



**NATIONAL INSTITUTE OF TECHNOLOGY
ROURKELA – 769 008, ODISHA**

Advertised Tender Enquiry

Department: Physics & Astronomy

Tender Notice No: NITR/PW/PH/2021/272

Date: 08/10/2021

IMPORTANT DATES

To

**Bidding
Through
CPP Portal
(e- Procurement)**
<https://eprocure.gov.in/eprocure/app>

Event	Date	Time
Last date of submission of bid	08/11/2021	11:00 AM
Date of opening of techno-commercial bid	09/11/2021	11:00 AM

Dear Sir,

We intend to purchase the commodities specified below and invite quotations in accordance with the terms and conditions detailed in the bid document. If you are interested, kindly send, your offer with prices and complete terms within the time mentioned above.

For any clarification:

Yours sincerely,

Attention:

Prof. Pitamber Mahanandia

Associate Professor

Physics & Astronomy

NIT Rourkela - 769 008

Phone: 0661-2462606(O) and 9437245625

Email: pitam@nitrkl.ac.in

Prof. Pitamber Mahanandia
Department of Physics & Astronomy

Encl:

- 1) Schedule of requirement, specifications, dates etc.**
- 2) Bid document containing detail terms and conditions.**

1. Schedule of requirements

Sl. No.	Description of Goods/Service	Quantity
1.	External Quantum Efficiency Measurement Setup (Spectrometer System) (As per the specification attached in Annexure –II)	1 Unit

2. Specifications and allied Technical Details:

As per the specification attached in **Annexure-II**

3. Format of Quotation

It is a two-part bid with separate techno-commercial and price bids.

4. The bid should be submitted through <https://eprocure.gov.in/eprocure/app>

5. Quotations should be valid for a period of **90 days** from the date of opening of techno-commercial bid.

6. **Some important dates:**

i.	Pre-bid Conference	Date:	NA	Time:	NA
ii.	Last date for submission of bid	Date:	08/11/2021	Time:	11:00 AM
iii.	Date of opening of techno- commercial bid	Date:	09/11/2021	Time:	11:00 AM

7. **Warranty: 24 months** comprehensive warranty.

8. **GST:** GST should be charged according to applicable rates.

9. **Tender Cost:** Tender cost (Non- refundable) in the shape of Demand Draft for **INR 1000/- (Rupees One Thousand only)** in favor of "**Director, NIT Rourkela**" Payable at Rourkela from any Scheduled Commercial Bank except Co-operative and Gramin bank. Tender Cost should reach physically through speed post/ registered post/courier, contained in an envelope & superscripted with subject, tender reference number addressed to **Registrar, NIT Rourkela-769008, Odisha; on or before 09/11/2021 at 11:00 AM.**, failing which the bid will be summarily rejected.

10. **Bid Security:** It is mandatory to submit the "**Bid Security Declaration**" form as mentioned in **Annexure I**, failing which the bid will be summarily rejected.

11. **Performance Security: 3 % of the contract value** should be deposited to the Institute within 15 days from the date of issue of Purchase Order in shape of Demand Draft (DD)/Bank Guarantee in favor of "Director, NIT Rourkela and payable at Rourkela" from any Scheduled Commercial Bank except Co-operative and Gramin bank. And Performance security should remain valid for a period of 60 days beyond the date of completion of all contractual obligations of the suppliers including warranty obligation.

12. Please go through the enclosed "bid document" carefully for other bidding instructions.

13. Please send your quotations through: <https://eprocure.gov.in/eprocure/app>

14. **Technical Bid Evaluation Criteria:**

The evaluation of the Techno-commercial Bid will be as per the detailed technical specifications given in **Annexure–II**. If required, the bidder(s) may be asked to provide additional clarification regarding the technical aspects.

If the supplier is not the Original Equipment Manufacturer (OEM), then it should have its authorized service center in India. The bidders must enclose details of their infrastructure with reference to locations and technical manpower, availability of inventory spares etc. A valid GST registration certificate of the supplier should be submitted along with bid.

- (i.) Offers from Authorized agents of Foreign Manufacturers should accompany Principal's Authorization letter mentioning our Tender Reference Number.
- (ii.) Manufacturer should have proper website and the offered product should be available in the website.
- (iii.) The ordered goods are required to be installed within 60 days of receipt of goods at this Institute. Installation should be carried out only by expert engineers of Supplier / Manufacturer. During the course of installation, necessary training on operation and maintenance of the goods shall be imparted to Institute's Faculty/ Engineers/ Technicians. Installation and training must be free of cost
- (iv.) Scanned copies of the technical brochure of the above equipment and accessories as per **Annexure-II** must be included in the technical bid. Point wise technical compliance along with any deviation of the mentioned specifications (**Annexure-II**) must be indicated along with the technical documents.
- (v.) Make and model no. should be mentioned in the technical bid.
- (vi.) At least five user names and contacts from NIT/IIT/reputed Indian institute /Govt. R&D organizations must be provided where the above equipment (**Annexure –II**) have been supplied in last five years along with copies of purchase orders.
- (vii.) Prior installation conditions / site preparation / electrical connection required must be clearly mentioned in the quotation along with technical bidding documents
- (viii.) The comparison between the indigenous and the foreign offers shall be made on FOR destination basis and CIF/CIP basis respectively.
- (ix.) The quotations are liable to be rejected if any of the above conditions are not complied with or there is any violation of GFR17 rules and regulations. Conditional Bids shall not be accepted.
- (x.) The Bidder shall bear all costs associated with the preparation and submission of its bid, and "the Purchaser", will in no case be responsible or liable for these costs, regardless of the conduct or outcome of the bidding process.
- (xi.) The average annual financial turnover of the vendor for the last three consecutive financial years ending on 31st March2020, should be minimum 50 Lakhs. Copy of audited balance sheet and P/L account to be submitted.
- (xii.) Warranty period: Comprehensive warranty minimum of **24 months** from the date of installation (including all parts and consumables supplied by the vendor) and during this warranty period, authorized service engineer should visit at least twice in a year in addition to the break-down call.
- (xiii.) The vendor should be able to provide all spare and parts for minimum of 10 years from the date of installation.

15. Financial Bid Evaluation Criteria:

Final price comparison for the award of contract to decide Lower (L1) will be made based on the price quoted in BOQ.

16. For technical details, you may contact

Prof.Pitamber Mahanandia

Associate Professor

Physics & Astronomy

NIT Rourkela, Odisha- 769 008

Phone: 0661-2462606 (O)

Email: pitam@nitrkl.ac.in

NB: Please furnish your Dealership Certificate (must) and Proprietary Nature Certificate (If applicable)



NATIONAL INSTITUTE OF TECHNOLOGY ROURKELA – 769 008, ODISHA

BID DOCUMENT

1. Instructions to the bidders

- 1.1 Bids are invited on behalf of the Director, National Institute of Technology (NIT), Rourkela – 769008, Odisha, from the intending bidders for supply of the goods/stores/equipment for the Institute as detailed in the enquiry letter.
- 1.2 The bidders should quote their offer/rates in **BOQ** in clear terms without ambiguity.
- 1.3 In Case of any discrepancy between the rate in figures and that in words, the rate in words will be accepted as correct.
- 1.4 The last date for receipt of the bid is marked in the tender document.
- 1.5 The bids should be uploaded in <https://eprocure.gov.in/eprocure/app>. Please follow the guidelines of the site.
- 1.6 If a prospective bidder requires any clarification in regard to the bidding documents, s/he may make a request the concerned officer or faculty member at least 15 days before the deadline for receipt of bids.
- 1.7 Bid received after deadline of receipt indicated in para 1.4 above, shall not be taken in to consideration.
- 1.8 Each bidder shall submit only one bid. A bidder, who submits more than one bid, shall be disqualified and considered non-responsive.
- 1.9 (In respect of high value plant, machinery etc. of a complex and technical nature). The bids may be submitted in two parts, viz., techno-commercial bid and financial bid.
- 1.10 The bidder has to sign in full at all pages of the scanned part of the bidding document. No over- writing in those pages is acceptable.
- 1.11 If any bidder does not fulfil technical specification, his/her eligibility will be cancelled even if his/her price got L1 status.
- 1.12 Bidders registered with any of the following agencies/ bodies as per Public procurement policy for Micro & Small Enterprises (MSE) order 2012 are exempted categories from payment of EMD & Tender Cost provided that the registration Certificate issued by any one of these below mentioned agencies must be valid as on close date of tender. Micro small or medium enterprises who have applied for registration or renewal of registration with any of these agencies/bodies but have not obtained the valid Certificate as on close date of tender are not eligible for exemption.
 - i) Khadi and Village Industries Commission (KVIC)
 - ii) National Small Industries Corporation (NSIC)
 - iii) Any other body specified by Ministry of MSME/GOI

2. Conditions of the bid

- 2.1 The rates quoted should preferably be net, inclusive of packing, forwarding, freight, Insurance and all other incidental charges including taxes. In case these charges are quoted extra in addition to the quoted rates, the amount thereof or ad-valorem rate must be specified. Packing, forwarding, freight, etc., when quotes separately are reimbursable at actuals. If external agencies are employed, their receipts must be enclosed with the invoice.
- 2.2 Duties and Taxes are to be quoted separately. Ad-valorem rates thereof should be clearly indicated with reference to the relevant Acts and Rules.

- 2.3 The goods are required to be delivered at the Department of Physics & Astronomy , NIT, Rourkela, and must be reached within **60 days** from the date of placement of the supply of order under the risk and arrangement of the bidder and offers with delivery beyond the above period shall be treated as unresponsive. In case the delivery time is higher, the same must be mentioned clearly in the quotation.
- 2.4 The bid should remain valid for a period of **90 days** from the date of opening of Techno-commercial Bid. In case your offer has a different validity period that should be clearly mentioned in the quotation.
- 2.5 Conditional discount, if any, offered by the bidder shall not be considered at the time of evaluation.
- 2.6 The goods offered should strictly conform to the specification and technical details as mentioned in schedule of requirements in the tender documents.
- 2.7 The Institute may like to conduct pre-dispatch inspection of goods, where applicable.
- 2.8 Period of guarantee/warranty, where applicable, should be specified in the bid.
- 2.9 If the successful bidder, on receipt of the supply order, fails to execute the order within the stipulated period, in full or part, it will be open to the Director, NIT, Rourkela to recover liquidated damage from the firm at the rate of 1 percent of the value of undelivered goods per month or part thereof, subject to a maximum of 5 percent of the value of undelivered goods. Alternatively, it will also be opened to the Director, to arrange procurement of the required goods from any other source at the risk and expenses of the bidder.
- 2.10 The successful bidder may be required to execute a contract, where applicable.
- 2.11 The bidder has to furnish up to date GST and Income Tax Clearance Certificate along with the bid.
- 2.12 Purchase order / Work order shall be placed on the bidding firm(s). In case of deviation to this, if any, the bidding firm should produce any such sufficient documents/credentials i.e, Agreements, MOUs, Arrangements etc. with the third party/ OEM to satisfy the buyer. A consent letter from the third party/ OEM to that effect must be enclosed along with the bidding documents.
- 2.13 80% payment will be paid in advance through LC against shipping documents, balance 20% payment will be through wire transfer on receipt of the consignment in good condition and installation in the Department of Physics & Astronomy, National Institute of Technology Rourkela, within 30 days after commissioning of the equipment, installation, demonstration and onsite training.
- 2.14 State Bank of India is the sole Banking partner for NIT Rourkela for operation of LC (Letter of Credit).
- 2.15 In the event of any dispute arising out of the bid or from the resultant contract, the decision of the Director, NIT, and Rourkela shall be final.
- 2.16 The bid document/resultant contract will be interpreted under Indian Laws.

BID SECURITY DECLARATION

Tender Ref. No.: _____ Dated _____

Tender ID : _____

To

**The Registrar,
National Institute of Technology, Rourkela
Sundargarh, Odisha-769008**

The undersigned, declare that I/We understand that, according to your conditions, bids must be supported by a Bid Securing Declaration. I/We accept that I/We may be disqualified/suspended from bidding for any tender /contract in your Institute (NIT Rourkela) for a period of **Five Years** from the date of notification of present tender, if I am /We are in a breach of any obligation under the bid conditions as under, if I/We

- (a) Withdraw/modify/amend, impair or derogate the tender/bids, during the period of bid validity specified in the form of Bid; or
- (b) having been notified of the acceptance of our Bid by the purchaser during the period of bid validity
 - (i) fail or refuse to execute the contract, if required, or
 - (ii) fail or refuse to furnish the Performance Security, in accordance with the Instructions to Bidders.

I/We understand this Bid Securing Declaration shall cease to be valid if I am/we are not the successful Bidder, upon the earlier of (i) the receipt of your notification of the name of the successful Bidder; or (ii) thirty days after the expiration of the validity of my/our Bid.

Signed: (insert signature of person whose name and capacity are shown) in the capacity of (insert legal capacity of person signing the Bid Securing Declaration)

Name: (insert complete name of person signing the Bid Securing Declaration) Duly authorized to sign the bid for and on behalf of (insert complete name of Bidder)

Dated on _____ day of _____ (insert date of signing) Corporate Seal (where appropriate)

(Note: In case of a Joint Venture, the Bid Securing Declaration must be in the name of all partners to the Joint Venture that submits the bid)

INVITATION FOR TENDER FOR SUPPLY OF EQUIPMENT**TENDER SPECIFICATIONS****ITEM DESCRIPTION: EXTERNAL QUANTUM EFFICIENCY MEASUREMENT SET-UP (SPECTROMETER SYSTEM)**

SL. NO.	PARAMETERS	SPECIFICATIONS / REQUIREMENTS
	Scope of measurement	i) Spectral Response measurement of solar cells ii) Reflectance, Transmittance iii) EQE & IQE iv) Quantum dots, thin films, Perovskites
	Scope of Supply	Supply, installation, commissioning and training
	Pre-qualification criteria	The supplier must have supplied 5 similar equipment to any national laboratories/Institutes/Universities. Documentary evidence must be provided with contact details.
	Commissioning	Complete set up including the interconnection of all system components with necessary connectors, cables, probes, etc... should be provided by the supplier The supplier should provide a demonstration with a sample on completion of successful commissioning.
1. IPCE measurement system		
1. Monochromator		
1.1	Monochromator configuration	Czerny Turner configuration.
1.2	Monochromator focal length	≥ 300mm
1.3	Slit width & height	Slit size at least 20mm in Y direction and variable in X - direction with atleast .01-5mm size. Slits should be adjustable and square/ rectangular spots should be emitted from exit port of monochromator varying from ~1mm-4mm.
1.4	Bandwidth	Adjustable, measurements will be typically done at 5 nm.
1.5	Gratings	3 gratings: 300l/mm blazed @ 2200nm 1200 l/mm blazed @ 500nm 600 l/mm blazed @ 1250nm.
1.6	Grating Size	≥68mm
1.7	Stray light rejection at 10x FWHM	$5 \cdot 10^{-5}$
1.8	Wavelength coverage	250-3000 nm
1.9	f-number	f/4.1 or faster
1.10	Wavelength accuracy	≤ ±0.05% (≤ ±0.2 nm) or better with 1200g/mm grating at 500 nm
1.11	Long pass & Bandpass filters	Suitable combination of long pass and bandpass filters to reject and allow light for high SNR.

2. Detectors (All detectors should have NMI traceable calibration)		
2.1	Silicon photodiode, (200-1100nm). NMI traceable calibration certificate to be provided.	Material: Silicon
		Active area $\geq 10 \times 10$ mm
		Spectral response range: 200-1100nm
		Dark current < 1pA
2.2	Ge Photodiode (800-1800nm). NMI traceable calibration certificate to be provided.	Active area ≥ 5 mm diameter
		Material: Germanium
		Spectral response range: 800-1800nm or better
		Dark current (typ.): <1pA
3. Light Source		
3.1	Probe Beam	Lamp type: Dual xenon / quartz halogen light source with facility for high and low frequency optical chopping with suitable light collection optics. Automated lamp selection using mirror assembly on setting wavelengths Xe ≥ 75W, QTH ≥ 100W
	Dual xenon/ quartz halogen light Source suitable to operate between 250-3000nm.	
3.2	Bias Lamp	<ul style="list-style-type: none"> At least 50W QTH lamp Bias light should co-axial to probe beam and uniformly illuminate sample area. Constant current power supply Adjustable intensity up to 0-1.5 suns Software controlled shutter Option for set of appropriate filters to enable measurement of multi junction solar cells
4. Electronics		
4.1	Optical Chopper & Control Module	Chopping Frequency: At least 25 Hz to 1kHz. Also to be equipped for DC chopping
		Phase Jitter $\leq 1^\circ$ pk-pk over entire frequency range.
		Reference Output: Suitable sensor on chopper (not control module) to provide real time frequency feedback to lock-in amplifier.
		Arrest function for DC measurements
		Resolution 1Hz or better
4.2	AC Current Pre-amplifier	Gain Ranges: Atleast 10^8 - 10^3 V/A
		Gain Accuracy $\geq +1\%$
4.3	DSP Lock-In Amplifier	Frequency Range Atleast 10Hz - 2kHz
		Gain Accuracy $\geq \pm 0.15\%$
		ADC Resolution ≥ 16 bit
5. Power Supply		
5.1	Programmable Constant Current Power Supply (two numbers, one for each light source)	Operating voltage: 230V, 5A, 50Hz
		Output voltage & current: as per system requirement
		Resolution ≤ 0.1 A local
		Output power: At least 50W- 250W
		Operating conditions: Ambient temperature: 0°C - +40 °C
		Accuracy: $\geq \pm(0.04\% + 0.05A)$
		Drift $\leq 0.05\%$ of rated output
Mode types: Constant current		

		Front panel control features: Power on/off lamp, select pre-set current, define current/ power
		Display: LCD display of set current, actual current, lamp voltage, burn time and power
		Compliance to standards: EN 61010-1:2010, EN 61326-1
6. Integrating sphere		
6.1	<ul style="list-style-type: none"> For measuring transmittance, reflectance: only diffused & diffused + specular reflectance Spectral Range 200 nm-2500 nm Port Fraction $\leq 4\%$ Sphere should have own separate detector for measurement for complete spectral range offered Diameter: 150 mm (minimum) Integrating sphere should be movable on rail. It should not be necessary to physically attach or remove the integrating sphere for switching from EQE to IQE. 	
7. Measurement Accessories		
7.1	Light Tight Chamber	Light tight chamber should be offered to facilitate all measurements (EQE, IQE) without requirement of a dark room.
7.2	Relay Optics	Reflective relay optics are needed to be usable for the entire wavelength to avoid any form of aberration and obtain high beam uniformity and beam power.
7.3	Sample holder	Mounts with micro positioners, Maximum sample size 60x60mm (should be equipped to measure front/front, front/back, back/back contacts.
7.4	Sample Probes	2 Contact probes with micro positioners for precise XYZ movement usable for mount mentioned.
8. Software		
8.1	Hardware Control & Data acquisition	<ul style="list-style-type: none"> i) System should be completely software controlled with need for minimum manual intervention. Selection of gratings, light sources, filter wheels etc. should be automatic. GPIB interfacing unit should be provided. ii) Measurement of spectral response, IV curves with results. iii) Should be equipped to provide direct results for EQE & IQE iv) Should have capability to normalize, append, merge, average spectra. v) Should be Compatible with Windows 7 and 8. Should include direct Excel export and simple integration of user written DLLs
9.	One Desktop Computer	<ul style="list-style-type: none"> a) HP All-in-One 24-df0215in 23.8-Inch (60.4 cm) FHD with Alexa Built-in (AMD Ryzen 3-3250U/8GB/256GB SSD + 1TB HDD/Window latest/MS Office 2019/Jet Black). b) Seagate Backup Plus Slim 1 TB External Hard Disk Drive (Black)

10. Upgradation		
10.1	Upgradation of EQE & IQE System	<p>Offered system should have the capabilities to upgrade measurements till 3000nm for both EQE & IQE experiment.</p> <p>Suitable detector should also be quoted as optional item along with the offered system.</p>

- 1. Training:** The supplier has to give 3 days onsite training after the installation.
- 2. Warranty :** Comprehensive warranty minimum of 24 months from the date of installation (including all parts and consumables supplied by the vendor) and during this warranty period, authorized service engineer should visit at least twice in a year in addition to the break-down call.

Warranty and after sales technical support
The tender must be quoted with 24 months comprehensive Warranty commencing from the date of complete and satisfactory installation of the equipment against the defect of any manufacturing, workmanship and poor quality of the components. The bidder also must agree and issue a certificate stating that technical query will be responded within 7 working days and the support will be provided within 21 working days from the date of reporting of the technical failure for down time free operation of the instrument.
Operation and service manual in English (electronic and hard copy) should be provided with all the equipment and components.
In the technical details, specify clearly about the kind of service/maintenance required for the system. Also mention that whether the service has to be carried out by a company engineer or it can be carried by trained service personnel within India.
Vendor has to give 3 days on site training after the installation.
Enclose pre-installation guide for the details on electrical power, space and other for all components and essential accessories.
