

REQUEST FOR QUOTATION

THIS IS NOT AN ORDER

Return Quotes To:

The University of Tennessee
Purchasing Department
5723 Middlebrook Pike
Knoxville, TN 37921

Vendor Address

Bidder # D99999
University of T
PARENT RFQ
UT TN

Information

Date: 05/25/2010
RFQ No: 6000038494
Collective No: 10035101
Return Quote By: 06/09/2010 4:00 PM E.S.T
Promised Ship Date: (Furnish) _____
Payment Terms: (Furnish) _____
FOB UT Dest Unless Otherwise Specified Below

Buyer: Bradley New
Phone: 865-974-3108
Fax: 865-974-2973

Item	Quantity	UM	Material/Description	Price Per Unit	Net Amount
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NOTE: Any potential bidder not otherwise notified by the University for this requirement must register at:
<http://purchasing.tennessee.edu>. Scroll to "Bid & Proposal Advertisements" under Quick Links, and follow the instructions. Failure to do so will result in rejection of your bid.

Item to be delivered and installed

00001 1 EA Hemispherical Electron Analyzer w/ Spin

Per attached specifications

Manufacturer _____ # _____

Warranty _____

00002 1 EA Monochromatized Dual Anode X-Ray

Manufacturer _____ # _____

Warranty _____

DELIVERY MAY BE A FACTOR IN THE AWARD

Delivery is requested as soon as possible. Please state your best delivery in the space provided below:

Best delivery date _____

SPECIAL BID CONDITIONS**SBC 1 CONFLICT OF CONDITIONS**

In the event that there are any conflicts between the general bid conditions and these special bid conditions the special bid conditions shall take precedence.

SBC 2 BID AS SPECIFIED OR EQUAL

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The items on this request for quotations shall be as specified or equal. When the specifications specify a product by name of a manufacturer or vendor, or whenever the terms (similar to) and (equal to), or (approved equal) are used, the terms named are intended to set the standard for such materials or articles. The burden of proof shall rest solely with the supplier to prove that the proposed substitutes are equal to the materials or articles specified. The university shall be the sole judge as to whether the items submitted are equal to those specified.

SBC-3- SEALED BID

The envelope in which quotations will be submitted should be identified by placing the required information on the outside of the envelope as follows: It is imperative that your name and address appear in the upper left corner of the envelope and that the collective number, due date and time of opening appear in the lower left corner. Bid openings shall be public, on the date and at the time specified on the bid form. All sealed bids must be received in the purchasing department on or before the date and hour specified for bid opening. Sealed bids that miss the deadline will be rejected and returned unopened or kept on file in the purchasing department. No qualifying letters or statements from vendors will be considered a justification for accepting late bids.

SBC-4 WARRANTY

Each bidder is required to attach to their quotation a detailed statement of warranty or guarantee. The statement should include the period of time involved as well as the specific details of the warranty.

SBC-5- FOB

PLEASE QUOTE F.O.B. DESTINATION DELIVERED. TO INCLUDE ANY AND ALL FREIGHT CHARGES.

SBC 6 BID MUST BE IN ACCORDANCE WITH SPECIFICATIONS

Bidders are cautioned that unless otherwise stipulated in their bids, it will be assumed that they are bidding in strict accordance with the specifications and will be required to strictly comply therewith. Any deviations whatever from the specifications must be fully set forth and itemized in detail in a letter accompanying the bid. Generalized statements submitted with your bid in order to avoid complying with this requirement in full detail will not be accepted.

SBC 7 INTERPRETATIONS AND ADDENDA

Any questions concerning conditions and specifications should be directed to the purchasing department in writing no later than five (5) days prior to the bid opening. Inquiries must reference the date of bid opening and RFQ number.

SBC 8 CONTRACTED SERV. INS.

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Certificate of Insurance

The successful bidder shall file with the Purchasing department of The University of Tennessee, prior to commencing work, an appropriate certificate of insurance, in duplicate, evidencing compliance with the insurance requirements contained in the bid specifications.

Additional Insured

The certificate of insurance shall name The University of Tennessee as an additional insured under the required policies of liability insurance set forth in the insurance requirements of these specifications.

The insurance required hereunder naming the University of Tennessee as an additional insured shall be primary insurance to any and all insurance that might be in force for the benefit of The University of Tennessee.

Insurance Requirement

The successful bidder who provides products and services to The University of Tennessee will provide the University with satisfactory evidence of the following insurance coverage:

Workers compensation and industrial diseases insurance in the statutory amounts, and employers liability in the amount of \$500,000.

General liability insurance or comprehensive general liability insurance, including contractual liability, products/completed operation, and contractors broad form liability in an amount equal to \$1,000,000 combined single limits of liability.

Automobile liability insurance, including non-owned and hired automobiles, in an amount equal to \$500,000 combined single limits of liability.

Such insurance shall be written by insurers acceptable to The University of Tennessee. The certificate of insurance shall indicate whether the policy or policies of insurance are written on a claims-made or occurrence basis.

SBC-9 AWARD-ALL OR NONE:

AWARD OF ALL ITEMS WILL BE MADE ON AN (ALL OR NONE) BASIS.

GENERAL BID CONDITIONS:

All University of Tennessee general bid conditions apply to this bid. To view these conditions, which include protest procedures, please visit website "http://purchasing.tennessee.edu/general_bid_conditions.htm". If for some reason you are unable to access this website you may telephone (865) 974-3311 for a hard copy of these conditions.

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IF THE BIDDER TAKES EXCEPTION TO ANYTHING IN THE SPECIFICATIONS OR TERMS AND CONDITIONS. THE EXCEPTION MUST BE LISTED BELOW IF NECESSARY. YOU MAY SUPPLEMENT YOUR COMMENTS WITH AN ATTACHEMENT LISTING YOUR EXCEPTIONS IF NO EXCEPTIONS ARE TAKEN WRITE 'NONE' IN THE AREA FURNISHED BELOW IF NO COMMENTS ARE FURNISHED IT WILL BE ASSUMED THAT NO EXCEPTIONS ARE BEING TAKEN

CERTIFICATION: MY COMPANY IS CLASSIFIED AS A:

NOTE: It will be assumed that business category is large if no response is furnished

LARGE BUSINESS _____ SMALL BUSINESS _____ WOMAN OWNED _____

PLEASE INDICATE BELOW ONLY IF YOUR FIRM IS AT LEAST 51 PERCENT OWNED BY A MEMBER(S) OF THE FOLLOWING GROUPS

BLACK AMERICAN _____ HISPANIC AMERICAN _____ ASIAN PACIFIC AMERICAN _____ NATIVE AMERICAN _____ ASIAN INDIAN AMERICAN _____

IT IS UNDERSTOOD AND AGREED THAT THIS BID WHEN CERTIFIED BY AN AUTHORIZED SIGNATURE SHALL CONSTITUTE AN OFFER WHICH WHEN ACCEPTED IN WRITING BY THE UNIVERSITY S PURCHASING DEPARTMENT AND SUBJECT TO THE TERMS AND CONDITIONS OF SUCH ACCEPTANCE. WILL CONSTITUTE A VALID AND BINDING CONTRACT BETWEEN THE UNIVERSITY OF TENNESSEE AND THE BIDDER/CONTRACTOR SUBMITTING SUCH OFFERING.

WE OFFER TO SELL TO YOU THE ABOVE MATERIAL(S) OR SERVICES AT THE PRICE AND TERMS SPECIFIED HEREON AND IN ACCORDANCE WITH THE UNIVERSITY S GENERAL AND ANY SPECIAL BID CONDITIONS FURNISHED AND INCORPORATED INTO THIS DOCUMENT ALL EXCEPTIONS, ALTERNATIVE MATERIALS, OR SPECIFICATIONS IF ANY HAVE BEEN CLEARLY INDICATED IF YOU HAVE ANY QUESTIONS ABOUT THIS REQUEST FOR QUOTATION. CONTACT THE BUYER AT THE ADDRESS OR TELEPHONE NUMBER SHOWN ABOVE

WHEN OFFERING A "NO BID". PLEASE INDICATE YOUR REASON(S) BELOW AND RETURN THIS INFORMATION WITH YOUR RESPONSE

_____ DO NOT HANDLE THIS TYPE EQUIPMENT _____ CANNOT MEET SPECIFICATIONS
_____ CANNOT MEET REQUIRED DELIVERY _____ MATERIALS NOT AVAILABLE
_____ OTHER (SPECIFY) _____

IN COMPLIANCE WITH THE REQUIREMENTS OF CHAPTER 878, PUBLIC ACTS OF 2006, THE CONTRACTOR HEREBY ATTESTS THAT THE CONTRACTOR SHALL NOT KNOWINGLY UTILIZE THE SERVICES OF AN ILLEGAL IMMIGRANT IN THE PERFORMANCE OF THIS CONTRACT AND SHALL NOT KNOWINGLY UTILIZE THE SERVICES OF ANY SUBCONTRACTOR WHO WILL UTILIZE THE SERVICES OF AN ILLEGAL IMMIGRANT IN THE PERFORMANCE OF THIS CONTRACT

ALL FIRMS WISHING TO DO BUSINESS WITH THE UNIVERSITY MUST LIST THEIR FEDERAL TAX ID NO. OR SOCIAL SECURITY NO. (IF INDIVIDUAL) IN THE SPACE PROVIDED:
TAX ID OR SSN: _____

(Signature)

(Printed Name and Company Name)

(Telephone #, Toll free if available)

(E-Mail Address)

(Date)

(Title)

(FAX #)

(WEB Site Address)

Specifications for the Purchase of a Monochromatized X-Ray Source and a Hemispherical Electron Energy Analyzer with SPIN Detector.

This document spells out in great detail the Specifications which must be met for a monochromatized x-ray source and a hemispherical electron energy analyzer with SPIN detector :

We are seeking to purchase a system composed of an x-ray source with dual Al and Ag anode, capable of producing Al $K\alpha = 1486$ eV and Ag $L\alpha = 2984$ eV radiations. The x-ray source must be provided with a monochromator capable of monochromatizing both Al $K\alpha = 1486$ eV and Ag $L\alpha = 2984$ eV radiations. In the x-ray monochromator, radiations produced by electron bombardment of the dual Al and Ag anode are monochromatized according to Bragg's law in first and second order, respectively. In addition, the monochromator of choice must offer the possibility of a future upgrade with the provision of a microfocus modification capable of producing spot size dimensions of ≈ 130 μm on the sample.

The other fundamental component of the system is a hemispherical energy analyzer. The latter must be equipped with a mini-Mott Spin Detector for electron spin resolved data acquisition. The detector must allow parallel acquisition of spin resolved and non-spin resolved data. The unit will be mounted in an analysis chamber made of μ -metal or provided with a μ -metal shielding.

This is a complex research tool, composed of several key sub-parts. The vendor of choice must take full responsibility for the service and service support for all of the sub-parts, not only during a warranty period but for the life of the system. The vendor must install and demonstrate the required specifications of the requested system, and must prove the ability to provide local support and service.

Please note the critical performance criteria (CPC). Please indicate in bid response Acceptance and the ability to meet the performance criteria or please take Exception. If Exception is taken, please explain how vendor can meet the specification with system modification(s) or additional accessories.

0. Performance requirements and tests

The vendor must be able to provide documentation regarding technical characteristics and/or performance of any of the components in questions. In particular, claims regarding key features such as resolutions, fluxes, countrates etc. as specified below in this document must be demonstrated with experimental tests and documentation made available to the buyer. Claims not supported by experimental tests and undocumented will be considered unacceptable.

CPC # 1: Performance requirements and tests

Acceptance

Exception

1. Technical Specifications

1.1. X-Ray Monochromator – source characteristics

1.1.1.a **Anodes** - The monochromator must be equipped with an x-ray source with a twin Al and Ag anode. These anode will produce Al $K\alpha = 1486$ eV and Ag $L\alpha = 2984$ eV lines. The Ag $L\alpha$ line will allow the collection of spectra with enhanced bulk sensitivity.

1.1.1.b **High Intensity and Minimal Crosstalk** - The electron optical design of the anode, filament and source housing must guarantee maximum x-ray intensity optimized for photoelectron spectroscopy experiments and minimal cross-talk of < 0.35 % between different anodes.

1.1.1.c **Anode base** - The anode base must be made of silver in order to avoid any Cu $L\alpha$ stray radiation, in addition to the provision of a thin Al window.

1.1.1.d **X-ray source cooling** - The anode must be very efficiently water-cooled to increase performance and durability. Display should show water flow rate and pressure, and the power supply should be interlocked with the water cooling.

1.1.1.e **Differential pumping** - The monochromator source must be equipped with a port for differential pumping.

1.1.1.f **Moveable window** - The monochromator should be equipped with a moveable window for differential pumping or to shield the crystal assembly during sputtering.

1.1.1.g **X-ray source variable power** - The power of the x-ray source must be continuously variable from in steps of 1W.

1.1.1.h **X-ray source output power stability** - The x-ray source output power stability shall be better than $\pm 1\%$, measured over a minimum twelve hour duration.

CPC # 2: X-Ray Monochromator – source characteristics

Acceptance

Exception

1.1.2 **Dual monochromatization** - The monochromator must be capable of monochromatizing both Al $K\alpha = 1486$ eV and Ag $L\alpha = 2984$ eV lines. Switching between both line must be possible with minor adjustments on the monochromator with in 10 minutes. This possibility must be tested and demonstrated with data provided.

CPC # 3: Dual monochromatization

Acceptance

Exception

1.1.3 Monochromator mirror type and shape - The mirror must be monolithic and ellipsoidal in shape, given the superior capabilities of these characteristics for imaging a point source located at the ellipsoidal mirror focus.

CPC # 4: Monochromator mirror type and shape

Acceptance

Exception

1.1.4 Monochromator mirror dimensions - The mirror must be large (100mm × 200mm or larger) in order to maximize the x-ray flux on the sample.

CPC # 5: Monochromator mirror dimensions

Acceptance

Exception

1.1.5 Monochromator Rowland circle - The mirror must have a 500 mm or larger Rowland circle diameter in order to achieve high x-ray energy dispersion.

CPC # 6: Monochromator Rowland circle

Acceptance

Exception

1.1.6 Monochromator resolution - The monochromator resolution, which must be limited by the rocking curve width of the crystal only, must be less than 250 meV. The monochromator resolution must be tested and demonstrated with data provided.

CPC # 7: Monochromator resolution

Acceptance

Exception

1.1.7 Variable x-ray spot size - The research that is envisioned will take advantage of the possibility of exciting photoelectron spectra with and without focusing modality, so as to exploit the possibility of having a small spot on the sample and to have high photon flux on the sample, respectively. The spot on the sample should therefore be variable, with the smallest spot size being less than $0.7 \times 4 \text{ mm}^2$.

CPC # 8: Variable x-ray spot size

Acceptance

Exception

1.1.8 Micro-focus modification - The monochromator package must offer the possibility of a future upgrade of a microfocus modification capable of producing linear spot size dimensions of $\approx 130 \mu\text{m}$ at the sample.

CPC # 9: Micro-focus modification

Acceptance

Exception

1.2 Electron Analyzer

1.2.1 Hemisphere - The analyzer must be 180° full hemisphere with mean radius larger than 120 mm to guarantee high brilliance.

CPC # 10: Hemisphere

Acceptance

Exception

1.2.2 μ -metal shielding - For ultimate performance the energy analyzer and the lens system must be constructed entirely from nonmagnetic materials inside the μ -metal shielding.

CPC # 11: μ -metal shielding

Acceptance

Exception

1.2.3 Sample-analyzer working distance - The standard working distance and the conical shape aperture of the front part of the lens must provide optimum access to the sample for the excitation source. Working distance should be 40 mm or larger.

CPC # 12: Sample-analyzer working distance

Acceptance

Exception

1.2.4 Analyzer power supplies - The analyzer power supplies must provide the possibility of measuring both low and high kinetic energy electrons. This includes energies as low as 1-2 eV as emitted when laser excitation is used, as well as energies in the 3 keV range resulting from the excitation with the Ag line. This possibility must be feasible via software, and must not require hardware adjustments.

CPC # 13: Analyzer power supplies

Acceptance

Exception

1.2.5 Independent entrance/exit slits - The user must be able to independently select different pairs of entrance and exit slits via rotary drive from outside the vacuum. Entrance and exit slits must be operated independently in order to achieve the best compromise between energy resolution, optimum transmission and match of the angular spread for the analyzer

CPC # 14: Independent entrance/exit slits

Acceptance

Exception

1.2.6 Acceptance angle - The acceptance angle of the analyzer can be varied with variations of the acceptance angle from $\pm 1^\circ$ to $\pm 13^\circ$

CPC # 15: Acceptance angle

Acceptance

Exception

1.2.7 Power Supplies step resolution and stability - Due to the extensive range of electron kinetic energies measured, the power supplies for this systems are very important. The power supplies must guarantee 20 bit of energy step resolution, and be stable within 10 ppm. Power Supplies must be modular, truly bipolar.

CPC # 16: Power Supplies step resolution and stability

Acceptance

Exception

1.2.8 Modular Detector Concept - The analyzer must exploit a Modular Detector Concept. It must be equipped with a flange-mounted detector assembly, so that other detector types, such as a multi-channel two-dimensional detector MCP/CCD, or Delay-Line detectors, can easily be retrofitted without modification of the analyzer.

CPC # 17: Modular Detector Concept

Acceptance

Exception

1.2.9 Standard channeltron detection - The standard detector assembly consists of single channel electron multipliers (CEM or channeltrons) with a high dynamic range for extremely high count rate applications.

CPC # 18: Standard channeltron detection

Acceptance

Exception

1.2.10 Spin detection - The analyzer must be equipped with a mini-Mott Spin Detector for electron spin resolved data acquisition. The detector must allow parallel acquisition of spin resolved and non-spin

resolved data. The non-spin resolved data is acquired with channeltrons, while the spin resolved data is measured using a mini-Mott polarimeter based on the Rice University design. The spin detection will be particularly exploited for studies of the valence band states due to the use of the high-flux ultraviolet laser existing in our laboratory Serf 310 at UTK.

CPC # 19: Spin detection

Acceptance

Exception

2. Safety, Operability and Performance issues

2.1 Count-rate quantification - The vendor of choice is required to provide performance data showing the count-rate for the given system (i.e. composed of x-ray, monochromator and electron analyzer) in terms of the Ag 3d_{5/2} core level peak intensity for a given FWHM. In addition, a measurement of the Fermi edge for a typical metallic sample must be shown for showing the ultimate energy resolution. These measurements are very sensitive on the measuring conditions. To facilitate comparisons, the vendor of choice must provide along with the data the following acquisition parameters: radiation type, x-ray power, spot size on the sample, number of analyzer channels, slit width, analyzer pass energy, and energy resolution.

CPC # 20: Count-rate quantification

Acceptance

Exception

2.2. System warm-up time and performance stability - The entire system (i.e. x-ray source, monochromator and electron analyzer) should not require time consuming adjustment or "tweaking" from day to day to achieve optimal performance. System warm-up time to achieve optimal operating conditions shall not exceed 30 minutes for day-to-day operation.

CPC # 21: System warm-up time and performance stability

Acceptance

Exception

2.3. Changing spot size operations - The research that is envisioned will take advantage of the possibility of exciting photoelectron spectra with and without focusing modality, so as to exploit the possibility of having a small spot on the sample and to have high photon flux on the sample, respectively. Changing the dimensions of the spot size should not require time consuming adjustment or "tweaking" from day to day to achieve optimal performances. This possibility must be demonstrated and documented.

CPC # 22: Changing spot size operations

Acceptance

Exception

2.4. Power supplies - All power supply must be rack mountable on a standard 19-inch laboratory rack. All variable operating parameters must be adjustable via power supply front panel controls and desktop PC.

CPC # 23: Power supplies

Acceptance

Exception

2.5. 110 VAC line power - The laser system must operate on 110 VAC line power only, so it can be operated from a standard wall outlet.

CPC # 24: 110 VAC line power

Acceptance

Exception

3. Customer Service

Since the laser system is a complex research tool, composed of several key sub-systems, the customer support is particularly important

3.1. Single service organization support - Being complex and integrated, the system must be supported in its entirety by a single service organization, ideally serviced and maintained by one technical support person. Support provided by multiple vendors, multiple service organizations, with different warranties, different exclusions, different travel costs and support is NOT acceptable.

CPC # 25: Single service organization support

Acceptance

Exception

3.2. Long term maintenance - The vendor of choice must guarantee long term maintenance of all the components of the system. The vendor of choice must take full responsibility for the service and service support for all parts of the system, not only during a warranty period, but for the lifetime of the system.

CPC # 26: Long term maintenance

Acceptance

Exception

3.3. Product line continuity - The vendor of choice must guarantee continuity in the production of all of the parts of the system. The vendor of choice must guarantee immediate availability of an equivalent or better product to substitute any constituent parts in case any of the latter is discontinued by a manufacturer.

CPC # 27: Product line continuity

Acceptance

Exception

3.4. Immediate assistance - The vendor of choice must guarantee availability of qualified personnel who will provide immediate remote assistance, and on-site assistance, troubleshooting, repairs etc. in case the system can not perform according to the vendor specifications in a timely manner ($\approx$ one week).

CPC # 28: Immediate assistance

Acceptance

Exception

3.5. Installation - The vendor of choice must show successful installations of the requested system, and must prove the ability to provide local support and service.

CPC # 29: Installation

Acceptance

Exception

3.6. References - Please provide name and contact information of at least 5 customers on a world wide basis who purchased a system matching the characteristics described in this document.

CPC # 30: References

Acceptance

Exception