

TWO PARTS TENDER ITEM

Technical specifications for a 'Back reflection Laue X-ray diffractometer system'

All the items/specifications listed below must be included in the offer.

	<p>Scope of the supply:</p> <ol style="list-style-type: none"> 1. Back reflection Laue x-ray diffractometer system 2. Microscope for sample selection 3. Additional three axes manual goniometer <p>Description and detailed specifications of the above items are as follows:</p>
1.	<p>High Resolution crystal orientation Laue X-ray back reflection diffractometer system:</p> <p>A 'Back reflection Laue X-ray diffractometer system' equipped with a compact high brightness mini-focus Tungsten (W) x-ray source and a latest generation 2D pixel detector should be capable of followings;</p> <p>A system allowing unique live digital back-scattered LAUE diffraction pattern recording. It should feature approx. 6mm centre hole that allows the X-ray beam to pass through the camera system and then hit the desired single-crystal to orient. The Laue camera should capture live exposure as well as extended exposures within a reasonable time up to few minutes. It must have a fast read out and very low noise operation in general.</p> <ul style="list-style-type: none"> - Include a high sensitivity / high resolution detector with low noise CCD read out. - High brilliance mini focus X-ray source with ≥ 0.45 mm beam size with fast automatic ramp up / down. - Scintillator screen for beam alignment. - Triple axis motorized goniometer and motorised XYZ stages. - It must contain preconfigured data acquisition system. - X-ray cabinet with proper safety interlock. - It must include final acceptance tests. - Also quality assurance documents for the completed device with copies of all quality control checks and intermediate test results. - The Laue system must cover standard service and warranty along with additional service and warranty for a period of at least 24 months after the end of standard one year from the date of installation.
(i)	<p>X-ray source, generator and optics:</p> <p>An air cooled mini-focus X-ray source with the following specifications:</p> <p><u>Horizontal beam delivery configuration / High brilliance X-ray mini focus source/motorized beam delivery</u></p> <ul style="list-style-type: none"> • Beam size of ≥ 0.45 mm on sample without the use of flux reducing collimators/apertures. • Minimum X-ray flux: typically: $> 3 \times 10^8$ photons [at 29 keV]. • Sealed X-ray tube with Tungsten (W) target. • X-ray generator: should have the manual control to adjust kV and current settings. • X-ray shielding down to beam exit. • Air forced cooling with $< 0.5\%$ RSD over 8 hours, temperature independent. • Interlock safety connections / warning beacon integrated with the source.

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	<ul style="list-style-type: none"> • Average spectrum on sample: 5 to 29 keV Bremsstrahlung. • X-ray generator: fast automatic ramp up / down procedures software controlled up to 50 kV and 1 mA with a maximum source power of 50 W. • X-ray tube should have the option to switch off in between measurements/use to save power and extend tube lifespan. • Beacon signalling for X-Ray ON, and interlocks closed. • Mounting fixture, bracket, clamping for the X-ray source, X-ray Laue detector and Manual stage assembly onto a 600 mm (length) x 600 mm (width) breadboard. • Requires one standard mains socket for powering the system.
(ii)	<p>Goniometer and translation:</p> <p><u>Motorized goniometer assembly (should support mounting of large single crystals)</u></p> <ul style="list-style-type: none"> • One three motorised axes allowing sample rotation with +/- 30 degrees (Rz), +/-10 degrees (Rx) & +/-7 degrees (Ry) with 0.06 degree positioning accuracy, 3kg maximum load capacity and 35mm eucentric point (i.e. common point of rotation above the top axis). • Motorized translation axis: Z +/-20mm, X +/- 25mm, Y +/- 100mm adjustments with 20 microns accuracy, should allow scanning of samples of size about 40 mm x 50 mm. • Pre-configured stage limits to avoid detector crash. • Clamping base for mounting the goniometer assembly onto a rigid breadboard, pre aligned with the source and Laue detector.
(iii)	<p>Laue Detector system:</p> <p>The detector should include a very low noise CCD.</p> <p><u>CCD Laue X-ray Imaging camera</u></p> <ul style="list-style-type: none"> • Active input area of approx. 155 (h) x 105 (v) mm (approx.) imaged on the sensor. • Input pixel size of about 61µm square, 2570 x 1710 pixels (without intense file). • Selectable exposure time ranging from 1 ms to 15 minutes. • Pixel binning option from 1x1 to 8x8, • Dual Gigabit Ethernet communication. • Automatic bright corner, bright pixel correction. • Fast 14-bit output with optional 18-bit high dynamic range mode.
(iv)	<p>Diffractometer control and data acquisition software:</p> <p>A PC should be provided with pre-loaded software for diffractometer control, data acquisition and data analysis.</p> <p><u>Acquisition / Laue image processing</u></p> <ul style="list-style-type: none"> • Laue system should come along with a preconfigured data acquisition PC which should allow live image acquisition / display using integration periods down to ms range. • The image should be exported to various usable formats like TIFF/BMP/JPG/PNG and PDF

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	<ul style="list-style-type: none"> • <u>The preconfigured data acquisition system with suitable software for latest Windows/Mac OS giving end user control of:</u> • Exposure from 1ms to minutes • Pixel addition from 1 x 1 to 8 x 8 • User selectable automatic background subtraction mode • 16-bit acquisition mode with user selectable noise quality level • 27inch monitor • 1TB Solid State Drive • Gigabyte Ethernet interface, 10 meters cable, etc. • <u>Laue image orientation</u> • The Laue system orientation software should display sample orientation over a predefined reference image acquired from a reference sample. At least standard 0.1 degree accuracy should be achieved using non characteristic diffraction spots. • Automatic misorientation of angular data (3 rotation axis) from sample scanning positions, with triclinic, monoclinic, orthorhombic, tetragonal, trigonal, hexagonal, cubic symmetry. • Typically find a solution either from a random Tungsten (W) or silicon (Si) crystal orientation within seconds. • Manual orientation by intuitive dragging of simulated crystal pattern. • <u>Crystal orientation software</u> • Should able to Import TIFF/ BMP / JPEG format to analyses the data and orient along the crystallographic directions.
(v)	<p>Safety enclosure: The diffractometer system should be enclosed in a suitable radiation protected cabinet.</p> <ul style="list-style-type: none"> • Doors of safety enclosure must be interlocked with X-ray source. If the door is opened during operation the interlock must power off X-ray tube. • Safety enclosure should meet high level of safety standards i.e. total radiation count at any point of time should not exceed 0.9 microSv/Hr so that x-ray worker/user is not exposed beyond radiation exposure limits (20 mSv/year). • <u>X-ray cabinet</u> • Cabinet dimensions: 800mm (width) x 676mm (depth) x 689mm (height) • Chicanes for electric cables. • Magnetic interlocks. • Beacon signalling X-Ray ON, and interlocks closed • Lights + 2 air extractors allowing cooling for the source and the Laue camera. • Mounting fixture, bracket, clamping for the X ray source, X ray Laue detector and goniometer assembly onto a 600mm (length) x 450mm (width) breadboard • Lights + air extractor allowing cooling for the source and the Laue camera. • Supplied with workbench supporting cabinet and space for monitor, keyboard and mouse (150 cm x 75 cm x 83 cm) • Emergency Stop
(vi)	<p>Test samples (System Configuration):</p> <ul style="list-style-type: none"> • Reference Tungsten (W) and Silicon (Si) or Sapphire sample

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	<ul style="list-style-type: none"> • X-ray source alignment camera
(vii)	Installation and training: Installation, personnel training and test measurements of the system must be done at the institute by engineers from supplier's side. Training has to be given to at least two persons for at least two days.
(viii)	Spares and accessories: Necessary accessories for fixing crystals on goniometer should be providing with the system. Supplier should confirm the availability of spares for next 10 years from the date of installation.
2.	Microscope for crystals/sample selection: A trinocular stereo-zoom (> 50x) optical microscope with polarizer along with USB camera (for saving the pictures of the crystals) for crystal mounting from a reputed company must be included.
3.	Additional three axes manual goniometer: One additional three axes manual goniometer allowing sample rotation with +/- 180 degrees (Rz), +/-20 degrees (Rx) & +/-20 degrees (Ry) with 0.1 degree positioning accuracy, 3kg maximum load capacity and 35mm eucentric point (i.e. common point of rotation above the top axis)
	Warranty: The back reflection Laue X-ray diffractometer system all parts and labour including X-ray tubes, detector, and motorized goniometer assembly quoted for it should be under comprehensive standard warranty for one (01) year from the date of installation and additional two (02) years from the end date of standard warranty. Any repair work or replacement of spares needs to be done on site, the manufacturer of the Laue system must confirm this in their quotation.
	Acceptance conditions: <ol style="list-style-type: none"> A. Test results of the following factory tests have to be provided prior to dispatch of the Laue diffractometer system, and confirmation of the same should be demonstrated at UGC-DAE CSR, Indore. <ol style="list-style-type: none"> i. Confirmation of x-ray flux value, > 3 x 10⁸ photons [at 29 keV]. ii. Confirmation of stability (> 98% for couple of hours) of the x-ray source with flux monitoring. iii. Laue crystal orientation data from back-scattered data of a standard compound/molecule e.g. Si or Sapphire and W, etc. crystals for test. B. Additional tests on user provided crystals to be performed at the UGC-DAE CSR, Indore. <ol style="list-style-type: none"> i. Demonstration of functioning of encoders and hard limits of goniometer motions. ii. Assurance of safety interlock performance iii. Demonstration of single crystal back diffraction measurements. iv. Demonstration of crystal orientation along 3 principal crystallographic directions for the supplied single crystal.
	Bidder criteria: <ol style="list-style-type: none"> a) The bidder must be a globally recognized manufacturer of diffractometer equipment with a minimum of 10 years of experience in the field. b) The bidder should have demonstrated a high level of technical expertise and innovation in diffractometer technology. c) The bidder should be capable of and experienced with customizing diffractometer systems to meet specific research and application requirements.

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	d) Detailed list of at least ten (10) installed X-ray diffractometers within the last 10 years, globally including in India, with contacts details of indenter, installation certificates must be provided.
	Service facility and down-time call attendance: Supplier should clearly mention about their service set up in India for prompt service support along with contact details of service engineers specially trained on the offered system. Service should be provided within 2 working days from the report of technical problem so that machine down time is minimized. Service should be provided at earliest and 24 X 7 online support should be available. In case the Equipment / System remains non-operational for more than 7 working days then warranty period will be extended for the equivalent period for which Equipment / System remained non-operational. Warranty extension in such case shall be done without prejudice to any other Term & condition of the contract.

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NOTICE INVITING GLOBAL TENDER No. 03/2025-26 dt 20-08-2025 due on 22-09-2025 at 15:00 hrs.

Director, UGC-DAE Consortium for Scientific Research, Indore invites separately sealed bids from eligible bidders for supply of the following:

Sl. No.	Description of Item <u>Two Parts Tender Item</u>
1.	Four-circle X-ray Diffractometer System.
2.	Back reflection Laue XRD System.
a.	Detailed tender document can be obtained in person, by post from Administrative Officer-I (Purchase & Stores Section), UGC-DAE CSR, Indore (address given above). The details of the tenders are also available on our website www.csr.res.in . Tender document will be available from 22-08-2025 to 22-09-2025 upto 15:00 hrs.
b.	The Tender Document can be downloaded from our website www.csr.res.in .
c.	Overseas suppliers can participate in the tender directly, provided they do not have Branch Office in India.
d.	The item can be shifted in any laboratory of the consortium in the country.
e.	Amendments if any, will only be published on our website: www.csr.res.in
	Administrative Officer-I (Purchase & Stores Section)

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Terms and Conditions

1.	Tender in sealed cover duly superscribed "Tender No. dt.... due onfor item "Complete with all details, otherwise tender may not be opened/considered. If you are interested to quote more than one items, you shall submit the quotations in sealed cover separately. (*) items as mentioned in the Tender No NOTICE INVITING TENDER No. 03/2025-26 dt 20-08-2025 due on 22-09-2025 at 15:00 hrs must be quoted in two parts (Part A-Technical and Part B-Financial). The two parts show separate sealed covers.
2.	Price should be quoted CIP Mumbai & Insurance up to Indore separately (As per INCOTERMS 2010). In case of local firms they should quote for delivery in premises of this office.
3.	Director, UGC-DAE CSR, Indore, reserves the rights of accepting in full or part /not accepting the tenders without assigning any reasons.
4.	The acceptance of tender, will rest with the Director, UGC-DAE CSR, Indore, who does not bind himself to accept the lowest tender and reserves to himself the authority to reject any or all of the tenders received without assignment of any reason.
5.	Delivery and Installation period must be mentioned. (if Installation required)
6.	Liquidated Damages: The penalty for late delivery will be imposed @ 2% per month or a part there of, subject to a maximum of 10% of the total value of the order.
7.	The tender shall remain open for acceptance for a period of 90 days from the date of receipt.
8.	The decision of the Director, UGC-DAE CSR, Indore, shall be final in all the cases.
9.	Director, UGC-DAE CSR, Indore, shall not be liable for postal delays. The incomplete tenders or the tenders received after due date will not be considered.
10.	Quote your offer along with literatures/catalogues, if any.
11.	We are exempted from the custom duty. The custom duty exemption certificate is issued by Department of Scientific & Industrial Research (DSIR), Govt. of India, New Delhi. Customs duty exemption is in terms of Government Notifications No. 51/96-Customs dated 23.07.1996; No. 24/2007-Customs dated 01.03.2007; No. 43/2017-Customs dated 30.06.2017; No. 42/2022- Customs dated 13.07.2022; No. 07/2024- Customs dated 29.01.2024; No. 38/2024 – Customs dated 23.07.2024.
12.	GST must be quoted separately, if applicable.
13.	No claim for any tax or duty, not stipulated in the tender will be admitted at any stage.
14.	The tenderer should furnish the users list where similar equipment has been supplied recently.
15.	Special care should be taken to write the rates in figures as well as in words. No overwriting be done on the rates and units.
16.	Arbitration: "in connection with the present contract shall be finally settled under the Rules of conciliation and arbitration of the International Chamber of Commerce" should be replaced by "between both parties in connection with the CONTRACT which cannot be settled amicably shall be exclusively & finally settled by Arbitration under the rules of conciliation and arbitration of the "International Chamber of Commerce, Mumbai" by one or more Arbitrators appointed in accordance with the said Rules.
17.	No deviation from the stipulated terms and conditions will be allowed. Tenders should be unconditional.
18.	The warranty of the equipment should be for 12 months from the date of commissioning / installation.
19.	It will be obligatory on the part of the tenderer to sign on your offer.
20.	Subject to Indore Jurisdiction.
21.	The bidder should fully comply with the OM no. F.No. 6/18/2019-PPD dated 23-07-2020 inserting rule 144 (xi) in GFR 2017 by the Ministry of Finance, Department of Expenditure, Public Procurement Division. (fill Annexure-I)
22.	No advance payment will be made.
23.	The Performance bank guarantee as per policy of the Government time to time, must be provided till the warranty period.
24.	The last date for submission of the tender documents is 22-09-2025 up to 15:00 hrs. Tender will be opened on 22-09-2025 at 16.30 hrs. Tenderer (s) / authorized representative(s) may attend on the opening of the tender bids.
25.	For Pre-bid: Email : iucstores@csr.res.in till 29-08-2025. AT 11:30 am . UGC-DAE CSR , INDORE
*26.	Benefits to MSME : As prescribed by MSME policy of the Government of India shall be provided to MSME vendors registered as manufacturer for the goods procured or for the service providers for services to this Department. The procuring Entity reserves its option to give price preference to Micro and small industries in comparison to the large-scale industries as per policies of the Government from time to time.
27.	Make in India : (fill Annexure-II) 27.1 As defined under the Public Procurement (Preference to Make in India), order 2017, Revised order dated: 16/09/2020 or as being revised from time to time, in procurement of goods or services in respect of which the Nodal Ministry/Department has communicated, that there is sufficient local capacity and local competition, only "Class-I local supplier", as defined under the said order, shall be eligible to bid irrespective of purchase value. 27.2 Only "Class-I local supplier" and "Class-II local supplier", as defined under the above said order, shall be eligible to bid in procurements under taken by this Directorate, except where the mode of procurement is by issue of Global Tender Enquiry. The bidding supplier shall indicate the percentage of local content for the item being offered in their bid. 27.3. Where the procurement is by issue of Global Tender enquiry, Non local suppliers, shall also be eligible to bid along with "Class-I local suppliers and Class-II local suppliers". Suppliers/bidders offering imported products will fall under the category of Non-local suppliers.

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27.4.	Subject to the provisions of the above said order, and to any specific instructions issued by the Nodal Ministry or in pursuance of the said order, purchase preference shall be given to "Class-I local Suppliers" in procurements under taken by this Directorate, in the manner specified there in the order.
27.5.	The bidders along with their bid/tender shall be required to provide a self-declaration certificate of the local content (where the procurement value is Rs.10 crore or less) for the item offered and their status as Class-I/Class-II/Non-Local supplier and their eligibility to participate in the tender as per Annexure-XI failing which bid will be rejected. In cases of procurement for a value in excess of Rs.10 crores, the "Class-I local supplier/Class-II local supplier" shall be required to provide a certificate from the statutory auditor or cost auditor of the company (in the case of companies) or from a practicing cost accountant or practicing chartered accountant (in respect of Contractors other than companies) giving the percentage of local content.
27.6.	Self-declaration certificate should quantify the percentage of local content of the offered product only. It should also indicate the location. However, claiming the services such as transportation, insurance, installation & commissioning, training and after sale service support like AMC/CMC etc., shall not be considered as local content as per OM N.P-45021/102/2019-BE-II-Part(1)(E-50310) dated:4/03/2021 issued by Ministry of Commerce and Industry, DPIIT.
27.7.	False declarations/violation of this order terms shall be deemed to be breach of code of integrity resulting in debarment of the firm for a period up to 2 years. Under such circumstances, the supplier shall not be considered for any preferences as proposed in the order.
27.8.	Wherever the bids are received without accompanying the above said requisite certificate such offers shall be treated as incomplete and not considered.
27.9.	Bidders/contractor are divided into three categories based on Local Content (The total value of the item procured (excluding net domestic indirect taxes) minus the value of imported content in the item (including all customs duties) as a proportion of the total value, in percent):
27.10.	Class-I local supplier is with local content equal to or more than as prescribed by the Nodal Ministry/ NIT, if prescribed, for the item being procured or 50% whichever is higher.
27.11.	Class-II Local supplier is with local content more than as prescribed by the Nodal Ministry/NIT, if prescribed, for the item being procured or 20% whichever is higher, but less than that applicable for class-I local supplier.
27.12.	Non-local supplier is with local content less than that applicable to class-II local supplier, as stated above.
<i>Note: Where the estimated value of the procurement is less than Rs.5 Lakhs (or as being amended by the competent authority from time to time) is exempted from the provisions of the above Make in India policy as stated therein the order.</i>	

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Appendix-II

Annexure to Bid Form: Eligibility Declarations

(To be submitted as part of tender/Technical Bid)

(on company letter head)

(Along with supporting documents, if any)

Tender Document No. DPS/XXXX

Tender Title: Goods

Bidder's Name:-----

(Address and contact details)

Bidder's Reference No. ----- Date : -----

Restrictions on procurement form Bidders from a country or countries, or a class of countries under Ruler 144(xi) of the General Financial Rules 2017.

"We have read the clause regarding restrictions on procurement form a Bidder of a country which shares a land border with India; and solemnly certify that we are not form such a country or, if from such a country, we are registered with the Competent Authority (copy enclosed). We hereby certify that we fulfil all requirements in this regard and are eligible to be considered."

Penalties for false or misleading declarations:

We hereby confirm that the particulars given above are factually correct and nothing is concealed and also undertake to advise any future changes to the above details. We understood that any wrong or misleading self-declaration by us would be violation Code of integrity and would attract penalties as mentioned in this tender document, including debarment.

(Signature with date)

(Name and designation)

Duly authorized to sign Bid for and on behalf of

(Name & address of the Bidder and Seal of Company)