

August 4, 2011

Dear Prospective Offeror:

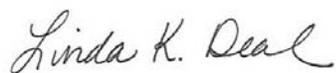
REQUEST FOR PROPOSAL (RFP) NO. 182437

The U. S. Department of Energy's (DOE) Basic Energy Sciences (BES) Program is soliciting offers for one (1) X-ray Microdiffractometer System. Battelle operates the Pacific Northwest National Laboratory for DOE and any resultant agreement will be between Battelle and the winning contractor.

Information regarding the goods and services required and instructions for preparation and submission of proposals are contained in the attached RFP. Battelle requests the submission of your best pricing proposal in support of the Technical Specifications and other requirements as detailed in this RFP.

As the sole point of contact, requests for clarification should be submitted by e-mail to me at linda.deal@pnnl.gov. The established due date for this RFP is **August 11, 2011**.

Sincerely,



Linda K. Deal
Contract Specialist





Proudly Operated by **Battelle** Since 1965

REQUEST FOR PROPOSAL NO. 182437

Offer Due: August 11, 2011, 4:00 pm PST

Delivery Required Date: TBD

<p>CONTRACT REPRESENTATIVE Linda Deal MSIN: K9-15 Battelle Boulevard P.O. Box 999 RICHLAND, WA 99352-0999</p> <p>Tel: 509/371-7603 Fax: 509/375-3818 E-mail: linda.deal@pnnl.gov</p>	<p>SHIP TO: PO #TBD Battelle for US DOE 3335 Q Avenue Richland, WA 99354 United States</p>
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This is a request for proposal for a **X-ray Microdiffractometer System**. Proposals should be initially submitted on the most favorable price and technical terms which can be offered because of the possibility that award will be made without discussion of proposal received.

Submit all offers on the form below showing unit and total prices for meeting the stated required delivery date. If unable to meet stated date, offer best delivery date.

LINE ITEMS

Line	Qty	U/M	Description	Unit Price	Total Price
1	1	EA	X-ray Microdiffractometer System per attached Technical Specification.		
1.1	1	EA	High Brilliance, Microfocus Rotating Anode X-Ray Generator		
1.2	1	EA	Variable Divergence Confocal X-ray Optics		
1.2	1	EA	Goniometer, Sample Stage, & Collimators		
1.2	1	EA	2-D Area Detector		
1.2	1	EA	Data Collection & Image Processing Software		
1.2	1	EA	Data Analysis Software		
1.2	1	EA	Chiller		
1.2	1	EA	Computer		
2.0	1	EA	Onsite (Richland, WA) Source Inspection, Installation Training.		
3.0	1	EA	Minimum Five-Year Warranty/Service Contract		

BATTELLE CONTRACTS REPRESENTATIVE

The Battelle Contracts Representative, **Linda Deal**, is the sole point of contact for any communications or questions regarding this acquisition.

PRICING INFORMATION

- [] A. Prices proposed herein are substantiated with enclosed copy of published price lists and/or catalog price sheets including conditions of any available discounts and are not more than those offered our most favored purchasers for similar quantities under like conditions.
- [] B. Published price list and/or catalog price sheets are not available. The prices proposed herein are not more than those offered our most favored purchasers including the United States Government for similar quantities under like conditions. If checked, include copies of recent invoices, sales slips, etc., for similar quantities of like material or services to at least two (2) other firms for verification.

Signed _____

Date _____

SUBMISSION OF PROPOSALS

Proposals should be prepared simply and economically, and provide a straightforward, concise delineation of the information required to be furnished. Emphasis should be on completeness and clarity. Elaborate brochures or other presentations are neither required nor desired.

Each proposal submitted should include:

1. A statement of acceptance of the conditions referenced in the General Provisions below.
2. Completed Commercial Representations and Certifications found at http://www.pnl.gov/contracts/documents/forms/representations_certifications_ci.pdf.
 - The NAICS code for section 2(a)(1) is **334516**
 - The size standard for section 2(a)(2) is **500 employees**
3. A price offer with all information requested herein.
4. A Technical Proposal, prepared in a manner consistent with the attached Specification. The Technical Proposal shall definitively indicate compliance, paragraph by paragraph, with the requirements outlined in the Specification and shall be supported by cross-referenced documentation as necessary.
5. Export Control Classification Code (see below) if non-domestic source.
6. Quality Assurance Pre-Award Evaluation (see below)

Proposals are preferred to be electronically submitted to linda.deal@pnnl.gov. Transmittals containing proposals should include "**Proposal to RFP No. 182437**" in the subject line. Proposals must be received by Battelle no later than **August 11, 2011**.

Proposals may also be submitted via facsimile at the number above or by hard copy the address above. Correspondence must include "**Proposal to RFP No. 182437**." Proposals submitted by overnight mail must be mailed to

Battelle, Pacific Northwest Division
6th Street Warehouse
790 6th Street
ATTN: Linda Deal, K9-15
Richland, WA 99354

GENERAL PROVISIONS

Each proposal submitted shall include a statement of acceptance of the conditions referenced below. The conditions may be viewed as at <http://www.pnl.gov/contracts/documents/>.

- Fixed-Price General Provisions other than Commercial Items – Supplies and Services, titled Form A-409.3-FP (Feb 2010)

EXPLANATION TO PROSPECTIVE OFFERORS

Any prospective offeror desiring an explanation or interpretation of the RFP must request it in writing soon enough to allow a reply to reach all prospective offerors before the submission of their offers. Oral explanations or instruction given before the award of the contract will not be binding. Any information given to a prospective offeror concerning the RFP will be furnished promptly to all other prospective offerors as an amendment of the solicitation, if that information is necessary in submitting offers or if the lack of it would be prejudicial to any other prospective offeror.

PROPOSAL DUE DATE AND VALIDITY PERIOD

Proposals shall be delivered to Battelle on or before the proposal due date and shall be valid for a minimum of **90** days.

AMENDMENTS TO RFP

If this RFP is amended, all provisions which are not modified remain unchanged.

Offerors shall acknowledge receipt of any amendment of this RFP (a) by signing and returning the form provided for such purpose; (b) by stating in its proposal that the amendment (date and number) was received and considered in formulating the proposal; or (c) by letter or E-mail. Battelle must receive the acknowledgement by the time specified for receipt of proposals.

SUBMISSION, MODIFICATION, REVISION, AND WITHDRAWAL OF PROPOSALS (CL 605, OCT 2007)

1. Offerors are responsible for submitting proposals, and any modifications or revisions, so as to reach the Battelle office designated in the solicitation by the time specified in the solicitation. If no time is specified in the solicitation, the time for receipt is 4:00 p.m., local time, for the designated Battelle office on the date that proposal or revision is due.
2. Any proposal, modification, or revision received at the Battelle office designated in the solicitation after the exact time specified for receipt of offers is "late" and will not be considered unless it is received before award is made, the Battelle Contracts Representative determines that accepting the late offer would not unduly delay the acquisition; and--
 - A. If it was transmitted through an electronic commerce method authorized by the solicitation, it was received at the initial point of entry to the Battelle, Pacific Northwest Division, infrastructure not later than 5:00 p.m. one working day prior to the date specified for receipt of proposals; or
 - B. There is acceptable evidence to establish that it was received at the Battelle site designated for receipt of offers and was under Battelle's control prior to the time set for receipt of offers; or
 - C. It is the only proposal received.
3. However, a late modification of an otherwise successful proposal that makes its terms more favorable to the Battelle, will be considered at any time it is received and may be accepted.
 - A. Acceptable evidence to establish the time of receipt at the Battelle site includes the time/date stamp of that installation on the proposal wrapper, other documentary evidence of receipt maintained by the installation, or oral testimony or statements of Battelle personnel.
 - B. If an emergency or unanticipated event interrupts normal Battelle processes so that proposals cannot be received at the office designated for receipt of proposals by the exact time specified in the solicitation, and urgent Battelle requirements preclude amendment of the solicitation, the time specified for receipt of proposals will be deemed to be extended to the same time of day specified in the solicitation on the first work day on which normal Battelle processes resume.
 - C. Proposals may be withdrawn by written notice received at any time before award. Oral proposals in response to oral solicitations may be withdrawn orally. If the solicitation authorizes facsimile

proposals, proposals may be withdrawn via facsimile received at any time before award. Proposals may be withdrawn in person by an offeror or an authorized representative, if the identity of the person requesting withdrawal is established and the person signs a receipt for the proposal before award.

- D. Unless otherwise specified in the solicitation, the offeror may propose to provide any item or combination of items.
 - E. Offerors shall submit proposals in response to this solicitation in English and in U.S. dollars unless otherwise permitted by the solicitation.
 - F. Offerors may submit modifications to their proposals at any time before the solicitation closing date and time, and may submit modifications in response to an amendment, or to correct a mistake at any time before award.
 - G. Offerors may submit revised proposals only if requested or allowed by the Battelle Contracts Representative.
 - H. Proposals may be withdrawn at any time before award. Withdrawals are effective upon receipt of notice by the Battelle Contracts Representative
- 4. Offer expiration date. Proposals in response to this solicitation will be valid for the number of days specified on the solicitation cover sheet (unless a different period is proposed by the offeror).
 - 5. Restriction on disclosure and use of data. Offerors that include in their proposals data that they do not want disclosed to the public for any purpose, or used by Battelle except for evaluation purposes, shall--
 - A. Mark the title page with the following legend:

This proposal includes data that shall not be disclosed outside Battelle and shall not be duplicated, used, or disclosed--in whole or in part--for any purpose other than to evaluate this proposal. If, however, a contract is awarded to this offeror as a result of--or in connection with--the submission of this data, Battelle shall have the right to duplicate, use, or disclose the data to the extent provided in the resulting contract. This restriction does not limit Battelle's right to use information contained in this data if it is obtained from another source without restriction. The data subject to this restriction are contained in sheets [*insert numbers or other identification of sheets*]; and

- B. Mark each sheet of data it wishes to restrict with the following legend:

Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal.

TREATMENT OF PROPOSAL DATA

- A. Although not specifically requested by the RFP, the proposal may include technical data and other data, including trade secrets and/or privileged or confidential commercial or financial information, which the Offeror does not want disclosed to the public or used by PNNL or the Government for any purpose other than proposal evaluation. To protect such data, the Offeror will specifically identify each page including each line or paragraph thereof containing the data to be protected and mark the cover sheet of the proposal with the following notice:

NOTICE

The data contained in pages _____ of this proposal have been submitted in confidence and contain trade secrets and/or privileged or confidential commercial or financial information, and such data shall be used or disclosed only for evaluation purposes. PNNL and the Government shall have the right to use or disclose the data herein to the extent provided in the contract. This restriction does not limit PNNL's and the Government's right to use or disclose data obtained without restriction from any source, including the Offeror.

Reference to this notice on the cover sheet should be placed on each page to which the notice applies. PNNL assumes no liability for disclosure or use of unmarked data and may use or disclose such data for any purpose.

- B. Should a contract be awarded based on a proposal, it is policy, in consideration of the award, to obtain unlimited rights for the Government in technical data contained in the proposal unless the prospective contractor marks those portions of the technical information that he asserts as "proprietary data," or specifies those portions of such technical data that are not directly related to or will not be utilized in the work to be funded under this subcontract. "Proprietary data" are defined as technical data which embody trade secrets developed at private expense, such as design procedures or techniques, chemical composition of materials, or manufacturing methods, processes, or treatments, including minor modifications thereof, provided that such data: (1) are not generally known or available from other sources without obligation concerning their confidentiality; (2) have not been made available by the owner to others without obligation concerning their confidentiality; and (3) are not already available to the Government without obligation concerning their confidentiality. An Offeror who receives a contract award shall mark the data identified as proprietary by specifying the appropriate proposal page number to be inserted in the Rights to Proposal Data clause below. Subject to the concurrence of PNNL, information unrelated to the subject may be deleted from the proposal by the Offeror. The responsibility, however, of identifying technical data as proprietary or deleting it as unrelated rests with the Offeror.
- C. The following clause shall be included in any contract based on a proposal. This clause is intended to apply only to technical data and not to other data, such as privileged or confidential commercial or financial information

RIGHTS TO PROPOSAL DATA

Except for technical data contained on pages _____ of the contractor's proposal dated _____, which are asserted by the Contractor as being proprietary data, it is agreed that as a condition of the award of this contract, notwithstanding the provisions of any notice appearing on the proposal, the Government shall have the right to use, duplicate, and disclose and have others do so for any purpose whatsoever, the technical data contained in the proposal upon which this contract is based.

ANTI-KICKBACK PROCEDURES (CL 398 - JUL 1995)

A. Definitions

"Kickback," as used in this clause, means any money, fee, commission, credit, gift, gratuity, thing of value, or compensation of any kind which is provided, directly or indirectly, to Battelle, Battelle employees, subcontractor, or subcontractor employees for the purpose of improperly obtaining or rewarding favorable treatment in connection with a prime contract or in connection with a subcontract relating to a prime contract.

"Person," as used in this clause, means a corporation, partnership, business association of any kind, trust, joint-stock company, or individual.

"Prime contract," as used in this clause, means a contract or contractual action entered into by Battelle for the purpose of obtaining supplies, materials, equipment, or services of any kind.

"Prime Contractor," as used in this clause, means a person who has entered into a prime contract with Battelle.

"Prime Contractor employee," as used in this clause, means any officer, partner, employee, or agent of a prime Contractor.

"Subcontract," as used in this clause, means a contract or contractual action entered into by Battelle or a subcontractor for the purpose of obtaining supplies, materials, equipment, or services of any kind under a prime contract.

"Subcontractor," as used in this clause, (1) means any person, other than Battelle, who offers to furnish or furnishes any supplies, materials, equipment, or services of any kind under a prime contract

or a subcontract entered into in connection with such prime contract, and (2) includes any person who offers to furnish or furnishes general supplies to Battelle or a higher tier subcontractor.

"Subcontractor employee," as used in this clause, means any officer, partner, employee, or agent of a subcontractor.

- B. The Anti-Kickback Act of 1986** (41 U.S.C. 51-58) (the Act), prohibits any person from -
1. Providing or attempting to provide or offering to provide any kickback;
 2. Soliciting, accepting, or attempting to accept any kickback; or
 3. Including, directly or indirectly, the amount of any kickback in the contract price charged by a prime contractor to the United States or in the contract price charged by a subcontractor to a prime contractor or higher tier subcontractor.
- C.**
1. When the Contractor has reasonable grounds to believe that a violation described in paragraph B of this clause may have occurred, the Contractor shall promptly report to the Battelle Contracts Representative in writing the possible violation. Such reports shall be made to the inspector general of Battelle, and Battelle shall forward such reports to DOE, or the Department of Justice.
 2. The Contractor shall cooperate fully with any Federal agency investigating a possible violation described in paragraph B of this clause.
 3. The Battelle Contracts Representative may (i) offset the amount of kickback against any monies owed by Battelle under the prime contract and/or (ii) direct that the prime Contractor withhold from sums owed a subcontractor under the prime contract, the amount of the kickback. The Battelle Contracts Representative may order that monies withheld under subdivision C.3.(ii) of this clause be paid over to DOE unless Battelle has already offset those monies under subdivision C.3.(i) of this clause. In either case, the Prime Contractor shall notify the Battelle Contracts Representative when the monies are withheld.
 4. The Contractor agrees to incorporate the substance of this clause, including this subparagraph C.4, in all subcontracts under this contract which exceed \$100,000.

BID AND PROPOSAL COSTS

Battelle is not obligated to pay any cost incurred in the preparation and submission of a proposal, nor to enter into a contract or any other arrangement with any Offeror.

ALTERNATE PROPOSALS

Battelle is inviting proposals in full accordance with the attached specifications or description. In the event that offeror is unable to submit a proposal responsive to this requirement and offeror believes they have an item(s) which may otherwise be acceptable, offerors are invited to submit a proposal for Battelle's consideration, stating item by item each incidence of noncompliance. Offerors are hereby advised that Battelle shall not be obligated to evaluate this proposal, but if acceptable, this Solicitation will either be canceled and reissued or revised to incorporate any appropriate changes. In the event offeror chooses not to submit a proposal, a short note of explanation would be appreciated.

TYPE OF CONTRACT

Battelle contemplates awarding a fixed price contract for this request.

TECHNICAL SPECIFICATION

The enclosed Technical Specification outlines the requirements for this solicitation.

INSURANCE

As required in the referenced General Provision herewith the Contractor must provide a valid insurance certificate prior and review the PNNL Visitor Guide, <http://www.pnl.gov/contracts/esh-procedures/>, prior to any work performed on-site.

PROMPT PAYMENT DISCOUNTS

In addition to normal payment terms, please advise amount and details of other cash discounts or savings available to Battelle for more expeditious or favorable methods of payment or for other reasons.

AUTHORIZED NEGOTIATORS

If a negotiation meeting is held, the Offeror shall designate as its negotiator a person who is authorized to make legally binding commitments without further review or approval. If, for any reason, it is impractical for the Offeror to be represented at a negotiation meeting by other than a person fully authorized to act in its behalf, Battelle shall be notified sufficiently in advance to allow a decision to be made whether the negotiations should proceed as scheduled or be postponed. The Offeror's notice, if originally given orally, shall be confirmed in writing.

CONTRACT AWARD

a) Battelle may evaluate proposals received in response to this solicitation without discussion. Contract award, if any, will be made to the responsive, responsible offeror whose evaluated proposal will be most advantageous to Battelle, considering only price and any price-related factors specified elsewhere in the solicitation, or

(b) Battelle may reject any or all proposals, and waive informalities or minor irregularities in proposals received, or

(c) Battelle may accept any item or combination of items, unless doing so is precluded by a restrictive limitation in the solicitation or the proposal, or

(d) Battelle may reject a proposal as non-responsive if the prices proposed are materially unbalanced between line items or sub-line items. A proposal is materially unbalanced when it is based on prices significantly less than prices for some items and prices which are significantly overstated in relation to prices for other items, and if there is a reasonable doubt that the proposal will result in the lowest overall price to Battelle even though it may be the low evaluated proposal, or if it is so unbalanced as to be tantamount to allowing an advance payment.

ADDITIONAL CLAUSES THAT MAY BE APPLICABLE

The following clauses may apply and be included with the contract.

EXPORT CONTROL (cl. 387 - February 2011)

For each article, deliverable, good, software program, or product, Contractor shall provide to Battelle the item's Commerce Control List (CCL) Export Control Classification Number (ECCN), or, if applicable, the item's USML category. Contractor shall provide this information using the Export Control Information Reporting Form located at <http://www.pnl.gov/contracts/documents/>. If requested, Contractor shall also provide reasonable assistance, at no additional charge, to enable Battelle to validate the CCL ECCN or USML category. Contractor agrees to indemnify and hold harmless Battelle, its officers, agents, and employees from any and all federal fines or other penalties resulting from Contractor's failure to provide Battelle with accurate export controls information. This provision shall survive the expiration or termination of the contract.

QUALITY PROGRAM/SYSTEM (cl QA-170, March 2008)

The Contractor shall provide and maintain a quality program/system that complies with a national or international program as identified in the Statement of Work or Specification.

- A copy of the organization's current Quality Assurance Program or Manual.
- Copies of all manuals and procedures that implement the QA program governing the product(s) or service(s) to be delivered. For manuals or procedures maintained as on-line documents, access to appropriate public URL(s) may be provided in lieu of copies.
- If the QA program governing the product(s) or service(s) to be delivered is certified as conforming to a national or international standard, a copy of the registration certificate must be submitted

Unless otherwise specified, Contractor shall mail all documents required by this contract to be delivered to the Battelle Contracts Representative, Battelle, PO Box 999, Richland, Washington 99352.

Submission of a certification constitutes Contractor's express warranty that the identified supplies conform to all of the requirements of this contract. A document is not delivered until it is received by

Battelle. Battelle shall have the right to reject, as not in conformity with the requirements of this contract, any supplies or services for which all required reports, procedures or certifications are not delivered. Contractor's failure to deliver such documents, or delivery of deficient documents, shall be deemed a failure to make delivery within the meaning of the Default clause of this contract.

Pre-Award Evaluation Requirement: A pre-award evaluation will be conducted of the prospective Contractor's technical and quality assurance capability. Evaluation shall be performed of the documented quality program/system.

QUALITY PROGRAM/SYSTEM (MAINTENANCE) (*cl QA- 170a, July 2008*)

The Contractor shall maintain a quality program/system that complies with a national or international program as identified in the Statement of Work (SOW) or Specification. The Contractor shall perform all work and deliver the items or services specified in compliance with its QA program/manual. If the Contractor revises its QA program/manual during the term of this contract, the Contractor shall submit the latest revision to the Battelle Contracts Representative for review and acceptance. Until written approval is provided by Battelle, all work shall continue in accordance with the previously approved QA program/manual.

Unless otherwise specified, Contractor shall mail all documents required by this contract to be delivered to the Battelle Contracts Representative, Battelle, PO Box 999, Richland, Washington 99352. Submission of a certification constitutes Contractor's express warranty that the identified supplies conform to all of the requirements of this contract. A document is not delivered until it is received by Battelle. Battelle shall have the right to reject, as not in conformity with the requirements of this contract, any supplies or services for which all required reports, procedures or certifications are not delivered. Contractor's failure to deliver such documents, or delivery of deficient documents, shall be deemed a failure to make delivery within the meaning of the Default clause of this contract.

SOURCE INSPECTION (*cl QA-178 – May 2003*)

Contractor shall give Battelle ten (10) calendar days advance written notice of the date, time, and place the acceptance test and/or inspection is scheduled to be performed. Contractor shall in no event perform any such operation, inspection, or test prior to the date specified in its notice or change the date, time, or place specified therein without Battelle's prior written approval. Battelle's authorized representative may, but is not required to, be present. In the event said representative witnesses an operation, inspection, or test performed by Contractor or conducts an inspection, surveillance, or test on Battelle's behalf, Contractor shall be provided documentary evidence to such effect.

PRICE-ANDERSON AMENDMENTS ACT (*cl . 3111 - Nov 2008*)

This clause applies when the Contract may involve risk of public liability from a nuclear incident.

In addition to applicable Quality and ES&H contract clauses and requirements, the following shall apply:

A. Indemnification for Nuclear Safety Violations

1. **Applicability.** The provisions of this clause shall be applicable if the Contractor's products or services are subject to the Nuclear Hazards Indemnity provisions of section 170 of the Atomic Energy Act of 1954, as amended, and the U.S. Department of Energy's Procedural Rules for DOE Nuclear Activities as described in Title 10, Code of Federal Regulations, Part 820 (10 CFR Part 820), or could otherwise have any effect on nuclear or radiological safety.
2. The Contractor assumes full responsibility and shall indemnify, hold harmless, and defend Battelle, its directors, officers, and employees from any civil liability, if any, under §234A of the Atomic Energy Act of 1954, as amended, or the implementing regulations, arising out of the activities of the Contractor, its subcontractors, suppliers, agents, employees, and their officers, or directors. The Contractor's obligation to indemnify and hold harmless shall expressly include attorney fees and other reasonable costs of defending any action or proceeding instituted under §234A or DOE's implementing regulations.

B. Nuclear Safety Regulations

1. **Applicability.** The provisions of this clause apply to any activity carried out pursuant to this contract by the Contractor, its subcontractors, suppliers, and employees that has the potential to result in a risk of harm to an individual from radiation or radioactive material, or the potential to

affect a DOE nuclear facility or radiological activity. The term “individual” as used in this clause includes, without limitation, general employees, radiological workers, embryo/fetus of a declared pregnant worker, minors, and members of the public. The requirements of this clause do not apply to activities that are regulated, and either indemnified or subject to financial assurance provisions, through a license by the Nuclear Regulatory Commission or a State under an Agreement with the Nuclear Regulatory Commission (an Agreement State), including activities certified by the Nuclear Regulatory Commission under §1701 (42 USC §2297(f)) of the Atomic Energy Act of 1954, as amended. Other specific applicability exclusions are identified in 10 CFR §820 and related Department of Energy regulations.

2. The Contractor shall comply, as applicable, with the requirements of Title 10, Code of Federal Regulations, Part 835, “Occupational Radiation Protection” (10 CFR Part 835). The Contractor’s programs and associated documents are subject to review at all times by Battelle.
 3. The Contractor shall: (1) comply, as applicable with the requirements of Title 10, Code of Federal Regulations, Part 830 “Nuclear Safety Management,” including Subpart A, Quality Assurance Requirements or a quality assurance program that meets the stated requirements of 10 CFR 830.120, and (2) implement, document, and maintain such programs (e.g., administrative controls, procedures, and technical work documents) as necessary to ensure compliance with the QA requirements section of this contract. The Contractor’s programs and associated documents are subject to review at all times by Battelle.
 4. The Contractor shall: (1) comply with all applicable requirements of Title 10, Code of Federal Regulations, Part 708, “Contractor Employee Protection” (10 CFR 708), and (2) implement, document, and maintain such programs as necessary to ensure compliance with this requirement. The Contractor’s programs and associated documents are subject to review at all times by Battelle.
 5. The Contractor shall (1) comply with all applicable requirements of newly promulgated Department of Energy nuclear safety requirements in Title 10, Code of Federal Regulations, and (2) implement, document, and maintain such programs as necessary to ensure compliance with these requirements. The Contractor’s programs and associated documents are subject to review at all times by Battelle.
 6. If any noncompliance or deficiency occurs in the programs or activities subject to this clause, or a lack of appropriate or timely corrective action by the Contractor, causes a potential violation of nuclear safety requirements, then the Contractor may be subject to enforcement actions under the Atomic Energy Act, 10 CFR 820 and/or other provisions of this contract.
 7. Where reporting of a potential violation of a nuclear safety regulation to the DOE is necessary, the Contractor shall report through Battelle.
- c. The Contractor shall include the provisions of this clause, including this paragraph, in all lower-tier Contracts for any activity subject to the applicability requirements in paragraphs A.1 and B.1.

We offer to sell the above items (or alternate items as specified) at the prices indicated, on the terms and conditions stated and the referenced general provisions which will be a part of any resulting order.		F.O.B. DESTINATION PRE-PAID or INTERNATIONAL: DDP	
		Delivery Date at F.O.B. Point:	
		Terms of Payment PNNL standard payment terms are N30 payment terms, if prompt payment discounts are available, please state	
Firm Name	Offer Date	Weight	Recommended Carrier
Dimensions	Number of Boxes	Origin Zip Code	
Telephone No.	Fax No.	Email Address	
Name/Title	Signature		

Technical Specifications

X-ray Microdiffractometer System

Scope:

The intent of this procurement is to acquire an x-ray microdiffractometer system for high speed data collection and analysis of samples including both small samples (μm) and small areas of larger samples. The x-ray microdiffractometer will be equipped with a large, curved, high-sensitivity, high-resolution image plate area detector, able to collect large sections of Debye rings over a very large 2θ range in a single image. The system must include hardware for data collection and software capable of crystallographic phase identification, quantitative analysis, percent crystallinity, and crystallite size determinations. The diffractometer system will consist of a high brilliance microfocus rotating anode x-ray generator with a Cr anode, high performance variable-divergence confocal optics, an automated x-y stage and fiber sample holder, a curved image plate detector, and complete data collection and analysis software with controller.

Technical specifications are outlined below.

High Brilliance, Microfocus Rotating Anode X-Ray Generator:

Type:	Direct-drive, High Frequency, Microfocus Rotating Anode X-ray Generator
Maximum Power:	1200 Watts Continuous Rated Maximum Output Power
Voltage:	20-60 kV, 1 kV steps
Current:	10mA fixed for 20-39kV; 10-30mA variable in 1mA steps for 40-60kV range
Voltage Stability:	$\pm 0.01\%$
Anodes:	Cr Target, replaceable with a Cu target, 9000rpm rotation speed, moveable anode head.
Focal Spot:	Focal spot must be no larger than $70 \times 70\mu\text{m}$ round spot at 6° take off angle
Seals:	High speed ferrofluidic vacuum seal, mechanical water seal
Filaments:	Pre-crystallized, pre-aligned W filaments in cassettes, including 3 replacement spare
Vacuum:	Turbomolecular pump integrated into tube tower
Shutter:	Rotary shutter

The generator must have a round focal spot of no larger than $70\mu\text{m}$ at a 6° take off angle. Filaments must come pre-crystallized and pre-aligned in cassettes to eliminate the requirement for aging a filament and allow for easy and repeatable installation of filaments by the user. Bias must be controlled automatically with no need to manual adjust the bias, ever. Dimensions of the generator shall not exceed 600mm (W) x 1000mm (D) x 1150mm (H).

Variable Divergence Confocal X-ray Optics:

The system must include a variable divergence confocal x-ray optic designed for a microfocus rotating anode x-ray generator for Cr. The optic must be a confocal design with two optics side-by-side. To achieve the largest capture angle from the generator, the optic must be 150mm in length. The x-ray beam shall make two bounces off the optics to achieve an optimized level of intensity and beam purity. The divergence of the x-ray beam must be user adjustable by a single variable divergence slit without the need to change the collimator size or realign the optic.

Note: The system must be designed such that switching between Cu and Cr radiation and vice versa does not require realignment and/or repositioning of the incident beam path and collimation system or the goniometer.

Goniometer, Sample Stage, & Collimators:

The goniometer must be equivalent or better than the following specifications:

Type:	2-Axis: ω -axis and ϕ -axis with χ fixed at 45°
Axial Angle Ranges:	ω -axis: -15° to 90° , $0.002^\circ/\text{step}$ ϕ -axis: 360° free rotation, $0.002^\circ/\text{step}$ χ -axis: fixed at 45°
X,Y,Z Sample Stage:	X-axis: $\pm 3\text{mm}$, 0.01mm step, motorized and programmable Y-axis: $\pm 3\text{mm}$, 0.01mm step, motorized and programmable Z-axis: manual micrometer adjustment
Scans:	ω and ϕ scans; independent or simultaneous oscillation
Collimator Sizes:	$10\mu\text{m}$, $30\mu\text{m}$, $100\mu\text{m}$, $300\mu\text{m}$, and $800\mu\text{m}$ double pinhole collimators
Measurement Modes:	Reflection & Transmission Modes

Video Microscope & Sample Alignment System:

Since the system will be used for small spot size analysis and microdiffraction, a sample alignment system must be included. The system must consist of a color CCD camera, video microscope, and high intensity light source with all positioned on the incident beam side. A minimum 200x magnification must be displayed on a local color flat panel LCD with an electronic crosshair generator. A color CCD image is displayed on the computer monitor and can be saved for later retrieval.

2-D Area Detector:

A 2-D area detector with the following specifications is required:

Type:	Cylindrical 2D Imaging Plate Area Detector
Active Area:	$465\text{mm} \times 256\text{mm}$
Detector Distance:	127.4mm fixed
Dynamic Range:	1.05×10^6 with dual photo multiplier tube (PMT)
Sensitivity:	1 x-ray photon per pixel
Pixel Size:	$100\mu\text{m} \times 100\mu\text{m}$, $100\mu\text{m} \times 150\mu\text{m}$, $200\mu\text{m} \times 200\mu\text{m}$ (software selectable)
Readout:	Automatic laser scanning readout and erase system
Detector Regassing:	None

The detector must be able to be used with Cu, Cr, and Mo radiation. Mo radiation may be used as an alternate to Cu radiation in order to reduce air absorption during transmission experiments with glass capillaries.

Data Collection & Image Processing Software:

The data collection and image processing software must be a comprehensive package controlling the video image of the sample, data collection, and 2-D x-ray image processing. Processing tools enable the 2-D diffraction image(s) from the image plate to be reduced to conventional I (intensity) vs. 2θ (position)

patterns. Creation of an input file allows the standard I vs. 2θ diffraction pattern to be analyzed by data analysis software.

Data Analysis Software:

Analytical Software for Microsoft Windows to include background and $K\alpha_2$ elimination, peak finding, editing, labeling, browsing and characterization, including painting, integration, FWHM and crystallite size estimation, graphical data editing and scaling, data filters for smoothing, sample displacement, spike elimination, fixed and variable slits, overlays of multiple patterns. The basic analytical software must include profile fitting with Pearson VII or pseudo-Voigt profiles, user-defined background models, graphical display of process including fills and differences, and editable profile list, including position, intensities, FWHM, crystallite size. A high level Search/Match Software with the ICDD PDF-2 database on CD-ROM must be included. System will also include Rietveld whole pattern fitting software for lattice constant and quantitative analysis using structure or structureless phase data. Software will also provide for auto load of structure data from FIZ-ICSD database, quantitative analysis with/without internal wt. % standard, amorphous content, absorption and preferred orientation correction, and batch mode refinement of multiple observed patterns. Multiple simultaneous users allowed via external network access.

Chiller:

The system must include a refrigerated water-cooled heat exchanger to sufficiently cool the microfocus rotating anode x-ray generator and any other necessary accessories and peripheral equipment. A tight temperature control of $\pm 0.1^\circ\text{C}$ is required.

Computer:

- Latest generation workstation interfaced with the XRD instrument and external network
 - 23" monitor
 - Laser printer
 - Audio speakers
-

Training, Installation, & Warranty:

The system must be provided with a training class to be performed at the customer's site. Installation must be included. A 5 (five) year warranty or service contract excluding consumables must be provided. The proposal must include a source inspection for a single customer representative to include travel and expenses. Customer representative will approve the system prior to shipment, and the instrument will be accepted upon arrival at the customer's site.
