzu AA-7000 Spectrometer includes a 1 year manufacturer warranty that covers the entire system, including all components of the spectrometer and software. The Dell computer has its own 3 year warranty provided by Dell.

3.1.1.11 Flame Atomic Absorption Spectrometer Instrument System must include a minimum of one (1) year onsite service/maintenance that covers the entire system, including all components of the spectrometer, software, computer, monitor, and laser printer. Onsite service/maintenance will include 72 hour onsite response. Vendor will be responsible for all costs incurred for providing onsite maintenance; including parts, labor, travel expenses, lodging, and meals.

MEETS.

3.1.1.12 Flame Atomic Absorption Spectrometer Instrument System must include telephone support for a minimum of one (1) year that covers the entire system, including all components of the spectrometer, software, computer, monitor, and laser printer. Telephone support must be available during Vendor's normal business hours.

EXCEEDS: Shimadzu's approach to support is unique in the industry. Shimadzu does not require a purchase order or service coverage to offer free telephone technical support to its users. This support remains free for the useful lifetime of the instrument, making its cost of ownership much less than competitive systems.

3.1.2.1 Vendor must setup and install Flame Atomic Absorption Spectrometer, including software, computer, monitor, and laser printer within 30 days of delivery at the Office of Laboratory Services, Environmental Chemistry Section, 4710 Chimney Drive, Suite G, Charleston, West Virginia 25302.

MEETS.

3.1.3.1 Vendor must provide one, 2-day onsite training session to Agency staff on the operation and maintenance requirements of the System at the Office of Laboratory Services, Environmental Chemistry Section, 4710 Chimney Drive, Suite G, Charleston, West Virginia 25302 following installation. Vendor will be responsible for all costs incurred for its staff to attend the training session; including travel expenses, lodging, and meals.

EXCEEDS: Shimadzu's approach to training is unique in the industry. Of course, we will provide a 2-day onsite training session to Agency staff. However, if future refresher trainings are needed or if new agency staff will become users, Shimadzu will return for onsite training for no charge.

Thanks for your time and consideration.

Sincerely,

Heather Juzwa
Field Sales Engineer



QUOTATION

Number: SSI-64544-CFJD Rev. 0

QUOTE DESCRIPTION:

LBS14051 Bench Style Flame Atomic Absorption Spectrometer

Roberta Wagner
State of West Virginia
PO Box 50130
2019 Washington Street East
Charleston, WV 25305
Phone: (304) 558-0067
Fax: (304) 558-4115
E-mail: Roberta.A.Wagner@wv.gov

Effective Date	11/12/2013	Proposed Ship Date	30 Days/ARO
Expiration Date	1/3/2014	FOB	DESTINATION
Ship Method	BEST WAY	Shipping Terms	PREPAID & ADD
Inco Terms			

PLEASE SEE ATTACHED TERMS AND CONDITIONS

For questions or modifications about this quote, please contact your sales representative. If you are a tax exempt customer, please contact Customer Service and send a copy of your exemption certificate in with your order. The exemption certificate can also be faxed to 410-381-1222

Salesperson:	Heather Juzwa	MAT Regional Office
Phone:	(800) 388-6996 Ext. 1673	7102 Riverwood Drive
E-mail:	hljuzwa@SHIMADZU.com	Columbia, MD 21046-2502

ADDITIONAL INFORMATION:

THANK YOU FOR YOUR INTEREST IN SHIMADZU SCIENTIFIC INSTRUMENTS

Authorization Signature

Date: 11/12/2013

For Order Placement:

Reference Quotation Number on Purchase Order
Shimadzu Scientific Instruments
7102 Riverwood Drive
Columbia MD 21046
Toll Free: 800-477-1227
Phone: 410-381-1227
Fax: 410-381-6781
E-mail: customer.service@shimadzu.com
Int'l Fax: 410-309-6130
Int'l Email: icsc@shimadzu.com

Line #	Product Number	Product Name	Qty	List Price	Ext'd Price
Shimadzu Flame AA					
1	206-77500-42	AA-7000F (120V) with AAC-7000	1	\$20,794.00	\$14,555.80
<p>The AA-7000 is a true double-beam flame atomic absorption (AA) spectrophotometer designed for the analysis of metals. The new developed 3D double beam optics ensures long-term baseline stability with low noise level for precise analysis. The system includes dual background correction modes, which cover the entire analytical wavelength range. The background corrections include Deuterium (D2) and Self-Reversal (S-R) mode. The burner height and gas flow rates are automatically set for each element and matrix. The system includes an automatic 4 step slit width setting. The AA-7000 includes an automatic 6-lamp turret with next lamp warm up. System includes Air-Acetylene Burner Head. The AA-7000 includes the AAC-7000 which is the Automatic Atomizer Changer which allows automatic burner height and burner forward/back position to be set and stored in memory for each element, method file, or template. Requires PC, not included.</p> <p>Software security functions include user login ID, passwords, user groups with various rights, audit trails, and electronic signatures. The user-friendly WizAArd software is included and contains QA/QC acceptance criteria with out of control actions. Using the WizAArd software with the addition of CLASS-Agent data management software supports FDA 21 CFR Part 11 Compliance. Also, included is AA Validation Software, which automatically tests for wavelength accuracy at six different wavelengths, noise level, baseline drift, absorption sensitivity, repeatability, and lower limits.</p> <p>The AA-7000 is designed to operate with flame, graphite furnace (optional), cold vapor mercury (optional), and hydride vapor generator (optional) accessories. The ASC-7000 autosampler (optional) is utilized in flame analysis. Moreover, when combining the ASC-7000 with the ACC-7000 (standard) and ASK-7000 (optional) accessories, automated furnace analysis can be conducted with the GFA-7000 furnace accessory (optional). A single autosampler is used for both flame and furnace. Switching between flame and furnace requires no tools. Flame Microsampling can be performed when utilizing the AA-7000 with the optional ASC-7000, ASK-7000 and Microsampling Kit.</p> <p>Replaces 206-77000-32</p>					
2	I&F	INSTALLATION AND CUSTOMER FAMILIARIZATION	1	\$0.00	\$0.00
3	1YW	1 YEAR WARRANTY	1	\$0.00	\$0.00
Shimadzu Workstation					
1	220-97318-20	Standard Workstation PC- Win 7 Pro 32-bit	1	\$2,210.00	\$1,878.50
<p>Dell Standard Workstation PC – Windows 7 Pro 32bit(Quad Core Intel Xeon Processor)</p> <p>Operating systems include Windows® 7 PRO (installed). System incorporates 2GB DDR3 UDIMM 1600, NECC memory (expandable to 24GB), 250GB SATA hard drive, 16X DVD+/-RW Drive.</p> <p>Included are USB keyboard, Optical Wheel mouse, 512 MB NVIDIA Quadro NVS 300, Dual Monitor Graphics Card, Intel Integrated Gigabit 10/100/1000 network connection, Two PCI slots, two x16 PCI Express Slots, one PCI-Express x1, one Serial Port (RS-232), one Parallel Port, 11 USB 2.0 ports (2 front,6 back 3 Internal), Integrated High Definition Audio (no speakers).</p> <p>Warranty: Three year limited warranty with three years standard next business day (NBD) onsite parts replacement and three years NBD onsite labor through Dell Corporation.</p>					
2	220-97320-10	DELL P2210, 22INCH PROFESSIONAL WIDESCREEN, FLAT PANEL.....	1	\$370.00	\$314.50
<p>22" LCD display, resolution to 1680 x 1050, contrast ratio (typical): 1000:1. Brightness (typical): 300 cd/m2, 0.282 mm pixel pitch.</p> <p>Limited warranty: Three years Advanced Portable Exchange through Dell.</p>					
3	220-97218-00	STD LASERJET PRINTER W/CABLE	1	\$2,060.00	\$1,751.00
<p>LaserJet printer with security features, ideal for heavy use. Speeds of up to 35 ppm; first page in 8.5 seconds; 540 MHz processor, 32 MB of memory. Jetdirect gigabit Ethernet embedded print server. Built-in control panel and 10-key pad; EIO expansion slot supports optional parallel card, hard disk, or Jetdirect print server. LCD control panel displays four lines of text. Manufacturer's 1-year limited warranty.</p>					
Hollow Cathode Lamps					
1	200-38422-13	HOLLOW CATHODE LAMP (MN)	1	\$600.00	\$510.00
<p>Mn; Lamps - These Lamps are for use with the Self-Reversal and Deuterium Background Correction.</p>					



QUOTATION

Number: SSI-64544-CFJD Rev. 0

Line #	Product Number	Product Name	Qty	List Price	Ext'd Price
2	200-38422-10	HOLLOW CATHODE LAMP (FE)	1	\$600.00	\$510.00
Fe; Lamps - These Lamps are for use with the Self-Reversal and Deuterium Background Correction.					
3	200-38422-12	HOLLOW CATHODE LAMP (MG)	1	\$900.00	\$765.00
Mg; Lamps - These Lamps are for use with the Self-Reversal and Deuterium Background Correction.					
4	200-38422-14	HOLLOW CATHODE LAMP (NA)	1	\$725.00	\$616.25
Na; Lamps - These Lamps are for use with the Self-Reversal and Deuterium Background Correction.					

NOTE: Taxes are not included in the quoted amount

Total List Price	\$28,259.00
Total Line Item Discounts	\$7,357.95
Subtotal	\$20,901.05
Estimated Freight Amount	\$300.00
Total Amount	\$21,201.05

Terms and Conditions

Shimadzu Scientific Instruments, Inc. - GENERAL TERMS AND CONDITIONS OF SALE

SALES AGREEMENT

The sales agreement ("Sales Agreement"), as referenced hereinbelow, shall mean and refer to these General Terms and Conditions of Sale ("General Terms and Conditions of Sale"), together with such other documents concerning the purchase of equipment and/or Products designed and/or manufactured by Shimadzu Scientific Instruments, Inc. ("Products"), which documents have been or will be executed by and between Shimadzu Scientific Instruments, Inc. ("SSI") and the individual or entity identified therein as the purchaser of said Products ("Buyer"). The documents that comprise the Sales Agreement may include, but are not limited to: these General Terms and Conditions of Sale; price quote provided by SSI; purchase order issued by Buyer as modified and accepted by SSI; bill of sale for Products; bill of lading issued for the shipment of Products; and product invoice. All Products shall be for research use only and not for use in the diagnosis of disease or other conditions, including a determination of the state of health, in order to cure, mitigate, treat or prevent disease or its sequelae ("Diagnostic Purposes").

PRICES

The prices set forth in the Sales Agreement:

(i) are SSI's domestic prices based upon manufacture of the quality and type of Product(s) ordered for shipment to and end use within the United States and Canada only - All Products shipped for end use outside the United States and Canada shall be subject to SSI's international pricing; (ii) are subject to revision when interruption, engineering changes or changes in quantity or quality a re-caused or requested by Buyer; and (iii) unless otherwise specified, do not include warranty service or installation outside the United States and Canada. Errors in Product pricing or related terms by SSI which may, in SSI's sole discretion, be deemed clerical errors are subject to correction by SSI at any time.

SPECIFICATIONS

Weights and dimensions set forth in Product related sales literature ("Sales Literature") are not guaranteed unless previously certified in writing. SSI may, without affecting the obligations under the Sales Agreement, make what SSI regards in its sole discretion as minor changes to the specifications of the Product or Products delivered under the Sales Agreement from those contained in Sales Literature.

TERMS OF PRODUCT USE

Buyer represents and warrants that the Products have not been purchased for Diagnostic Purposes and that the Buyer will not at any time use the Products for Diagnostic Purposes. The Buyer acknowledges that use of the Product for Diagnostic

Purposes is cause for Termination of this Agreement, as set forth in the "Contingencies; Force Majeure" section below.

TERMS OF PAYMENT

Subject to credit approval by SSI, terms of payment on the Sales Agreement are net thirty (30) days from date of the invoice unless otherwise specifically stated on the invoice. Invoices are payable at par on date due at any place of collection designated by SSI in funds bankable at par. Payment made beyond terms will be subject to simple interest of 1 -1/2% per month on the outstanding balance. All orders are accepted and SSI's obligation to make deliveries are subject to SSI's right to either: (i) require Buyer to make payment of all or any part of the purchase price in advance of delivery of Product(s), or (ii) make shipment of Product(s) to Buyer payable C.O.D.

If Buyer fails to make advance payment when requested to do so by SSI or if Buyer is or becomes delinquent in the payment of any sum of any kind due SSI or refuses to accept C.O.D. shipments (whether or not arising out of the Sales Agreement), then SSI shall have the right, in addition to any other remedy to which it may be entitled in law or in equity, to cancel the Sales Agreement, refuse to make further deliveries, and declare immediately due and payable all unpaid amounts for Products and services previously delivered to or performed for Buyer. Each shipment shall be considered a separate and independent transaction and payment therefor shall be made accordingly. Buyer must notify SSI within fifteen (15) days from the invoice date if Buyer has not received the Product(s).

REPOSSESSION

In the event of nonpayment, either of the entire purchase price or a portion thereof, Buyer expressly consents to the right of SSI to reclaim by repossession of any and all Products delivered to Buyer pursuant to the Sales Agreement for which payment has not been made within (90) days of invoice. In the event that SSI elects to exercise its right to reclaim Products by repossessing the same, said election shall be deemed to be in the alternative and not to the exclusion of any other remedy to which SSI may be entitled, at law or in equity. To the extent that SSI successfully reclaims Products, it shall credit Buyer's account for the value of the same, as determined by SSI in its sole discretion. No Products may be reclaimed by repossession unless and until Buyer is provided with prior notice of SSI's intention to elect such remedy. Such notice shall state the date, time and location that Products shall be available for repossession. Such notice shall also provide Buyer with a final opportunity to cure the default of nonpayment within five (5) days of notice to avoid the execution of the remedy of repossession. The costs of repossession, including legal fees and costs of collection, shall be added to Buyer's account.

SECURITY INTEREST

In addition to any other remedies hereunder or otherwise provided at law or in equity, SSI shall have the right, and Buyer hereby grants SSI the right, without further notice to or consent from Buyer, to secure any and all payment obligations of Buyer by recordation of a security interest in the Products that are the subject of the Sales Agreement. Said security interest shall be in the form of a UCC Financing Statement (UCC Form 1) or other form prescribed by contract or applicable law. No UCC Financing Statement recorded for the benefit of SSI will be released unless and until all financial obligations to SSI incurred by Buyer with respect to the Products have been fully satisfied.

SHIPMENTS

(i) The cost of packaging for domestic shipments is included in the quoted price unless otherwise provided. For international shipments or where special packaging is specified or necessary, a charge will be made to cover such expense. (ii) For shipments to and from places within the United States, all shipments, unless otherwise agreed in writing, shall be FOB point of shipment and title and risk of loss or damage shall pass to Buyer at the point of shipment. The cost of transportation and insurance (if requested by Buyer) shall be borne by Buyer. (iii) For shipments from the United States to ports or places outside the United States all shipments are, unless otherwise agreed in writing, FOB Columbia, MD. SSI's obligation to affect shipment of the Products purchased by Buyer shall be fully discharged, and beneficial ownership, legal title and all risk of loss or damage shall pass to Buyer when the Products are made available for shipment to a carrier at the designated FOB location. If shipped FOB Destination, upon arrival Buyer shall be entitled to conduct a reasonable investigation of the Products purchased by it, but all claims for losses due to loss or damage to Products while in transit shall be waived unless made immediately in writing by Buyer to SSI, but not more than (30) thirty days after arrival. If Buyer shall fail or refuse to accept delivery of any of the Products for unverifiable claims for loss or damage to Products occurring while in transit, all sums paid on deposit shall be retained by SSI as liquidated damages, provided, however, that SSI may recover in full its actual damage from Buyer in the event that actual damages exceed the amount retained as liquidated damages. (iv) All claims for damage or loss of insured shipments shall be immediately communicated, when possible, to SSI at Shimadzu Scientific Instruments, Inc. 7102 Riverwood Drive, Columbia, Maryland 21046-2502 Attn: Customer Service Phone: (410) 381-1227.

Buyer shall immediately notify delivering carrier of loss or damage to the shipment and SSI will cooperate with Buyer in the adjustment of all claims. Buyer agrees to permit SSI or SSI's representative to inspect damaged Products.

TERMINATION

Upon any termination or cancellation of the Sales Agreement by Buyer (if otherwise specifically permitted by the terms of the Sales Agreement), either in whole or in part, Buyer agrees to promptly pay appropriate termination or cancellation charges invoiced by SSI. At SSI's sole discretion, the termination charge shall be not less than twenty percent (20%) of the total amount of the Sales Agreement.

RETURNED PRODUCTS

All returns must be pre-authorized by SSI and a Return Goods Authorization ("RGA") number must appear on the face of the package. Returned Products will be subject to a restocking charge. If deemed appropriate at SSI's sole discretion, the restocking charge shall be not less than twenty percent (20%) of the total amount of the Sales Agreement.

ALLOCATION OF PRODUCTS

If SSI is unable for any reason to supply the total demands for Products specified in Buyer's order, SSI may allocate its viable supply among any or all buyers, including Buyer, on such basis as SSI may deem fair and practical, without liability for any failure of performance which may result therefrom.

DELIVERY

The scheduled shipping or delivery date shown on the face hereof is SSI's best estimate of the time the Product order will be shipped and SSI assumes no liability for loss, general damages, or special or consequential damages due to delays.

TAXES AND OTHER CHARGES

All taxes on Products, goods and/or services sold under the Sales Agreement, including but not limited to federal, state and local excise, sales or use taxes, shall be borne solely by Buyer. Buyer shall be obligated to pay all taxes set forth on invoices, in accordance with the terms of payment, provided that SSI shall not invoice taxes when within 30 days of placing the order, Buyer has furnished SSI with written proof of exemption from tax in the form of a certificate of exemption or an equivalent document which Buyer represents and warrants is properly completed and validly executed. If, notwithstanding the foregoing, any taxing authority attempts to assess taxes, Buyer shall indemnify and hold harmless SSI from any loss, damage, claim or cause of action, including, but not limited to, tax, interest, penalties and professional fees, related to such attempted assessment and shall make payment to SSI for any such costs paid by SSI and invoiced to Buyer in accordance with the terms of payment.

PATENTS

SSI shall defend any suit or proceeding brought against Buyer so far as based upon an assertion that any Product furnished under the Sales Agreement constitutes a direct infringement of any United States patent having a claim of claims covering solely the Product itself, if notified promptly in writing and given authority, information and assistance (at SSI's expense) for the defense of same, and SSI shall pay all damages and costs awarded therein against Buyer. In the event said Product in such suit is held to constitute infringement and the use of said Product is enjoined, SSI shall, at its own option and at its own expense, either:

(i) procure for Buyer the right to continue using said Product, (ii) replace the same with a non-infringing Product, (iii) modify it so it becomes non-infringing, or (iv) remove said Product and refund the purchase price and transportation costs thereof. The foregoing obligations of SSI shall not apply to any infringement claim based upon: (i) any use of any Product sold hereunder in any process or in conjunction with any other product, (ii) any Product manufactured to Buyer's design or any Product having a design arising from SSI's compliance with Buyer's specifications; or (iii) use of any Product sold hereunder, if the Product has been modified or customized by Buyer.

The foregoing sets forth the entire liability of SSI for patent infringement by said Product. If any suit or proceeding is brought against SSI based on claims that the goods manufactured by SSI in compliance with Buyer's specifications and supplied to Buyer directly infringe any fully issued United States patent, then the patent indemnity obligations herein stated with respect to SSI shall reciprocally apply with respect to Buyer.

WARRANTY

Subject to the exceptions and upon the conditions stated below, SSI warrants that the Products sold under the Sales Agreement shall be free from defects in workmanship and materials for one year after shipment of the Products to the original Buyer by SSI (the "Warranty"), and if any such Products should prove to be defective within such one year period, SSI's sole liability (and Buyer's sole and exclusive remedy) shall be, at its option, either (i) to correct by repair or, at SSI election, by replacement with equivalent product any such defective Product, provided that investigation and factory inspection discloses that such defect developed under normal and proper use, or (ii) to refund the purchase price. The exceptions and conditions mentioned above are as follows: (i) Components or accessories manufactured by SSI which by their nature are not intended to and will not function for one year are warranted only to give reasonable service for a reasonable time; what constitutes reasonable time and reasonable service shall be determined solely by SSI. A complete list of such components and accessories is maintained at the factory; (ii) SSI makes no warranty with respect to components or accessories not manufactured by it, in the event of defect in any such component or accessory SSI will give reasonable assistance to Buyer in obtaining from the respective manufacturer whatever adjustment is authorized by the manufacturer's own warranty; (iii) any Product claimed to be defective must, if required by SSI, be returned to the factory, transportation charges prepaid, and will be returned to Buyer with transportation charges collect unless the Product is found to be defective, in which case SSI will pay all transportation charges; (iv) If the Product is a reagent or the like, it is warranted only to conform to the quantity and content and for the period (but not in excess of one year) stated on the label at the time of delivery; (v) SSI may from time to time produce a special printed warranty with respect to a certain Product, and where applicable, such warranty shall be deemed incorporated herein by reference; (vi) SSI shall be released from all obligations under all warranties, whether expressed or implied, if any Product covered hereby is repaired or modified by persons other than its own authorized service personnel unless such repair by others is made with the written consent of SSI; and (vii) SSI's obligations pursuant to all warranties, either express or implied, shall be expressly conditioned upon payment in full by Buyer for the Products covered by the warranties. In the event of non-payment, whether for the entire purchase price or a part thereof, SSI shall be released from all obligations under all warranties, either express or implied.

IT IS EXPRESSLY AGREED THAT THIS WARRANTY SHALL BE IN LIEU OF ALL WARRANTIES OR WARRANTY OF ANY NATURE WHATSOEVER, WHETHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION WARRANTIES OF FITNESS AND MERCHANTABILITY, AND THAT NEITHER BUYER NOR SSI SHALL HAVE ANY LIABILITY FOR SPECIAL OR CONSEQUENTIAL DAMAGES OF ANY KIND OR CAUSE WHATSOEVER, INCLUDING, BUT NOT LIMITED TO LOSS OF USE, LOSS OF DATA, LOSS OF PRODUCTIVITY, LOSS OF BUSINESS, LOSS OF PROFIT, LOSS OF PLANT, EQUIPMENT OR PRODUCTION. THE LIMITATION OF LIABILITY FOR SUCH DAMAGES SHALL BE APPLICABLE EVEN IF SSI HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, ARISING OUT OF THE MANUFACTURE, USE, SALE, HANDLING, REPAIR, MAINTENANCE OR REPLACEMENT OF ANY OF THE PRODUCTS SOLD UNDER THE SALES AGREEMENT.

If an SSI Special Warranty (covering a designated item or items) is contained in the manual or is otherwise shipped with such designated item or items, the terms and conditions specified therein are incorporated herein by reference and shall supplement the foregoing warranty. In the event of a conflict between the terms and conditions specified herein and those specified in such Special Warranty, the terms and conditions specified herein shall control. SSI's warranties made in connection with this sale shall not be effective if SSI has determined, in its sole discretion, that Buyer has misused the Products in any manner, has failed to use the Products in accordance with industry standards and practices, or has failed to use the Products in accordance with instructions, if any, furnished by SSI.

Representations and warranties made by any person, including dealers and representatives of SSI, which are inconsistent or in conflict with the terms of this warranty, shall not be binding upon SSI unless expressly assumed in a writing that is approved and signed by an authorized officer of SSI. By signing the Sales Agreement, the Buyer specifically acknowledges that no representations or warranties were made by any person, including dealers and representatives of SSI, that the Product may be used for Diagnostic Purposes.

CONTINGENCIES; FORCE MAJEURE

SSI shall be entitled to cancel or rescind the Sales Agreement, without liability for loss or damage resulting therefrom, if: (i) any Product covered by the Sales Agreement is purchased for end use outside the United States or Canada; (ii) the Buyer breaches any of its representations or warranties found in this Agreement; or (iii) the performance of SSI's obligations under the Sales Agreement is in any way adversely affected by the occurrence of any contingency beyond the control of either SSI or SSI's suppliers, including but not limited to: (a) war (whether an actual declaration thereof is made or not), sabotage, insurrection, riot, act of a public enemy, or other act of civil disobedience; (b) failure or delay in transportation; (c) act of any government, government agency or subdivision of any government, or any judicial action affecting the terms of the Sales Agreement; (d) labor dispute, shortage of labor, fuel, raw material or technical or yield failure where SSI has exercised ordinary care in the prevention thereof; and (e) accident, fire, explosion, flood, storm or other act of God.

U.S. GOVERNMENT CONTRACTS

If the Products to be furnished under the Sales Agreement are to be used in the performance of a U.S. Government contract or subcontract, and a U.S. Government contract number shall appear on Buyer's order, those clauses of the applicable U.S. Government procurement regulations that are required to be included in U.S. Government contracts and subcontracts shall be incorporated herein by reference, including, without limitation, the Federal Acquisition Regulations and the Fair Labor Standards Act of 1938, as amended.

INDEMNIFICATION: Buyer shall at its own expense apply for and obtain any permits and inspections required for the installation and/or use of the Products. SSI makes no promise or representation that the Products or related services will conform to any federal, state or local laws, ordinances, regulations, codes or standards, except as particularly specified and agreed upon in writing by an authorized representative of SSI. SSI's Products are not for use in or with any nuclear facility unless specifically so stated by SSI in writing. SSI's Products are not for use for Diagnostic Purposes. SSI shall not be responsible for any losses or damages sustained by Buyer or any other person as a result of improper installation or misapplication of the Products. Buyer shall defend, indemnify and hold harmless SSI and its agents and employees against any loss, damage, claim, suit, liability, judgment or expense (including, without limitation, attorney's fees) arising out of or in connection with any injury, disease or death of persons (including, without limitation, Buyer's employees and agents) or damage to or loss of any property or the environment, or violation of any applicable laws or regulations resulting from or in connection with the sale, transportation, installation, use, or repair of the Products by Buyer or of the information, designs, services or other work supplied to Buyer, whether caused by the concurrent and/or contributory negligence of Buyer, SSI, or any of their agents, employees or suppliers. The obligations, indemnities and covenants contained in this paragraph shall survive the consummation or termination of this transaction.

CONFIDENTIAL INFORMATION

Except as required by law, neither party shall use (except for purposes connected with the performance of its obligations hereunder), divulge or communicate to any third party any information of the other it reasonably knows to be confidential.

FDA REQUIREMENTS

If any Product sold by SSI to Buyer is subject to regulation by the Food and Drug Administration as a device, then as to any such Product, sale and delivery is contingent upon successful completion and processing of a 510(k) notice. If such a 510(k) notice cannot be obtained by SSI, SSI shall have no obligation to deliver the Product.

COMPLIANCE WITH LAWS

Buyer agrees to comply fully with all federal, state, county and local laws, rules and regulations concerning the purchase, sale and use of Products. Without limiting the foregoing, Buyer agrees to comply with any the Export Administration Regulations; Federal Food, Drug & Cosmetics Act; the International Traffic In Arms Regulations of the United States; and the Foreign Corrupt Practices Act of the United States in so far as they apply to the sale of Products. To the extent the Products require license for export, the Products are licensed by the United States for delivery to the ultimate destination as shown on the shipment/invoice address and any contrary diversion may be prohibited by law.

APPLICABLE LAW, JURISDICTION VENUE

The Sales Agreement is made and entered into, and shall be governed, enforced and interpreted in accordance with the laws of the State of Maryland. The Buyer hereby expressly consents to the jurisdiction of the courts of the State of Maryland with regard to all issues and questions of law or fact pertaining to the Sales Agreement. In the event that either party commences litigation to enforce the Sales Agreement, said litigation shall be brought in the courts of Howard County, Maryland. The prevailing party to any such action shall be entitled to an award of all costs and attorney's fees actually incurred.

GENERAL PROVISIONS

The rights and obligations under these General Terms and Conditions of Sale will inure to the benefit of, and be binding upon the parties hereto and their respective heirs, administrators, executors, personal representatives, successors and permitted assigns. No action, failure of action or delay by either party will constitute a waiver of any of its rights or remedies under these General Terms and Conditions of Sale. SSI and Buyer are not, and will not be, joint venturers, partners, agents, servants, or employees or fiduciaries of the other, and do not have the power to bind or obligate the other. The waiver of a breach of any provision does not constitute a waiver of a subsequent breach of the same or different provision. If any of the terms of these General Terms and Conditions of Sale or the Sales Agreement are subsequently or are now illegal, they will be severed without affecting the remaining terms. The section headings are for reference only and will not be considered controlling as to the content and/or interpretation of any section.

ENTIRE AGREEMENT

These General Terms and Conditions of Sale, together with the Sales Agreement, and any attachments, exhibits and supplements specifically referred to in the Sales Agreement, are intended by the parties as a complete and exclusive statement of the terms of their agreement, and supersede all prior agreements, written or oral. No course of prior dealings between the parties and no usage of the trade may be used by Buyer to supplement or explain any term used herein.

END GENERAL TERMS AND CONDITIONS OF SALE

This document contains the number of pages indicated, including all attachments. Authorized signature required on quotation pages

SSI-64544-CFJD Rev. 0

Authorization Signature

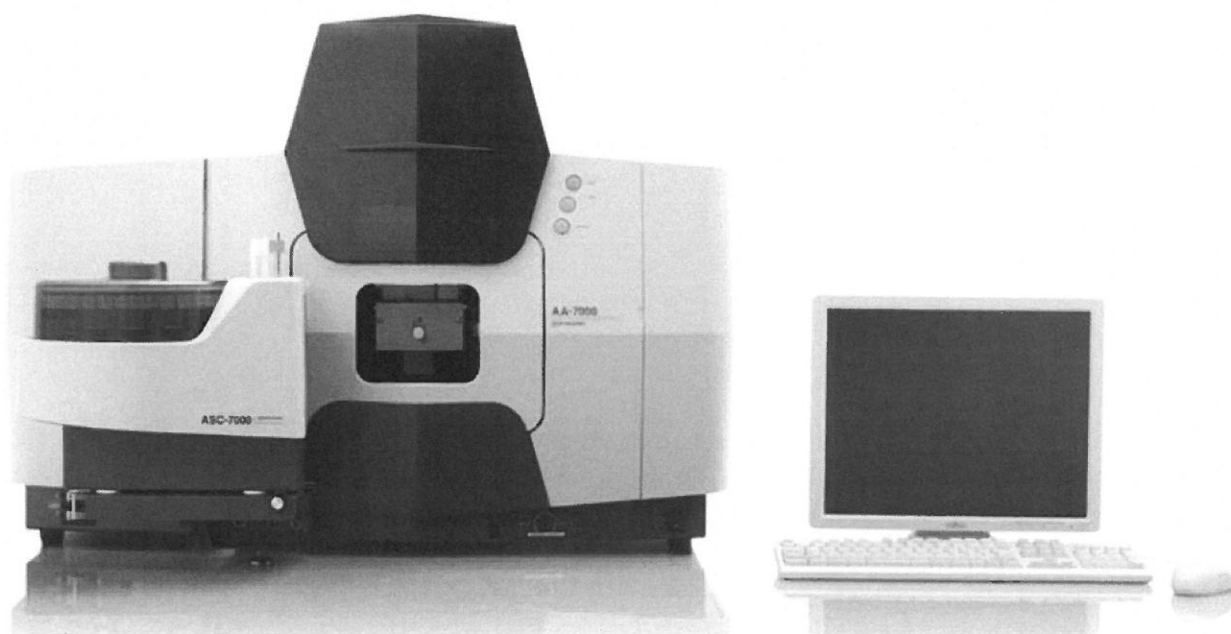


Date: 11/12/2013

 SHIMADZU

AA-7000 Spectrophotometer

Site Prep



AA-7000 Spectrophotometer Flame, Furnace, OR Flame/Furnace Unit

Purpose of Procedure: Shimadzu strives to assure that the installation of your new instrumentation can be completed successfully. To this end, a list of utilities, consumables and supplies are provided.

Customer Responsibilities: All necessary site operating conditions, supplies and consumables required for successful installation of instruments and systems should be made available by the Customer.

Important Information: If you need additional assistance, please contact our Technical Support group (1-800-477-1227) or your local sales office. Assistance with applications can be contracted separately for time and materials. We request that the users be present during installation to receive valuable information on the operation, maintenance and safety of this instrument.

Procedure Checklist:

⊕ Dimensions:

Flame Only

AA-7000 (Computer not included)
28 in W x 23 in D x 28 in H
(700 mm W x 588 mm D x 714 mm H)

Add another 8 inches (210 mm) to Height for removal chimney

Furnace, Flame/Furnace with Autosampler

With ASC-7000 Autosampler (Computer not included)
38 in W x 34 in D x 28 in Height
(960 mm W x 870 mm D x 714 mm H)

Add another 8 inches (210 mm) to Height for removal chimney

Autosampler

Sampler: 14 in W x 11 in D x 11 in H
(340 mm W x 280 mm D x 270 mm H)

Controller: 9 in W x 4 in D x 10 in H
(235 mm W x 110 mm D x 240 mm H)

⊕ Weight:

AA-7000F:	159 lbs (72 kg)
AA-7000G:	143 lbs (65 kg)
ASC-7000:	18 lbs (8 kg)
Controller:	15.5 lbs (7 kg)
GFA-7000	101 lbs (46 kg)

⊕ Power Requirements:

- Spectrophotometer- 120 volts (+/-10%), 50/60 Hz
- ASC-7000 autosampler-120 volts (+/-10%), 50 VA, 60 Hz
- GFA-7000- 200, 220, 230, 240V (+/-5%), 6000VA, 50/60 Hz

⊕ Environmental Conditions:

- **Ambient temperature:** 50-95°F (10-35°C) must be stable. Do not install the instrument where it will be exposed to direct sunlight, heat from a local heat source, drafts from an air-conditioner, etc.
- **Ambient Humidity:** 20 – 80% (less than 70% when temperature is greater than 30° C).
- **Location:** The AA-7000 Series should be installed on a **sturdy** level surface convenient to a grounded power source of the appropriate voltage.
- **Bench :** 59 in min. (W) x 28 in min (D), withstand load: 440 lbs.
(1500 mm min (W) x 700 mm min. (D), withstand load: 200 kg)
- **Ventilation:** Do not install the AA Spectrophotometer without proper exhaust. A ventilation hood **must** be installed above the instrument. Locate the system outlet such that the exhaust cannot re-enter the building through any door, window, air conditioning inlet or other ventilator.
 - **Dimensions**
 - **Flame:** ~ 20 in W x 20 in D (~500 mm W x 500 mm D)
 - **Furnace:** 6 in x 9 in (150 mm- 200 mm)
 - **Flow rate**
 - **Flame:** 600-1200 m³/ hr (21,188-42,377 CFH)
 - **Furnace:** 10 – 180 m³/ hr (353-6,356 CFH)

⊕ General:

- Select an installation site that is free from corrosive or organic gases and dusts.
- Do not install equipment where the use of fire is prohibited.
- Do not install the instrument in the vicinity of strong magnetic or electric fields or high frequency waves.
- Ventilation: A ventilation hood **must** be installed above the instrument based upon specification listed.

⊕ Gas Requirements:

- Acetylene (C₂H₂) 14.2 psi supply pressure: Purity >98% (instrument grade)
- Air 50 psi pressure: Free of oil, moisture, and dust (instrument or zero grade)
- Nitrous Oxide (N₂O) (optional) 50 psi supply pressure: Purity >98%, Moisture <1%
- Hydrogen (H₂) (optional) 50 psi supply pressure: Purity >99%
- Argon (Ar) (optional) 50 psi pressure: Purity >99%

All tanks, fittings and tubing provided will be in place, properly secured and will have been leak checked prior to instrument installation. It is recommended that all lines have a pressure gauge and shut-of valve between the gas lines and the hoses of the instruments. This is a safety precaution.

In case of use of GFA-7000, the (Ar) gas must be supplied at a pressure between 0.35 to 0.4 MPa (50-60PSI).

⊕ **Gas Regulators:**

All gas regulators may be purchased from Shimadzu or supplied by the user. A two state, stainless steel regulator is required.

- Acetylene (C₂H₂) regulator: Shimadzu Part # 220-95248-00
- Air regulator: Shimadzu Part # 220-95248-03
- Nitrous Oxide (N₂O) regulator: Shimadzu Part # 220-95248-04
- Hydrogen (H₂) regulator (optional): Shimadzu Part # 220-95248-01
- Argon (Ar) regulator (optional): Shimadzu Part # 220-95248-02

⊕ **Hoses:**

The gas lines may be metal. Never pass acetylene through copper or brass tubing containing more than 65% copper since this may cause an explosion.

The connections at the gas control box are Shimadzu pressure connects. All hoses are supplied **without** connectors for the cylinder side. If the regulator is purchased from

Shimadzu, the hose barb will be provided. Otherwise, the user must supply 1/4-inch hose barb connections for the regulators, or have other appropriate connectors pre-attached to the hoses for their specific installation. There are 5 separate gas supply hoses for use with the instrument. Each hose is 5 meters long. If nitrous oxide is used, the regulator should be supplied with a heater.

⊕ **Water:**

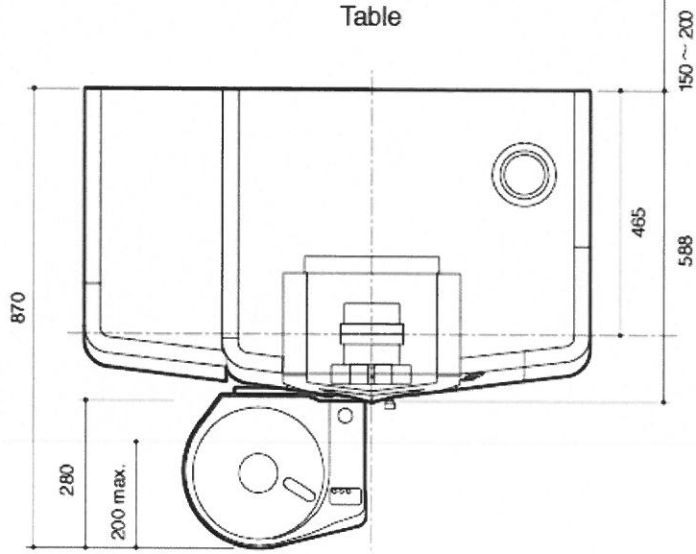
In case the GFA-7000 is used, cooling water is required at a temperature between 10 to 30 °C (50-86 °F), with a flow rate between 0.6 to 1.5 L/min (supply pressure of 0.08 to 0.15 MPa or 12-22 PSI). Compatible faucet is 13 or 12-15 mm O.D. rimmed faucet.

⊕ **Hollow Cathode Lamps:**

All Hollow Cathode Lamps (HCLs) may be purchased from Shimadzu or supplied by the user. The HCLs are a standard 1.5 inches in diameter. Operation of the HCL using the Self-Reversal background correction requires the Giant Pulse Lamps. Shimadzu recommends using Hamamatsu lamps.

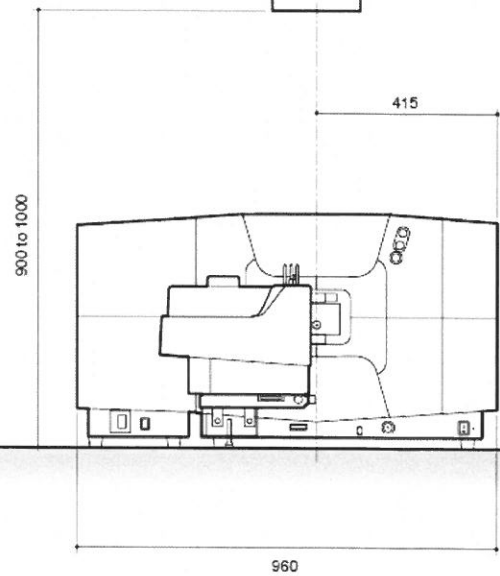
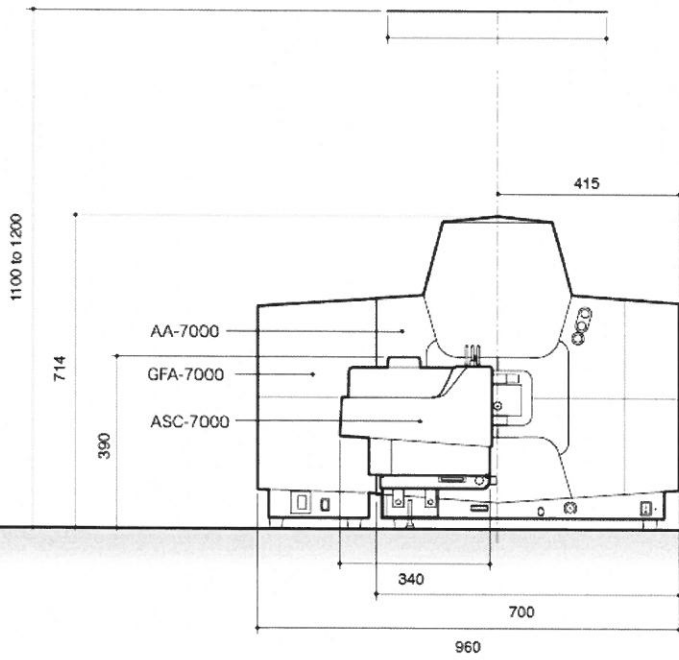
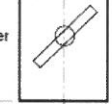
Wall

Table



ø150 to ø200

Damper



Both for flame analysis and furnace analysis

For furnace analysis

Example of recommended piping for the atomic absorption system

