

The Islamia University of Bahawalpur

TENDER NOTICE

Sealed Tenders on item rate basis are invited from the Manufacturing Firms or their Authorized Distributors, Dealers and Suppliers having established credentials in terms of Technical, Financial and Managerial capabilities for the supply of Scientific Equipment for the Materials Chemistry Laboratory, Department of Chemistry, The Islamia University of Bahawalpur as per details given below on C&F and FOR basis as mentioned separately in each tender.

Tender No.	Category (Quantity and specifications are available in the tender document)	Estimated Cost (Millions PKR)	Bid Security (Millions PKR)
A C & F Basis	1. Dual source single crystal X-rays diffractometer with cryosystem and accessories 2. Powder X-rays diffractometer	62.5	3.125
B C & F Basis	1. Polarizing microscope with hot stage and camera 2. Thermogravimetric analyzer (TGA)/Differential Scanning Calorimeter (DSC) 3. Microwave synthesis system 4. Spectrofluorimeter	13.4	0.67
C FOR Basis	1. Computing facility 2. Rotary evaporator with chiller and vacuum pump 3. Fume hood 4. Analytical balance 5. Precision balance 6. Heating mantle 7. Hot plates 8. Stirring plates 9. Laboratory refrigerators 10. Chemical storage cabinets	16.2	0.81

- Interested bidders may get the Tender Documents containing detailed specifications, terms and conditions from the Purchase Section, Treasurer's Office Abbasia Campus (Old), the Islamia University of Bahawalpur during office hours on submission of written application on letter head and a copy of CNIC or can be down loaded from the IUB website www.iub.edu.pk or PPRA website www.ppra.punjab.gov.pk on payment of (non-refundable fee) of Rs. 1000/ (Separately for each category through Bank challan HBL in A/C 14730000010403 or pay order in the name of the Treasurer, The Islamia University of Bahawalpur for bidding documents.
- 5% Bid Security** of the estimated cost as mentioned above separately against each tender (Refundable) in the shape of CDR shall be attached with the bid, otherwise bid will be rejected.
- The rates should be quoted on C&F (for tenders A & B) and FOR basis (for tender C).
- Single Stage – Two Envelopes** bidding procedure will be adopted as per PPRA Rules 38- 2(a). The Envelopes shall be marked as “**TECHNICAL PROPOSAL**” AND “**FINANCIAL PROPOSAL**” in legible letters. Financial Proposal of bids found technically non-responsive shall be returned un-opened.
- Procurement shall be governed under the Punjab Procurement Rules, 2014.
- The rates should be quoted inclusive of all taxes. Copy of paid bank challan of professional tax and copy of the bid security shall be attached with the technical proposal.
- The Islamia University of Bahawalpur however, reserves the right to reject all bids at any time prior to acceptance of a bid as per clause 35 of the Punjab Procurement Rules and grounds of rejection will be conveyed to the bidders upon their request.
- Tender should reach in the Office of the Chairman (SMPC), Department of Mathematics, Baghdad-ul-Jadeed Campus The Islamia University of Bahawalpur upto **10th of August 2017** by **11:00 AM**. Tenders will be opened on the same day at **11:30 AM** in the presence of bidders or their representatives.
- All bids submitted after the given time schedule shall not be accepted.
- All taxes will be applicable as per Govt. Rules & Regulations.
- The rates should be valid upto 180-days from the date of opening the tender.
- In case of closed/forced holidays, tender opening time/date will be considered as the next working day.



Chairman SMPC
The Islamia University of Bahawalpur
Baghdad-ul-Jadeed Campus,
Bahawalpur.
Phone: 062-9250245

IPB-754

Tender Summary

Tender	ItemNo.	Name	Quantity (total)
A C&F Basis	1	Single Crystal X-rays diffractometer with accessories	1
	2	Powder X-rays Diffractometer with accessories	1
B C&F Basis	1	Polarizing microscope with accessories	1
	2	TGA/DSC (separate preferably)	1
	3	Microwave synthesis system with accessories	1
	4	Spectrofluorimeter	1
C FOR Basis	1	Computing facility	1
	2	Rotary evaporator with accessories	1
	3	Fume hood	1
	4	Analytical Balance	10
	5	Precision Balance	5
	6	Heating Mantle	10
	7	Hot plates	10
	8	Stirring plates	10
	9	Laboratory Refrigerator	1
	10	Chemical Storage Cabinets	2

General Terms & Conditions

1. Only the manufacturing firms or their certified dealers/distributors are eligible. Eligible Bidder/Tenderer is a Bidder/Tenderer who has authorization of the Principal/Manufacturer.
2. The products must be of EU, UK, USA and Japan origin and must strictly conform to the specifications.
3. Prices should be quoted on C&F or FOR basis as required in the tender separately in each category and will be delivered to the Department of Chemistry, BJ Campus, The Islamia University of Bahawalpur. If the items supplied are not according to the required specification/make, it will not be accepted.
4. Letter of credit (L/C) will be opened in favor of the principal/manufacturer by the Islamia University of Bahawalpur and exemption letter will be provided to the selected bidders. The sole agent will be responsible for all types of charges (clearing, freight etc.) for delivery of items at site.
5. The firm shall have minimum five years experience in the relevant field.
6. Agreement on stamp paper @ 0.25 percent of total cost should be submitted by the firm.
7. The successful Tenderer/The Contractor against each Item(s) shall furnish Performance Security as under in Tender A & B only.
 - a) Within **twenty (20) days** of the receipt of the Acceptance Letter from the Purchaser, in the form of Demand Draft / Pay Order / Call Deposit Receipt, in the name of the Treasurer, The Islamia University of Bahawalpur, issued by a scheduled bank operating in Pakistan, for a sum equivalent to **10%** of the contract value denominated in Pakistani rupees.
 - b) The Performance Security shall be confiscated proportionately, on occurrence of any/all of the following conditions and it will be retained for the period of warranty:-
 - i. If the Contractor commits a default under the Contract;
 - ii. If the Contractor fails to fulfill the obligations under the Contract;
 - iii. If the Contractor violates any of the terms and conditions of the Contract.
8. Technical Proposal shall comprise of the following without quoting the price in it:
 - a) Technical Proposal Form
 - b) Covering letter duly signed and stamped by authorized representative.
 - c) Authorized Certificate / document from the Principal / Manufacturer.
 - d) Technical Brochures / Literature (in legible English/urdu language)
 - e) Copy of the bid security in the shape of CDR (All the bidders are required to attach the CDR of the amount separately mentioned against each separate tender to participate in any item of that tender)
9. The Tenderer should also enclose soft copies of the Technical Proposal, including all Forms, Annexes, Schedules, Charts, Drawings, Documents, Brochures, Literature, etc., in the form of MS Word Documents, MS Excel Worksheets and Scanned images, with the hard copies.
10. Delivery period is within Sixteen (16) weeks from the issuance of Acceptance Letter for all items except as mentioned separately in the tender document against individual items.
11. The Contractor shall furnish the user documentation, the operation manuals, and service manuals for each appropriate unit of the supplied items and other information pertaining to the performance of the items, in hard and soft copy format.
12. Warranty requirements are as under;
 - a) The Contractor shall warrant to the Purchaser that the equipments supplied by the Contractor, under the Contract are genuine, brand new, non- refurbished, un-altered in any way. The component(s) of any item(s) found dead on arrival /defective shall be replaced with new item(s) or component(s) by the contractor as such and shall in no way be referred to the warranty.
 - b) The Contractor shall provide Manufacturer's warranty for minimum period as mentioned against individual item after the issuance of Taking-over Certificate in respect of the items or any portion thereof, as the case may be, which will include: Free on site repair / replacement of defective / damaged parts and labor, within four weeks of intimation.
 - c) The Contractor shall clearly mention the Terms and Conditions of service agreements for the items supplied after the expiry of initial warranty period.
13. The taking-over certificates will be issued after the supply of the items (including installation, configuration, deployment, commissioning, testing, and training of the delivered items).
14. Validity of rate should be for 180 days from the date of opening of the financial bid of the tenders.
15. The vendors will be responsible for any damages during Transit/Delivery. They will also be responsible for any accident and their consequent damages.
16. The Contractor shall arrange and undertake a comprehensive training program for the staff nominated by the IUB to ensure that they shall acquire a good working knowledge of the operation, and general maintenance of the equipments to be supplied under the Contract.
17. The general terms and conditions will prevail overall in addition to those mentioned separately against individual items.

Signature: _____

Name: _____

Designation: _____

Date: _____

ATTACHMENTS:

Earnest Money Draft (As mentioned against each tender separately)	(Yes/No)
Affidavit for non black listing	(Yes/No)
Bid Validity	(Yes/No)
Signed terms & conditions	(Yes/No)

NOTE: Bid shall be signed by the bidder/authorized person for bidder.



The Islamia University of Bahawalpur

PROCUREMENT OF EQUIPMENT

TENDER-A/B/C FORM for ITEM No:.....

1. Name of Firm: _____
 2. Mailing Address: _____
 3. Phone No: _____
 4. Fax No: _____
 5. Tender Fee Challan No. & Amount _____
 6. CDR No. & Amount _____
 7. General Sales Tax No: _____
 8. Income Tax No. _____
 9. Professional Tax No: _____
-

Tender:A

Item No: 1

A DUAL SOURCE SINGLE CRYSTAL X-RAY DIFFRACTION SYSTEM WITH ACCESSORIES

Total Quantity: 1

Component	Specification
General	<p>Must provide highest flexibility and reliability.</p> <p>Must allow a wide range of structural studies.</p> <p>Must allow very fast routine analyses of inorganic and metallo-organic compounds.</p> <p>Must allow analyses of organic samples, proteins and cluster compounds.</p> <p>Must allow the study of particle size and texture of powder samples and the analysis of torsion in polycrystalline material.</p>
System cabinet	<p>Dimensions: A large cabinet with a volume not less than 3.5 m³ and must provide sufficient space to mount samples and perform maintenance.</p> <p>Must have radiation protection hood according to recent standards.</p> <p>Must enable a complete view of the system during operation.</p> <p>Must allow maximum access to the instrument.</p> <p>Mains: As per specifications of the equipment.</p>
Goniometer	<p>Goniometer must be a four-circle goniometer with either a Kappa or Open Eulerian Cradle geometry of highest precision for automatic collection of highest quality single crystal data sets (small molecules and proteins) or powder data.</p> <p>Must allow a 2theta range of >235°, an omega range of >200°, a chi range of 90° and a phi range of 360°.</p> <p>Must have computer-controlled stepping motors allowing a position accuracy of <0.001° (2θ, ω) and 0.015° or better for κ.</p> <p>Must provide sufficient space to add additional attachments like a High Pressure Cell, Low Temperature attachments and other chambers for non-ambient investigations.</p> <p>Magnetic goniometer head that allows very user friendly crystal mounting and adjustment must be included.</p> <p>Must be equipped with a collision detection capability.</p> <p>Must support loads of up to 2 kg on the phi axis for high pressure studies.</p> <p>An additional goniometer head should also be quoted as an additional accessory.</p>
X-ray generator system	<p>Must be a dual beam set-up for using Mo and Cu radiation.</p> <p>Must have two X-ray generators with a power as per make and type of source used. Generators tube current allowed in the range of 0 - 80 and a voltage of 10 - 60 kV.</p> <p>System must be equipped with micro focus (using microfocus technology with spot size ≈ 0.1 mm or smaller) Mo and Cu sources.</p> <p>System must have curved crystal monochromators or multilayer optics and allow installing fiber optics to increase the intensity. System must allow easy switching between the two X-ray sources by software and without further re-alignments.</p>
Detector	<p>Must be a fast hybrid pixel area detector with single-photon counting or a charge integrating pixel array detector with single photon sensitivity in the silicon chip with or without using a phosphor or scintillator sheets. Detector signal must not be affected by dark current noise and read-out noise.</p> <p>Must allow very long exposure times WITHOUT increasing the noise.</p> <p>Must have an active area of >85 cm². Number of pixels must be >300000.</p> <p>Pixel size should not be larger than 173 x 173 microns.</p> <p>Must have point spread function of 1 pixel only - Must have a short read-out</p>

	<p>time of < 10 milliseconds.</p> <p>Must have a high frame rate of ≥ 20 Hz.</p> <p>Must have a dynamic range of $> 1:1000000$.</p> <p>Must have a counting rate of > 1000000 counts per second per pixel.</p> <p>Must be optimized for the use of both copper and molybdenum X-ray sources.</p> <p>Must have a software supported sample to detector distance variation between 40 and 140mm (or broader).</p> <p>Should be air cooled or water cooled maintaining manufacturer detector specs in combination with quoted air conditioner.</p> <p>Must have a software supported sample to detector distance variation between 40 and 140mm (or broader).</p>
Microscope for sample alignment	<p>A high resolution video CCD microscope (50 X magnification, higher resolution will be preferred).with sample image displayed on the computer monitor for fast alignment and observation must be included.</p>
Low temperature attachment	<p>The system must be capable of generating low temperature in the range of 80-400K (or wider) with a temperature stability ± 0.1 K using ordinary air.</p> <p>The system must consist of the following:</p> <ul style="list-style-type: none"> • COBRA gas delivery cold head • COBRA refrigerator • COBRA programmable temperature controller • CryoDrive He compressor module for coldhead • NitroFlow Nitrogen gas generator to provide 2 streams of dry N₂ gas, sufficient for inner and outer gas streams • Varibeam Coldhead Support Stand to adjust the nozzle of the cooler onto the sample of the diffractometer • Cryodrive Water Cooling Hoses • Cobra Nitrogen Gas Lines Assembly • Helium Gas Lines • Rubber Rewireable Plug • Helium Line Spanner 30mm Jaw • Helium Line Spanner 37mm Jaw • Data Serial Cable M/F • Mains Lead, • Line Drier Unit • Nozzle Alignment Tool • Any other complementary part for smooth functioning of the system • CD: Cryopad & Instruction Manuals
Software	<p>Must have routines for accurate instrument calibration, convenient diffractometer control and automatic data collection.</p> <p>Must allow very easy set-up of measurements.</p> <p>Must help planning indexing strategies.</p> <p>Must have an indexing routine for extremely small cell volumes as well as for extremely big ones.</p> <p>Must allow identifying crystallographic problems at a very early stage.</p> <p>Must allow permanent monitoring of statistical parameters.</p> <p>Must have a graphical user interface for displaying and manipulating diffraction intensities in reciprocal space.</p> <p>Must have the possibility to analyse more complex patterns (e.g. from superstructures) by calculation and representation of pixel-oriented undistorted layers of the reciprocal space with all frames of a measurement.</p> <p>Must have a tool for indexing of crystal faces and numerical absorption correction.</p> <p>Must allow simultaneous integration of intensities from non-merohedric twins with up to 4 individuals.</p> <p>Must allow determination of up to 3 q vectors.</p> <p>Must allow scaling of symmetry-equivalent reflections.</p> <p>Must have a tool for structure solution and refinement not only for routine</p>

	<p>structures but also for special individual problems. Must allow the output with SHELX and CIF format. Must be a perpetual licence with 10 years (or longer) of free upgrades. Purchaser must have the right to use the software of the manufacturer for no additional consideration on an unlimited number of workplaces within the campus which is using the hardware delivered.</p>
Control PC	<p>Must have Microsoft WINDOWS 7 (or later versions) professional operation system. Must include a flat screen color monitor LED 24" minimum. The system should have a latest Intel core-i7 processor, minimum 1TB hard drive, minimum 8 GB RAM. 2 Flat screen color monitors LED 24" (minimum) must be included.</p>
Option	<p>It must be upgradable to attach a hot air flowing heater for measuring crystal samples at an elevated temperature of up to 800°C at a later time.</p>
Chiller for X-ray sources	<p>Closed water circuit cooling system for the two X-ray generators with adequate power (if required, depending on type of source and make).</p>
Uninterrupted power supply and Air Conditioner	<p>Must have a capacity >15000 VA to allow working time of >20 minutes at 4000 Watts or >5 minutes at 8000 Watts. A 2 ton air conditioner (Mitsubishi or equivalent) for temperature maintenance.</p>
On site user training	<p>At least one week long onsite training must be provided for a group of users by the <u>application scientist</u> of the manufacturer. The training must include introduction in the general system functionality, basic maintenance and safety aspects, advising for sample preparation and in performing measurements, teaching in using the software packages. Training must be in connection with the installation of the system.</p>
Warranty	<p>Minimum 5 years comprehensive warranty from the date of installation. (Parts and Labor, travel to the site of installation) Any extended warranty for the system will be positively desirable. The warranty for the batteries of the UPS will be considered as six months.</p>
Delivery time	<p>Should be less than 20 weeks.</p>
Delivery terms	<p>Must be at the site of installation. Delivery at site is the responsibility of the bidder. All types of clearance and delivery at the site of installation is the responsibility of the bidder.</p>
Installation and acceptance test	<p>On-site installation must take place within four weeks from delivery and include all necessary parts for a complete working system with all requirements fulfilled. A complete set of tools and consumables required for initial maintenance, alignment tools and calibration tools including test crystal must be part of the delivery. A functional test proving specifications and functionality must be performed after setup for acceptance.</p>
After Sales	<ol style="list-style-type: none"> 1. Bidder must keep the system fully operational during the warranty period without charge (parts, labor, travel to the site). In case of a breakdown within the warranty period the bidder must repair/replace the faulty part without charge. 2. Response time in case of failure within the warranty period must be 24 hours. In case a physical intervention may be required, it must not be delayed by more than one week. 3. Parts and support must be provided for at least 10 years after installation. 4. The warranty and post warranty service must be organized from the bidder's factory location and the direct contact between the customer

	<p>and the bidder's technical experts must be ensured.</p> <p>5. The system must be robust and reliable enough to solve 90% of the service cases quickly and remotely by e-mail, phone and mail.</p>
--	--

General Terms and conditions for Item No. 1 (SC XRD):

1. The bidder must be the authorized dealer of the manufacturer/principal and he will furnish an active authorization certificate in this regard.
2. The bid must come with a certificate from the manufacturer that it will continue to support this installation in terms of warranty and after sales in case its local representation is changed in Pakistan due to any reason and on the same terms and conditions as agreed in the initially submitted bid document.

Item No: 2**A POWDER X-RAY DIFFRACTION SYSTEM WITH ACCESSORIES:****Total Quantity: 1**

GENERAL	<p>Must be a flexible multi-purpose system.</p> <p>Must be suitable for a wide range of investigations in material science and crystallography like phase analysis of powders and thin films, reflectometry measurements and structure solutions with transmission samples, samples in capillaries and reflection samples using pure monochromatic $K\alpha_1$-radiation.</p>
SYSTEM CABINET	<p>Must provide sufficient space to mount samples and perform maintenance.</p> <p>Must have an interlock-secured radiation protection hood.</p> <p>Must enable a complete view of the system during operation.</p> <p>Must allow maximum access to the instrument.</p>
X-RAY GENERATOR	<p>Must be water cooled using a compatible chiller.</p> <p>Must have a power of 3000-3500 W.</p> <p>Must allow a tube current of 60–80 mA continuously adjustable.</p> <p>Must allow a voltage of 50 -60 kV continuously adjustable.</p> <p>Must have a stability (current and voltage) of $\pm 0.01\%$ at $\pm 10\%$ max. mains fluctuation.</p> <p>Must allow a control via software or manually.</p>
X-RAYS SOURCE	<p>Must be a fine focus Cu source. (with minimum warranty of 4000 operational hours).</p> <p>In case the tube housing is of a size specific to a particular manufacturer, the bidder must ensure that when at later stages, at the time of the replacement of the tube, its price will be harmonic with the market prices of other manufacturers.</p> <p>The bidder must quote the replacement price of X-rays tube which will be binding during the period of warranty. In case of non-competitive price of a particular manufacturer, the bidder having more competitive price will be preferred.</p>
GONIOMETER	<p>Must be capable to realize 3 different powder configurations (transmission mode, reflection mode and high-flux micro-diffraction mode) within minutes.</p> <p>Must have Independently driven ω and 2θ circles.</p> <p>All configurations must work with pure monochromatic $K\alpha_1$-radiation.</p> <p>Must have electro-optical encoders allowing minimum step size of 0.001° and reproducibility of 0.0005°.</p> <p>Must have a 2θ-range of -10° to $+140^\circ$ (or better depending on selected configuration).</p>
COLLIMATOR ASSEMBLY	<p>Must be provided with different collimators including point collimator and vertical divergence slits.</p>
MONOCHROMATOR ASSEMBLY	<p>Must consist of a primary asymmetric curved crystal monochromator or parallel beam from Gö bel mirrors to achieve a pure monochromatic Cu-$K\alpha_1$-radiation and a convergent beam with motor controlled monochromator adjustment for automated optimisation of the intensity.</p>
SAMPLE STAGES:	<p>Must include a rotating sample holder for transmission mode with 6 circular sample carriers, atleast 1 box with Acetate foil, 1 plate for sample preparation.</p> <p>Must provide the possibility to compensate sample offset resulting from different sample thickness preferably by automated system or manual set up.</p> <p>capillaries with adjustable goniometer head to measure capillaries, delivered with 5 sample holders, 1 adjusting key, atleast 25 capillaries.</p> <p>Must include a rotating sample holder for reflexion mode to measure solid samples with motor for permanent sample spinning and 5 sample carriers.</p> <p>Instrument must have the possibility to upgrade with sample holders for reflectometry measurements.</p> <p>Instrument must have the possibility to upgrade with sample changers for flat transmission samples, capillaries and reflection samples.</p> <p>Instrument must have the possibility to upgrade with attachments for measurements under non-ambient conditions for samples in capillaries and reflection samples.</p> <p>Optional: The system should be compatible with a heating assembly for heating the samples upto $800C^\circ$ or higher and with a vacuum. (The prices of these optional items should be quoted separately and with and without vacuum chamber.)</p>
MICROSCOPE:	<p>Should be a video CCD microscope with sample image displayed on the computer monitor for fast alignment and observation.</p>
PERSONAL COMPUTER:	<p>Must have Microsoft WINDOWS 7 (or later versions) professional operation system. Must include a flat screen color monitor LED 24" minimum.</p> <p>The system should have a latest Intel core-i7 processor, minimum 1TB hard drive, minimum 8 GB RAM.</p>
SOFTWARE:	<p>Must allow for diffractometer control, data collection and data processing/analysis.</p> <p>Must be menu-driven and network-compatible.</p>

	<p>Must be a perpetual licence with 3 years of free upgrades.</p> <p>Purchaser must have the right to use the software of the manufacturer for no additional consideration on an unlimited number of workplaces within the department or business unit which is using the hardware delivered.</p> <p>The system should come with the latest ICCD Powder Diffraction File PDF-4+ (inorganic,organic and minerals) licensed to the IUB. Original CDs (if so) must be provided.</p>
DETECTOR:	<p>Must be a high resolving linear Silicon microstrip detector.</p> <p>Must allow a 2θ angular range aperture of up to $25^\circ 2\theta$.</p> <p>Must have an active area of $>6 \times 60 \text{ mm}^2$.</p> <p>Number of channels must be >1250.</p> <p>Must have a resolution $< 0.03^\circ \text{ FWHM } 2\theta$.</p> <p>Must provide excellent statistical accuracy and symmetrical line profiles.</p> <p>Must have a short read-out time of < 0.5 milliseconds.</p> <p>Must have a high frame rate of $>600 \text{ Hz}$.</p> <p>Must be usable with Ag, Mo, Cu, Co and Cr radiation.</p> <p>Must be air cooled and maintenance free.</p> <p>Instrument must have the possibility to use alternative detectors (linear wire detector, scintillation counter etc).</p>
Uninterrupted power supply And Air conditioner	<p>Must have a capacity $>15000 \text{ VA}$ with compatible dry batteries having six month warranty of batteries to allow working time of >20 minutes at 4000 Watts or >5 minutes at 8000 Watts. A 2 ton AC (Mitsubishi or equivalent) for temperature maintenance.</p>
On site USER TRAINING:	<p>At least one week long onsite training must be provided for a group of users by the <u>application scientist/authorized resource person</u> of the manufacturer. The training must include introduction in the general system functionality, basic maintenance and safety aspects, advising for sample preparation and in performing measurements, teaching in using the software packages.</p> <p>Training must be in connection with the installation of the system</p>
Warranty	<p>Should be atleast 5 years from the date of installation. (Parts, Labor, travel to the site).</p> <p>For UPS batteries, the warranty shall be considered as 6 months.</p>
DELIVERY TIME:	<p>Must be in less than 20 weeks</p>
DELIVERY TERMS:	<p>Must be at the site of installation. Delivery at site is the responsibility of the bidder. All types of clearance and delivery at the site of installation is the responsibility of the bidder.</p>
INSTALLATION AND ACCEPTANCE TEST:	<p>On-site installation must take place within four weeks from delivery and include all necessary parts for a complete working system with all requirements fulfilled. A complete set of tools and consumables required for initial maintenance, alignment tools and calibration tools including test crystal must be part of the delivery.</p> <p>A functional test proving specifications and functionality must be performed after setup for acceptance.</p>
AFTER SALES:	<ol style="list-style-type: none"> 1. Bidder must keep the system fully operational during the warranty period without charge (parts, labor, travel to the site). In case of a breakdown within the warranty period the bidder must repair the faulty part without charge. 2. Response time in case of failure within the warranty period must be 24 hours. In case a physical intervention may be required, it must not be delayed by more than one week. 3. Parts and support must be provided for at least 10 years after installation. 4. The warranty and post warranty services must be organized from the bidder's factory location and the direct contact between the customer and the bidder's technical experts must be ensured. 5. The system must be robust and reliable enough to solve 90% of the service cases quickly and remotely by e-mail, phone and mail.

General Terms and conditions for Item No.2 (Powder XRD)

1. The bidder must be the authorized dealer of the manufacturer/principal and he will furnish an active authorization certificate in this regard.
2. The bid must come with a certificate from the manufacturer that it will continue to support this installation in terms of warranty and after sales in case its local representation is changed in Pakistan due to any reason and on the same terms and conditions as agreed in the initially submitted bid document.

Tender:B

Item No. 1

Polarizing Microscope (*with heating stage and video camera*):

#	Name	Specification	Quantity
	<p>Polarizing microscope <i>(with heating stage and video camera)</i> + Ordinary microscope suitable for crystal selection</p>	<p>General: Must be a stereo microscope with polarizing lenses. Must have options for attaching video camera, hot stage and computer. Should have a robust flexible, modular design for easy customization.</p> <p>Magnification: upto 60X or better with adjustable upper and lower zoom magnification stops.</p> <p>Resolution: upto 600 lines/mm or better.</p> <p>Video camera: A minimum 5 megapixel CCD or CMOS camera capable of capturing at least 50 images per second or faster. The camera should be compatible with the microscope interface software.</p> <p>Heating stage assembly: temperature range -100°C upto 400°C or higher with a heating range of 100°C/minute or faster. It should be equipped with a complete liquid nitrogen cooling system and LN flask. It should be equipped with digital control system and should be compatible with the microscope setup.</p> <p>Computer and software: The system must come with a compatible computer system, LCD screen and data cables. The system should support Windows 7, 32/64 bit or later versions. The software should be capable of live image acquisition, image analysis, gallery view, image history and properties. A user-friendly online help system is obligatory.</p> <p>Power Supply : 220 V / 50 Hz</p> <p>Warranty and after sale service: 3 Years Parts and Labour warranty starting from the date of commission. Training must be provided after installation. A user-friendly online help system should be ensured.</p> <p>User’s manual: The system must be provided with detailed user manual in standard English language.</p>	<p>1</p>

Item No. 2

Differential Scanning Calorimeter/Thermogravi-metric analyzer:

#	Name	Specification	Quantity
	<p>Differential Scanning Calorimeter/Thermogravi-metric analyzer</p> <p>DSC/TGA</p>	<p>General: The system should be able to perform simultaneously or preferably uniquely TGA and DSC measurements and should offer to calculate DSC (mW/mg) results. The system should be designed to transfer heat uniformly to the sample. The system should allow using sample holders of any brand.</p> <p>Temperature Range: Ambient to 700°C or higher for DSC and ambient to 1000 °C or higher for TGA</p> <p>Optional: Ambient to -180 °C</p> <p>Temperature Calibration: Up to 5 pts</p> <p>Temperature Repeatability: ±0.1°C, based on metal standards</p> <p>Heating rates: from 0.1 to 100°C/min in 0.01°C/min increments</p> <p>DSC Sensitivity: 4 Microwatts</p> <p>Calorimetric Accuracy: 0.5° C</p> <p>Thermocouples: Platinum/Platinum-Rhodium</p> <p>Vacuum: 0.02 torr</p> <p>Baseline drift: less than 10 micrograms.</p> <p>Liquid nitrogen cooling system should be available as optional accessory. The liquid nitrogen shall be able to stay connected even at higher temperature.</p> <p>Computer and software: The system must come with a compatible computer system, minimum 24 inch LED screen, and data cables. The system should support Windows 7, 32/64 bit or later versions. The software should include quick and easy understanding calibration routines and offering the possibility for automatic baseline correction of the DSC signal. The interface software/programme should have possibility to update online/upon request.</p> <p>Export of graphics with evaluation results to clipboard or to common formats such as EMF, PNG, BMP, JPG, TIF or PDF should be possible. A data export into Excel®-compatible CSV-format and as ASCII file should be possible. An import of ASCII-files should be possible. Loop programming (insertion, deletion, and annexation of temperature segments) even in already existing temperature programs should be possible. Snapshot for online evaluation of the measurement in progress should be possible.</p> <p>Calibration Standards: The system must be delivered with certain number of traceable standards to allow calibration for temperature and enthalpy by the DSC user.</p> <p>Automated temperature and weight calibration, taring and recording of sample weight.</p> <p>A user-friendly online help system is obligatory.</p> <p>Power Supply : 220 V / 50 Hz</p> <p>Warranty and after sale service: Minumum 3 Years Parts and Labour warranty starting from the date of commission. Training must be provided after installation. A user-friendly online help system should be ensured.</p> <p>UPS: Should come with a compatible UPS with long backup.</p> <p>AC: A 2 ton AC for temperature maintenance.</p> <p>User's manual: The system must be provided with detailed user manual in standard English language.</p>	1

Item No. 3

Microwave synthesis system:

Item #	Name	Specification	Quantity
	Microwave synthesis system	<p>General: Should be robust and user friendly system.</p> <p>Capacity: Should accept reaction flasks as small as 10 ml upto 100ml or larger</p> <p>Temperature: Should be upto 300°C or higher</p> <p>Heating Rate: Upto 5°C or faster</p> <p>Pressure: Should be upto 20 bar or higher</p> <p>Reaction agitation: should be equipped with electromagnetic stirring with adjustable rates.</p> <p>Magnetron frequency: upto 2450 MHz or higher</p> <p>Cooling: Should be equipped with a cooling mechanism, preferably air cooled.</p> <p>Safety: should meet the safety standards</p> <p>Control: Must be equipped with a control unit either with a computer system or builtin digital display and appropriate data acquisition software. A user-friendly online help system is obligatory.</p> <p>Power Supply : 220 V / 50 Hz</p> <p>Warranty and after sale service: 3 Years Parts and Labour warranty starting from the date of commission. Training must be provided after installation. A user-friendly online help system should be ensured.</p> <p>User's manual: The system must be provided with detailed user manual in standard English language.</p>	1

Item No. 4

Spectrofluorimeter:

	Name	Specifications	Quantity
	Spectrofluorimeter	<p>General: The instrument must be capable of multiple data collection modes including fluorescence, phosphorescence, chemi-luminescence and bioluminescence.</p> <p>Wavelength: System should have variable wavelength in the range of 220-900nm.</p> <p>Source: The instrument must be a Xenon flash lamp based instrument. Room light immunity for fluorescence mode is desirable allowing samples or accessories to be measured without closing the sample compartment lid.</p> <p>Geometry: The instrument beam should have such an excitation beam geometry which allows for maximum collection efficiency and to permit the use of low sample volumes in the cuvettes.</p> <p>Signal strength: The instrument must have a guaranteed signal-to-noise specification of >500:1 for the Raman Band of Water – excitation at 500 nm, 1 sec signal averaging time.</p> <p>Detector: The detector should be one with fast readout and minimum electronics noise. Must have a very short integration time.</p> <p>Accuracy: The instrument must be capable of measuring four or greater cells automatically and must have a temperature accuracy of +/- 0.3 °C. The system must be accurate to 1 nm.</p> <p>Computer and software: The system must come with a compatible computer system and data cables.</p> <p>The software must have the ability to collect fluorescence scans at different temperature intervals. The software must have the ability to measure multiple ramps and within each ramp must have the ability to collect at different data intervals.</p> <p>Cuvettes: Must be supplied with cuvettes.</p> <p>Power Supply : 220 V / 50 Hz</p> <p>Warranty and after sale service: 3 Years Parts and Labour warranty. A user-friendly online help system should be ensured.</p>	1

Tender:C

Item No. 1

COMPUTING FACILITY:

Total Quantity: 1

Form Factor	4U Rack Mount
Processor Installed	4* Xeon 12C E7-4850v4 105W 2.3GHz/1333MHz
Processor (max)	Up to four Intel Xeon E7-4850/8860 v4 processor families up to 3.2 GHz, up to 1800 MHz memory access, 16 cores per processor, 32 Threads
Cache	40MB
Processor Scalability	up to 8
Chassis	Rack mountable with rail kit
RAM	96 GB PC3L-12800 CL11 ECC DDR3 1600MHz LP RDIMM
RAM Scalability	Up to 6 TB, 96 DIMM slots supporting 64 GB LRDIMMs
Internal Disks	6*1TB 2.5inches Enterprise value 6G SSD installed
Internal Disk Scalability	6TB 2.5 inches enterprise value 6G SSD installed
Raid Controller	Integrated Raid Controller with RAID 5 support
DVD Drive	DVD(R+W)
Network Adapter	One ML2 socket; ML2 card choices include: 4 x 1 GbE copper or 2 x 10 GbE SFP+ or 2 x 10 GbE 10BaseT; Dedicated 1 GbE on-board management port
Hot-swap components	Half-length I/O Books, Full-length I/O Books, power supplies, fans, hard disk drives, SSDs
Power Supply	Up to four common 1400 W or 900 W AC or 4 x 750 W DC
I/O Slots	At least 7 PCI Slots including 10G Ethernet Adaptor with Min 1 x PCI Express 2.0 x16 (full length,) 1 x PCI Express 2.0 x4 (full length, x8 mechanical) 5 x PCI Express 2.0 x8 (half length)
I/O Slots Scalability	14 internal slots including 2 slots with dual x 10G integrated ports with FCOE or better
System Scalability	Modular Architecture upto 8 Processors and 6TB RAM
Management	Alert on LAN 2, automatic server restart, Systems Director, IMM2, light path diagnostics (independently powered), Wake on LAN, Dynamic System Analysis, Predictive Failure Analysis on storage, processors, adapter slots, VRMs, fans, power supplies and memory
Security Features	Power-on password, admin password, and two Trusted Platform Modules (TPMs).
Partitioning	System should be able to boot as one four-socket system or two two-socket systems, without having to make any physical changes to the hardware. Should also be able to schedule such configuration changes through Management software according to the user request
OS Support	Microsoft Windows 2008 with HyperV Datacenter, Enterprise and std. Editions Red Hat Enterprise Linux SUSE Linux Enterprise Server VMware
Pre Install OS & Software's	Cluster workload management package (Moab Cluster Suite, TORQUE Resource Manager) Suse Linux latest version NAMD , Auto Dock , Chimera CRYSTAL14 or latest (Full parallel (multicore) Linux version) Gaussian 16 Linux version with 64 bit <u>parallel execution capability on cluster.</u> GaussView 6 Package for Linux version The software must be registered with the IUB (machine serial number based) and the bidder must provide the registration letter.
Predictive Failure Analysis Alert	Failure Alerts of Processors, memory, VRMs, disk drives, power supplies, fans, and L3 cache
RACK	42U Branded Rack with rack mount LCD , PDU , keyboard & Mouse
Console Manager	2x16 console manager
Display	17 inch Flat Monitor Panel Console w/o Keyboard
PDU	4x DPI Universal Rack PDU
USB Conversion Option Pack	Required
Managed Network Switch	2 x 8 port Giga bit network switch

Cable	CAT 6A STP (2 rolls)
Work station	<p>(1) A fifth generation core i7 with 16 GB RAM, 2GB Graphics card 512 SSD hard disk, 24 inch LED monitor, LAN, WiFi, Mouse, Key Board and compatible UPS</p> <p>(2) A core i5 (or superior) branded laptop.</p> <p>(3) A minimum 1.5 ton air conditioner for the work station.</p>
Special Note :	RACK should be complete in all aspects in order to host the desired number of servers , storage and other connectivity items , all connecting cables , PDU's should be part of the RACK , any additional item required in order to host the server shall be responsibility of the vendor .
UPS	A set of compatible UPS for the main server and work station with at least 2 hours backup should be supplied.
Warranty / Support	Five years comprehensive (parts, labor and travel to the site) warranty on all equipment (Hardware + Software). Onsite with Local Backup support of Principal Company (IBM/HP/Fujitsu/Dell). Any offer with superior specifications will be preferred.

Item No. 2

Rotary Evaporator with chiller and vacuum pump:

Total Quantity: 1

<p>Rotary Evaporator with chiller and vacuum pump</p>	<p>(a) General: Drive: DC motor drive with electronic speed control lift: Hand/motor Rotation speed: 20-280 Heating capacity: upto 1300 W or better Temperature range of heating bath (C°): 20-210 or higher Temperature range accuracy (C°): +/- 1 °C Volume of heating bath: 4.5 litres (minimum) Material of heating bath: High grade steel Must be supplied with heating and receiving flasks made of high quality glass with at least 1 litre capacity. Must be able to accept flasks of various neck sizes.</p> <p>(b) Chiller: Should be supplied with air cooled refrigeration and built in circulation pump, all made of stainless steel with digital display for temperature etc. Operating range: -20°C – 40 °C Temperature control: Digital Refrigeration: Air cooled, must be CFC free.</p> <p>(c) Vacuum pump: must provide high pumping speed and low vacuum. Number of head / stages: 2 Maximum pumping speed: 0.75m³h/0.9 m³h Ultimate vacuum: 12mbar</p> <p>Power Supply : 220 V / 50 Hz Warranty and after sale service: 3 Years Parts and Labour warranty starting from the date of commission. Training must be in connection with installation. A user-friendly online help system should be ensured. User's manual: The system must be provided with detailed user manual in standard English language.</p>
--	--

Items No. 3 to 10:

Item #	Name	Specification	Quantity
3	Fume hood	<p>Cabinet Material : Stainless Steel (SS41 or better)</p> <p>Inner Material : Coated Asbestos Board, Coated Urethane Resin</p> <p>Working Material : Lead Sheet Plate</p> <p>External: should be chemical and corrosion resistant.</p> <p>Utility Device : Air Cock, Gas Cock, Goose, Cup Sink Concent Vapor proof Lamp</p> <p>Fan Motor : Sirocco type Fan Motor , Stainless steel</p> <p>Dimension (minimum): 1x 0.8 x 2 (H) meter</p> <p>Air Volume : 1000 - 1600 CFM</p> <p>Power Supply : 220 V / 50 Hz</p> <p>Warranty: 3 Years Parts and Labour</p>	1
4	Analytical balance	<p>Readability= 0.0001 g</p> <p>Power Supply : 220 V / 50 Hz</p> <p>Capacity: 200 g</p> <p>Type: Top loading</p> <p>Warranty: 3 Years Parts and Labour</p> <p>User's manual: The system must be provided with detailed user manual in standard English language.</p>	10
5	Precision balance	<p>Readability= 0.0001 g</p> <p>Power Supply : 220 V / 50 Hz</p> <p>Capacity: 200 g</p> <p>Type: Top loading</p> <p>Repeatability : 1 mg</p> <p>Linearity : 1.5 mg</p> <p>Warranty: 3 Years Parts and Labour</p> <p>User's manual: The system must be provided with detailed user manual in standard English language.</p>	5
6	Heating Mantle	<p>Temperature regulation: upto 500C°</p> <p>Capacity : 50 ml -10 litres</p> <p>Power Supply : 220 V / 50 Hz</p> <p>Outer casing: must be chemically resistant, must be safe to touch, must be equipped with indicator lamps for power and heater operation</p> <p>Warranty: 3 Years Parts and Labour</p> <p>User's manual: The system must be provided with detailed user manual in standard English language.</p>	10
7	Hot plates	<p>Element Temperature ; up to 300 C° or higher</p> <p>Control Heater: Proportional Voltage Control</p> <p>Plate material: must be chemically resistant, melt free and durable material</p> <p>Safety: Control panel must be thermally separated from the hot plate. Display must indicate temperature. Must be liquid proof.</p> <p>Power Supply : 220 V / 50 Hz</p> <p>Warranty: 3 Years Parts and Labour</p> <p>User's manual: The system must be provided with detailed user manual in standard English language.</p>	10
8	Stirring plate	<p>Speed Range : 100 - 1000 (or higher) RPM</p> <p>Control Heater: Proportional Voltage Control</p> <p>Plate material: must be chemically resistant, melt free and durable material</p> <p>Safety: Control panel must be thermally separated from the hot plate. Display must indicate temperature. Must be liquid proof.</p> <p>Power Supply : 220 V / 50 Hz</p> <p>Warranty: 3 Years Parts and Labour</p> <p>User's manual: The system must be provided with detailed user manual in standard English language.</p>	10

9	Laboratory Refrigerator	<p>General: CFC free, 0-10C° (higher range will be preferred), Energy efficient</p> <p>Capacity: should not be less than 500 litres, must be equipped with adjustable and corrosion resistant trays.</p> <p>Safety: Must comply with standard electrical safety regulations.</p> <p>Power Supply : 220 V / 50 Hz</p> <p>Warranty: 3 Years Parts and Labour</p> <p>User's manual: The system must be provided with detailed user manual in standard English language.</p>	1
10	Chemical Storage cabinets	<p>General: Must be chemical & fire resistant, adjustable racks</p> <p>Capacity: should not be less than 100 litres, must be equipped with adjustable and corrosion resistant trays.</p>	2