



**INSTITUTE OF MINERALS & MATERIALS
TECHNOLOGY**
(COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEARCH)
BHUBANESWAR – 751 013
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Tender No. 7/2011-12

Date: 20.01.2012

OPEN TENDER NOTICE

Sealed tenders are invited (under two bid system) from reputed manufacturers and their accredited/sole selling agents for “Supply, Installation and Commissioning” of the following equipments:

1. Ellipsometer
2. Laboratory Pressure Filter Test Rig
3. Fluorescence / Luminescence Spectrometer
4. Atomic Absorption Spectrophotometer
5. A Portable CCD Camera based image processing system.

The detailed Tender Notice, Specifications and Terms & Conditions can be seen/ downloaded from our web site: <http://www.immt.res.in> **23.01.2012** onwards. The last date for receipt of quotations is **14.02.2012 up to 5.00 P.M.** and **date of opening is 15.02.2012 at 2.30 P.M.** Director, IMMT, Bhubaneswar reserves the right to accept or reject any tender in part / full or to split order without assigning any reason thereof.

Section Officer (S&P)

**INSTITUTE OF MINERALS & MATERIALS TECHNOLOGY****(Council of Scientific & Industrial Research)****Bhubaneswar –751 013****Phone : 0674 – 2584091-94, 2581635-39, Extn.9513, 9393, Fax : 0674 – 2587846**

Advt. No. 7/2011-12

Date: 20.01.2012

OPEN TENDER NOTICE

Director, IMMT, Bhubaneswar invites Sealed Tenders in TWO BID system from reputed manufacturers and their accredited/sole selling agents for “Supply, Installation & Commissioning” of following equipments:

Sl. No.	Ref. No.	Description of Item	EMD (Rs.)
1.	PI/73/11	Ellipsometer	1,00,000.00
2.	PI/72/11	Laboratory Pressure Filter Test Rig	50,000.00
3.	PI/71/11	Fluorescence/Luminescence Spectrometer	50,000.00
4.	PI/70/11	Atomic Absorption Spectrophotometer	60,000.00
5.	PI/57/11	A Portable CCD Camera based image processing system	70,000.00

Terms & Conditions:

- A. Tender documents comprising of detailed Terms & Conditions can be downloaded from our website <http://www.immt.res.in> **FREE OF COST**. The bidders are to submit EMD along with technical bid.
- B. The tender documents can also be obtained from the office of Stores and Purchase Officer, IMMT, Bhubaneswar on a written request on payment of non refundable and non transferable tender document fee of Rs.300/- by way of crossed demand draft issued by Nationalized / Scheduled Bank drawn in favour of “Director, IMMT, Bhubaneswar” payable at “Bhubaneswar” from **23.01.2012 to 13.02.2011** on all working days from 9.00 A.M to 5.00 PM.
- C. Tender complete in all respects along with EMD should reach us on or before **14.02.2012 till 5.00 P.M** and the bid shall be opened on **15.02.2012 at 2.30 P.M** in the Purchase Section/Meeting Hall of IMMT, Bhubaneswar. Director, IMMT, Bhubaneswar reserves the right to accept or reject any tender in part / full without assigning any reason thereof.

Section Officer (S&P)

CONTENTS

PART – I

Sl. NO	Description	Page No.
1.	Chapter-I: Instruction to Bidders	2
2.	Chapter-II: Conditions of Contract	4 – 9
3.	Chapter-III: Schedule of Requirements	N.A
4.	Chapter-IV: Specifications and Allied Technical Details	16-19
5.	Chapter-V: Price Schedule (To be utilized by the bidders for quoting their prices)	7
6.	Chapter-VI: Contract Forms	N.A
7.	Chapter-VII: Other Standard Forms	10 – 18

CHAPTER – II TO TENDER DOCUMENT

TERMS & CONDITIONS

1. Tender documents with detailed specification and terms & conditions can be down loaded from our Website <http://www.immt.res.in> (**FREE OF COST**). The bidders are to submit EMD along with Technical Bid.
2. The tender documents can also be obtained by post or by hand from the office of Stores and Purchase Officer, IMMT, Bhubaneswar on a written request on payment of non refundable and non transferable tender document fee of Rs.300/- by way of crossed demand draft issued by Nationalized / Scheduled Bank drawn in favour of Director, IMMT, Bhubaneswar payable at Bhubaneswar from **23.01.2012** to **13.02.2012** on all working days from 9.00 AM to 5.00 PM.
3. The detailed technical specifications of the materials offered should be given. Relevant printed technical literature and descriptive catalogue/pamphlet should also be attached.
4. **Cost Ex-Works/FOB Price** to be indicated. Other charges like Packing, Forwarding, etc., applicable to be indicated separately.
5. **FREIGHT**–Please indicate approximate Air Freight Charges for Kolkata Air Port, India.

If there is no mention of 4 and 5 above, such offers will be rejected being incomplete.

6. **PAYMENT TERMS:** Payment will be made in Two Parts, through Irrevocable Letter of Credit in case of imported equipments.

Towards Part–I: 90% value of goods will be paid on submission of shipping documents.

Towards Part II: 10% balance value of goods will be paid within 30 days, from the date of installation and commissioning and acceptance of the goods by IMMT and on submission of Performance Bank Guarantee for equivalent value through a International/National Bank valid till 60 days after the warranty period.

Please note that payment will be arranged through our bankers State Bank of India, Fortune Tower, Rail Vihar, BHUBANESWAR – 751 023, Orissa.

7. **INDIAN AGENT’S COMMISSION,** if any: If you have any Agent(s) in India, please show specifically whether the amount of commission payable to them is included in the FOB Price. Please note that under the Government of India regulations, Commission to Indian Agent is payable only in Indian Currency. The role played by the Indian Agent(s) in rendering assistance to your customers like installation, commissioning, troubleshooting and AMC etc may also be specified.

8. **DELIVERY SCHEDULE:** Delivery of the item is required within 2 months from the date of receipt of order. If the supplier fails to deliver the goods within the time to be agreed upon, a sum equivalent to 1 (one) percent of the order value for each week of delay or part thereof until actual delivery, will be deducted from the order value, as liquidated damages, subject to maximum deduction of 10 percent of the order value. Once the maximum is reached, termination of the order may be considered by us.
9. **RISK PURCHASE CLAUSE:** If the Supplier fails to deliver the goods within the maximum delivery period specified in the order, the Purchaser may procure, upon such terms and in such manner as it deems appropriate, Goods or Services similar to those undelivered and the Supplier be liable to the Purchaser for any excess costs for such similar Goods or Services.
10. **COMMISSIONING:** has to be completed immediately after receipt of goods at IMMT, Bhubaneswar, Orissa.
11. **WARRANTY:** Please also indicate the Warranty period. The supplier warrants that the goods are new, unused and of the most recent or current models, and that they incorporated all recent improvements in design, and materials. The supplier further have to warrant that the goods are free from defects arising from any act or omission of the Supplier or arising from design, materials, and workmanship, under normal use in the conditions prevailing in India. Unless otherwise specified it will be taken as 12 months from the date of installation. Warranty period more than 12 months from the date of successful installation will be appreciated.
12. **COUNTRY OF ORIGIN:** Please specify Place / Country of Origin and the Place / Country from which goods will be finally shipped. These particulars are very important for establishment of L/C, arranging insurance and customs clearance etc.
13. **VALIDITY PERIOD:** Your Offer should be valid for at least 120 days from the date of opening of quotations.
14. **PLEASE ALSO INDICATE NAME AND ADDRESS OF SOME OF THE INDIAN ORGANISATIONS / CSIR LABS/ INSTITUTIONS TO WHOM YOU HAVE SUPPLIED MATERIAL UNDER REFERENCE, IF ANY. THE DETAILS OF SUCH SUPPLIERS FOR THE PRECEDING THREE YEARS SHALL BE GIVEN TOGETHER WITH THE PRICES EVENTUALLY OR FINALLY PAID ALONG WITH COPY OF THE ORDER (S) RECEIVED.**
15. **The quotations should be sealed and addressed to “Director, Institute of Minerals & Materials Technology, Bhubaneswar – 751 013, Orissa” with attention Stores & Purchase Officer. Each quotation sent by post is to be closed in double cover. The cover should be sealed with wax and superscribed as per subject and tender number mentioned in the first page of tender document with date of opening. Quotation delivered personally should be delivered to Receipt and Dispatch Section of Institute of Minerals & Materials Technology, Bhubaneswar. Offers sent through Fax will NOT be accepted. Institute of Minerals & Materials**

Technology, Bhubaneswar will not be responsible for non-receipt of Tender Documents due to postal delay/loss in transit.

The Offer should be submitted in two – bids system i.e. Part-I TECHNICAL BID AND PART-II COMMERCIAL BID SHOULD BE KEPT IN SEPARATE SEALED COVERS, SUPERSCRIBED AND PROPERLY IDENTIFIED; THEN BOTH THE COVERS SHOULD BE KEPT IN A SINGLE COVER AND FORWARDED TO US COMPLYING WITH AFORESAID INSTRUCITONS.

16. Technical bid (Part-I) should accompany the **EMD** by way of Crossed Demand Draft, bankers Cheque/Bank Guarantee (valid for 180 days) drawn on any scheduled / Nationalised Bank / Foreign Bank (in case of Foreign suppliers who quote directly) favouring **Director, IMMT** and **payable at Bhubaneswar**, failing which your quotation will be summarily rejected. The EMD will be returned to unsuccessful bidders within 15 days of the award of purchase order. The Manufacturers registered with DGS &D, NSIC & Government/Public undertakings are exempted form payment of EMD. This Exemption of EMD is only applicable to Manufacturers and not for dealers / distributors.
17. **FORFEITURE OF EMD:** EMD will be forfeited if the bidder withdraws/amends, impairs or derogates from the tender in any respect within the period of validity of his tender or if the successful bidder fails to submit the required Performance Security.
18. **Performance Security:**

Within 21 days of receipt of the notification of award/PO, the Supplier shall furnish performance security 10% of order value valid till 60 days after the warranty period.

The proceeds of the performance security shall be payable to the Purchaser as compensation for any loss resulting from the Supplier's failure to complete its obligations under the Contract.

The order confirmation and submission of Performance Security (PS). Even after extension of time, if the order confirmation / PS are not received, the contract shall be cancelled and limited tenders irrespective of the value would be invited from the responding firms after forfeiting the bid security of the defaulting firm, where applicable provided there is no change in specifications. In such cases the defaulting firm would not be considered again for re-tendering in the particular case

19. Inspections and Tests

The Supplier shall at its own expense and at no cost to the Purchaser carry out all such tests and/ or inspections of the Goods and Related Services as are specified in the see or as discussed and agreed to during the course of finalization of contract.

The Purchaser or its representative shall have the right to inspect and/ or to test the Goods to confirm their conformity to the Contract specifications at no extra cost to the Purchaser. It should be specified what inspections and tests the Purchaser requires and where they are to be conducted. The Purchaser shall notify the Supplier in writing in a timely manner of the identity of any representatives retained for these purposes.

The inspections and tests may be conducted on the premises of the Supplier or its subcontractor(s), at the point of delivery and/ or at the Goods final destination. If conducted on the premises of the Supplier or its subcontractor(s), all reasonable facilities and assistance, including access to drawings and production data - shall be furnished to the inspectors at no charge to the Purchaser.

Should any inspected or tested Goods fail to conform to the specifications, the Purchaser may reject the goods and the Supplier shall either replace the rejected Goods or make alterations necessary to meet specification requirements free of cost to the Purchaser.

The Purchaser's right to inspect, test and, where necessary, reject the Goods after the Goods' arrival at final destination shall in no way be limited or waived by reason of the Goods having previously been inspected, tested and passed by the Purchaser or its representative prior to the Goods shipment.

The Supplier shall provide the Purchaser with a report of the results of any such test and/ or inspection.

With a view to ensure that claims on insurance companies, if any, are lodged in time, the bidders and / or the Indian agent shall be responsible for follow up with their principals for ascertaining the dispatch details and informing the same to the Purchaser and he shall also liaise with the Purchaser to ascertain the arrival of the consignment after clearance so that immediately thereafter in his presence the consignment could be opened and the insurance claim be lodged, if required, without any loss of time. Any delay on the part of the bidder/ Indian Agent would be viewed seriously and he shall be directly responsible for any loss sustained by the purchaser on the event of the delay.

20. Packing

The Supplier shall provide such packing of the Goods as is required to prevent their damage or deterioration during transit to their final destination as indicated in the Contract. The packing shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit and open storage. Packing case size and weights shall take into consideration, where appropriate, the remoteness of the Goods' final destination and the absence of heavy handling facilities at all points in transit.

The packing, marking and documentation within and outside the packages shall comply strictly with such special requirements as shall be provided for in the Contract including additional requirements, if any, specified in SCC and in any subsequent instructions ordered by the Purchaser.

21. Delivery and Documents

Delivery of the Goods and completion and related services shall be made by the Supplier in accordance with the terms specified by the Purchaser in the contract. The details of shipping and/ or other documents to be furnished by the supplier are specified .

The terms FOB, FCA, CIF, CIP etc shall be governed by the rules prescribed in the current edition of the INCOTERMS published by the International Chambers of Commerce, Paris.

22 Annual Maintenance Contract (AMC): The bidder is to quote compulsorily for Annual Maintenance Contract (AMC) whenever bidding for an equipment. Price of AMC can be quoted in terms of percentage of the quoted price of the equipment or absolute value. AMC is to be quoted in INR. Awarding of AMC on completion of warranty period is not bound on IMMT.

23. Insurance

Should the purchaser elect to buy on CIF/CIP basis, the Goods supplied under the Contract shall be fully insured in Indian Rupees against any loss or damage incidental to manufacture or acquisition, transportation, storage and delivery.

Where delivery of the goods is required by the purchaser on CIF or CIP basis the supplier shall arrange and pay for Cargo Insurance, naming the purchaser as beneficiary and initiate & pursue claims till settlement, on the event of any loss or damage.

Where delivery is on FOB or FCA basis, insurance would be the responsibility of the purchaser.

With a view to ensure that claims on insurance companies, if any, are lodged in time, the bidders and / or the Indian agent shall be responsible for follow up with their principals for ascertaining the dispatch details and informing the same to the Purchaser and he shall also liaise with the Purchaser to ascertain the arrival of the consignment after clearance so that immediately thereafter in his presence the consignment could be opened and the insurance claim be lodged, if required, without any loss of time. Any delay on the part of the bidder/Indian Agent would be viewed seriously and he shall be directly responsible for any loss sustained by the purchaser on the event of the delay.

24. Transportation

Where the Supplier is required under the Contract to deliver the Goods FOB, transport of the Goods, up to and including the point of putting the Goods on board the vessel at the specified port of loading, shall be arranged and paid for by the Supplier, and the cost thereof shall be included in the Contract price. Where the Supplier is required under the Contract to deliver the Goods FCA, transport of the Goods and delivery into the custody of the carrier at the place named by the Purchaser or other agreed point shall be arranged and paid for by the Supplier, and the cost thereof shall be included in the Contract price.

Where the Supplier is required under the Contract to deliver the Goods CIF or CIP, transport of the Goods to the port of destination or such other named place of destination in the Purchaser's country, as shall be specified in the Contract, shall be arranged and paid for by the Supplier, and the cost thereof shall be included in the Contract Price.

In the case of supplies from within India, where the Supplier is required under the Contract to transport the Goods to a specified destination in India, defined as the Final Destination, transport to such destination, including insurance and storage, as specified in the Contract, shall be arranged by the Supplier, and the related costs shall be included in the Contract Price.

25. The acceptance of the quotation will finally rest with the Director, IMMT, Bhubaneswar who does not bind himself to accept the lowest quotation and reserves the right to himself to reject or accept partially the quotations received, without assigning any reason.
26. The quotations are liable to be rejected if the above conditions are not complied with.
27. The bid should be complete in all respects and should be duly signed. Incomplete and unsigned bids will not be considered at all.
28. This Institute is exempted from payment of Excise Duty as per Notification No. 10/97-Central Excise, dated 01.03.1997 and Customs Duty vide Notification No. 51/96-Customs. However, from 01.03.2002, the Government of India has imposed an ad valourum Customs Duty of 5% vide notification No. 24/2002-Customs, on all imports covered under Exemption No. 51/96-Customs.
29. The Manufacturer/ supplier may also indicate the minimum consumables/spares required to operate the equipment over 01-02 years period with cost(s), if any, separately under optional item.

Stores & Purchase Officer

COST AND OTHER DETAILS OF THE SYSTEM OFFERED**(TO BE SUBMITTED ALONG WITH PRICE BID.)**

	COMPONENT	COMPONENT F.C.	RUPEE
1,	Total cost of the System/Equipment		
	(a) FOB Prices (in case of imports)		
	(b) EXW Prices (in case of indigenous Offers)		
2.	Cost of spares, tools and test equipments		
3.	(a) Estimated cost of air freight, insurance, transportation etc. upto Kolkata Airport.		
	(b) Cost of forwarding, inland Transportation, packing, insurance etc. (in case of indigenous offers)		
4	(a) Training Cost, (in India) if any, (b) Training Cost (in foreign) if any: <i>(please indicate place, duration and number of persons included)</i>		
5.	Payment terms:		
6.	Delivery Period :		
7.	Country of origin:		
8.	Port of shipment:		

Signature and Stamp of the Tenderer

Place:

Date:

BID SECURITY FORM

WHEREAS¹
(hereinafter called "the Bidder") has submitted its bid dated
..... (date of submission of bid) for the supply of
..... (name and/or description of the goods) (hereinafter
called "the Bid").

KNOW ALL PEOPLE by these presents that WE
(name of bank) of (name of country), having our
registered office at (address & phone & fax no. of bank) (hereinafter called
"the Bank"), are bound unto (name of Purchaser)
(hereinafter called "the Purchaser") in the sum of _____ for
which payment well and truly to be made to the said purchaser, the Bank binds
itself, its successors, and assigns by these presents, Sealed with the common
Seal of the said Bank this _____ day of _____ 200_____.
THE CONDITIONS of this obligation are :

- 1. If the Bidder withdraws its Bid during the period of bid validity specified by the Bidder on the Bid Form; or
- 2. If the Bidder, having been notified of the acceptance of its bid by the Purchaser during the period of bid validity :
 - b) fails or refuses to execute the Contract From if required; or
 - c) Fails or refuses to furnish the performance security, in accordance with Instruction to Bidders.

We undertake to pay the purchaser up to the above amount upon receipt of its first written demand, without the Purchaser having to substantiate its demand, provided that in its demand the Purchaser will note that the amount claimed by it is due to it, owing to the occurrence of one or both of the two conditions, specifying the occurred condition or conditions.

This guarantee shall remain in force up to and including forty five (45) days after the period of the bid validity, and any demand in respect thereof should reach the Bank not later than the above date.

.....
**Signature of the Bank with seal and full
address and phone & Fax No.**

¹ Name of the Bidder

PERFORMANCE SECURITY FORM

To

(Name of the purchaser) _____

WHEREAS (Name of Supplier)

hereinafter called "the Supplier" has undertaken, in pursuance of Contract no dated 20... to supply.....

..... (Description of Goods and Services) hereinafter called "the Contract".

AND WHEREAS it has been stipulated by you in the said order that the Supplier shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with the Supplier's performance obligations in accordance with the order.

AND WHEREAS we have agreed to give the Supplier a Guarantee:

THEREFORE WE hereby affirm that we are Guarantors and responsible to you, on behalf of the Supplier, up to a total of..... (Amount of the Guarantee in Words and Figures) and we undertake to pay you, upon your first written demand declaring the Supplier to be in default under the order and without cavil or argument any sum or sums within the limit of (Amount of Guarantee) as aforesaid, without your needing to prove or to show grounds or reasons for your demand or the sum specified therein.

This guarantee is valid until the Day of 20.....

Signature and Seal of Guarantors

Date : _____ 20____
Address : _____

Phone. No. :
Fax. No. :

All correspondence with reference to this guarantee shall be made at the following address: **The Director, Institute of Minerals & Materials Technology, Bhubaneswar – 751 013**

MANUFACTURERS' AUTHORIZATION FORMAT

No. :

Date :

Dear Sir:

We _____ who are established and reputed manufacturers having factories at (*address of factory*) do hereby authorize _____ M/s

(*Name and address of agent*) to submit a bid, negotiate and receive the order from you. No company or firm or individual other than M/s _____ is authorized to bid, and conclude the contract in regard to this business.

We hereby extend our full guarantee and warranty as per Clause 11 of the General Conditions of Contract and relevant Clause of the Special Conditions of Contract for the goods and services offered by the above firm.

Yours faithfully

(Authorised Signatory)
(Name & Seal of manufacturers)

Note : *This letter of authority should be on the letterhead of the manufacturer and should be signed by a person competent and having the power of attorney to bind the manufacturer. It should be included by the Bidder in its bid.*

WARRANTY CERTIFICATE

We Warrant that everything to be supplied by us hereunder shall be brand new, unused, and of the most recent / current models, and that they incorporate all recent improvement in design and materials. It is further warranted that the goods shall be free from all defects and faults in materials, workmanship and manufacture and shall be of the highest grade and quality and consistent with the established and generally accepted standards for material of the type that is being ordered shall be in full conformity with the specification, drawing, or samples, and operate properly. We shall be fully responsible for its efficient operation. This Warranty shall be effective from the date of successful installation, commissioning and acceptance of the ordered materials by the CSIR-IMMT.

Warranty period is years (to be filled by the bidder).

The obligations under the Warranty expressed above shall include all costs relating to labour, spares, maintenance (preventive and unscheduled) and transport charges from site to the manufacturers work and back and free repair/adjustment or replacement at site or any parts of the equipment which under normal and proper use and maintenance proves defective in design, material or workmanship or fails to conform to the specifications previously given by the Council/IMMT to the contractor.

Signature and Stamp
of the Tenderer

Date:
Place:

CHAPTER – VII

CHAPTER – VII : BIDDER'S PERFORMANCE STATEMENT FORM
(For A Period of Last 3 Years & For similar equipment)

Name of the Firm.....

Order placed by (full address of purchaser)	Order No. and date	Description and quantity of ordered similar equipment	Price	Date of completion of delivery as per Contract/Actual	Remarks indicating reasons for late delivery, if any	Has the equipment been installed satisfactory? (Attach a certificate from the purchaser/Consignee)	Contact Person alongwith Tel. NO., Fax No. & e-mail address

Place :
Date :

Signature
Rubber stamp

DEVIATION STATEMENT FORM

- 1) The following are the particulars of deviations from the requirements of the tender specifications:

CLAUSE	DEVIATION	REMARKS (INCLUDING JUSTIFICATION)

Place:

Date:

Signature and seal of the
Manufacturer/Bidder

NOTE :

- 1) Where there is no deviation, the statement should be returned duly signed with and endorsement indicating "No Deviations".

PRICE SCHEDULE FOR GOODS BEING OFFERED FROM INDIA

Name of the Bidder _____
 No. _____

Tender

1	2	3	4	5	6	7	8	9	10	11
Sl. No.	Item Description	Country of origin	Unit	Quantity	Ex-Works. Ex-warehouse, Ex-show room off the shelf price (inclusive of all taxes already paid)	Total price Ex-Works. Ex-warehouse, Ex-show room off the shelf price (inclusive of all taxes already paid) 5x6	VAT & other taxes like excise duty payable, if contract is awarded	Packing & for warding up to station of dispatch, if any	Charges for inland transportation, insurance up to Lab./Instt.	Installation, Commissioning And training Charges, If any

Total Bid price in foreign currency _____
 in words.

Signature of Bidder

Name _____

Business

Address _____

Note :

- (a) The cost of optional items shall be indicated separately.
- (b) Cost of Spares _____

PRICE SCHEDULE FOR GOODS BEING OFFERED FROM ABROAD

Name of the Bidder _____
 No. _____

TENDER

1	2	3	4	5	6*		7*		8*		9*
Sl. No.	Item Description	Country of origin	Unit	Quantity	Unit price		Total price (5x6)		Charges for Insurance & transportation to port//place of destination		Total price (7+8)
					FOB (named port of shipment)	FCA (named place of delivery)	FOB (named port of shipment)	FCA (named place of delivery)	Ocean	Air	CIF

Note:

currency _____

Total Bid price in foreign

- (a) Indian agents name & address _____ in words.
- (b) Installation, commissioning & training charges, _____
 if any _____
- (c) Cost of Spares _____
 Address _____
- (d) The Indian agent's commission shall be paid in Indian Rupees only based on the Exchange Rate prevailing on the date of negotiation of documents in accordance with clause 22.1 of GCC.
- (e) The cost of optional items shall be indicated separately.

Signature of Bidder
 Name
 Business

Ref. No.PI/73/2011

Details specification of Ellipsometer:

High precision R&D spectroscopic ellipsometer with following spec.:

I. Basic requirements: Variable angle spectroscopic ellipsometer for thin film application to study interfacial behaviour, surface, thickness, optical, material and chemical properties--

- 1) **Spectral wavelength:** 190-2100 nm or wider
- 2) **Spectral resolution:** 0.3 nm or better
- 3) **Incidence angle:** Automatic angle selection from 35-90° or better with 0.01° step
- 4) **Measurement Modes:** Reflectance and transmittance
- 5) **Sample mounting:** User friendly sample mounting and automatic alignment
- 6) **Sample thickness:** Suitable for photo-sensitive, single/multi layer film (1 Å - 30µm or more)
- 7) **Sample size:** 300mm or larger
- 8) **Focusing:** Auto focusing (positioning) and camera for view of measurement spot
- 9) **Stage:** Automatic stage (50mm x 50mm) for mapping
- 10) **Software:** Complete software for running the system for routine and advance data analysis
- 11) **Computer:** Latest PC with 17” flat panel monitor
- 12) **Power:** Single phase UPS supply with 1 hour back-up
- 13) **Table:** A suitable sturdy table as per requirement
- 14) **AMC:** Subsequent years AMC and CMC price after 3-yrs standard free warranty is over to be mentioned

II. Optional items:

- 1) Heating stage (RT-300°C)
- 2) Cryo-stage (LN2)
- 3) Liquid cell
- 4) Sample tilt and rotation stage
- 5) A set of essential spares for 5 years with price
- 6) List of optional item for future up-gradation

III. Installation and training:

Free installation and training (operation and maintenance) at IMMT, Bhubaneswar.
All operation and service manuals need to be provided.

IV. Warranty:

Free 2 years standard warranty, and 3 years AMC after warranty period is over.

XXXXXX

Ref. No.PI/72/2011

Details specification of Laboratory Pressure Filter Test Rig(Complete unit):

Broad Specification of the Item

The filtration unit should be capable for filtering water from processed iron ore fines.

Minimum Capacity of 150 kg per hour solids out put of iron ore concentrate or tails .

Operating pressure minimum 12 bar

Filter test rig should contain

- Filter press with filtrate manifold, hydraulics, pumps
- Complete with common piping and valve connection with filter plates and filter media kits, pressing plates,
- Slurry feeding pump system to filter press
- Slurry tank with agitator
- Wash water system
- Electronic control panel
- Spares for filter media

With appropriate power connection AC-50 Hz 220 V single phase or 440 V three phase.

The Filter machine should give results in following data

- the total length of cycle time including individual phases [min]
- filter capacity [l/m²h or kg/m²h d.s.]
- residual moisture in the cake [%]
- solids in the filtrate [mg/l]
- amount of washing water needed [l/kg of wash liquid per dry solids content in the cake, l/l of wash liquid per the feed volume]
- the result for the washed cake
- air consumption [m³ /m²min]
- choice of the filter cloth
- Training, operational procedure, service manual should be provided
- Spares for three years
- Warranty for three years

Xxxxx

Ref. No.PI/71/2011

Details specification of Fluorescence /Luminescence Spectrometer:

FLUORESCENCE / LUMINESCENCE SPECTROMETER required for studying luminescence spectra of liquid and solid (powder, bulk & film form)

Computer-controlled rationing luminescence spectrometer with the capability of measuring fluorescence, phosphorescence or chemiluminescence and bioluminescence. Pulse rate, delay and gate times can be varied.

Source: Pulsed xenon flash lamp. Delay (td) and gate time (tg) can be varied to measure phosphorescence. Source can be turned off for measuring chemiluminescence and bioluminescence

Monochromator: Excitation 200 – 800 nm or better with zero order selectable. Emission: 200-900nm or better (Photomultiplier). Synchronous scanning should be available with constant wavelength or constant frequency difference. Standard excitation cut-off filters should be provided.

Wavelength Accuracy: +/- 1.0 nm

Wavelength Reproducibility: +/- 0.5 nm

Spectral band pass: The excitation and emission slits should be 2.5-15 nm and 2.5 –20 nm respectively and can be varied and selected in 0.1 nm increments

Scanning Speed: 10 – 1500 nm per minute with 1 nm increment

Emission filters: Computer selectable cut off filters - 290, 350, 390, 430, and 530 nm, a blank (to act as a shutter), a 1% attenuator and a clear beam position

Sensitivity: Minimum signal to noise level using the Raman band of water, excitation 350 nm is 750:1 RMS measuring noise on the Raman peak, and 2500:1 RMS measuring noise on the baseline.

Standard sample holder: Single position water thermostatted holder for 10 mm cuvettes. Sample holder for solid (powder, bulk & film form) and liquid samples should be provided.

Software operating system: Windows environment. The luminescence intensity and the excitation and the emission wavelength can be displayed in real time. Spectral and time drive data should be displayed in real time and can be stored on disk

Data Analysis: Appropriate software to perform mathematical calculations on stored data. These include arithmetic functions, smoothing, 1-4th order derivatives, area, peak, normalization, merge, difference, interpolate and least squares fit

A wavelength program should be available for storing up to 15 pairs of excitation and emission wavelengths with variable integration and cycle times. Specific application programs should be provided for determining phosphorescence decay, polarization

spectra, intracellular biochemistry programs and simple quantitation. Custom configured programming should be standard with some specimen programs.

Accessory: Front Surface Accessory for solid sampling should be quoted

Liquid nitrogen accessory

Single-cell, water-cooled Peltier accessory (operation 0-100 °C at a resolution of 0.1 °C)

Well plate reader 96, Cell holder

Price for each accessory item should be quoted separately

Indigenous: 2KVA online UPS with half an hour back up & frequency monitoring system should be quoted.

Branded PC with latest configuration and Printer available then should be quoted.

Water circulatory bath should be quoted

Technical literature, Operation manual & Service manual should be provided

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Ref. No.PI/70/2011

Details specification of Atomic Absorption Spectrophotometer:

ATOMIC ABSORPTION SPECTROPHOTOMETER

Optically true double beam having quartz quoted sealed optics
With configuration and accessories as mentioned below:

Basic Unit with sealed optics, 10 cm acetylene burner, nitrous oxide-acetylene burner, nebulizer, spray chamber, ignition coil, background corrector, detector, lamp turret, required licensed latest software with latest PC, Laser Printer, oil free compressor with filter and necessary accessories for installation.

The system should have low noise amplifier, fully automatic gas control i.e. it should control oxidant selection with automatic gas sequencing, oxidant and fuel monitoring and control. Ignition shut down should be automatic. The instrument should have continuous source double beam background correction using a high efficiency D2 arc lamp.

Monochromator

Optical system:

1. Focal length not less than 250 mm.
2. Holographic Diffraction Grating with minimum 1800 lines/ mm.
3. Wavelength range 190-900 nm. Automatic wavelength selection, optimization and peak positioning through computer software.
4. Slit: Variable band width from 0.2nm to 2.0 nm. Automatic selection.
5. Photometric accuracy: +/- 0.002 Abs. or better.

Detector

Photo multiplier tube (PMT)/ Solid state detector.

Light source

Minimum 4 lamp turret having facility of computer controlled lamp selection, alignment and optimization of energy.

Electrode less discharge lamp (EDL), Super Lamp or high intensity Hollow Cathode lamp facility should be built-in with at least two positions of the lamp turret.

Coded Hollow Cathode Lamps for following elements (single element):
Bi, Cr, P, Sn, Te, Ti and W.

Electrode less discharge lamp, Super Lamp or high intensity Hollow Cathode lamps for following elements:
As, Pb, Hg, Se and Sb.

Background correction

Continuum source double beam background correction using a high efficiency D2 arc lamp.

Burner

10cm single slot burner head for Air- acetylene operation.

Single slot burner head for nitrous oxide- acetylene operation.

Gas control

Fully automatic gas control i.e. it should control oxidant selection with automatic gas sequencing, oxidant and fuel monitoring and control. Ignition shut down should be automatic.

Nebulizer

Pre-mix corrosion resistance Nebulizer and capable of withstanding acidic solution and organic solvent.

Computer controlled change over from acetylene to nitrous oxide.

Sensitivity of the instrument: Minimum 0.75 A of 5ppm copper with 5 seconds integration time and relative standard deviation (RSD) less than 0.25%

Computer

Specs for Desktop PC:

Microsoft Software:

Genuine Windows® 7 Professional 32-bit

Processor:

2nd Generation Intel® Core™ i3-2120 Processor
(3.3GHz, 3MB, 2C)

Monitor:

47cm (18.5") HD Monitor

Memory:

4GB (2X2GB) Dual Channel DDR3 1333MHz

Hard Drive:

500GB 7200RPM SATA Hard Drive

Optical Drive:

16X DVD+/-RW drive

Warranty Support:

3Years Onsite Service

Printer:

HP LaserJet Pro M1136 Multifunction Printer

The AAS operating software should be Windows 7 based, multitasking with a provision of calibration, recalibration, data storage, data manipulation, reslope, post data run, display of recommended condition, graphs, curves, absorbance peaks, background correction, inter element correction including fault error finding diagnostic features, statistical parameters, etc. The software must have the facility of reprocessing the data.

Safety Devices

Safety interlocks to prevent flame ignition if the burner head, the nebuliser, end cap or the burner drain system is not correctly installed; the level of liquid in the drain vessel is in correct; or the gas pressures are too low. Interlocks will automatically shut down the gases if a flame is not detected. The flame will safely extinguished in case of a power failure.

Graphite Furnace Atomizer

Integrated Graphite Furnace Atomizer with Pyrolytically coated tubes with integral platform, fast heating rates, fast electronics, Argon gas stop flow during atomization, True Temperature Control (TTC) through out entire temperature range, Automatic Baseline Offset correction for obtaining accurate peak area measurements etc.

- Analytical programme with atleast 12 steps with following parameters
 - a) Temperature: Minimum ambient to 3000°C in steps
 - b) Ramp and Hold time: 0 to 99 sec in steps of 1 sec.
 - c) Re-circulating Cooling system.
 - d) Furnance with auto sampler

Both flame and furnace atomizers should be motorized. The change over and alignment of furnace or flame atomizer should be automatic i.e. computer controlled.

Graphite Furnace Atomizer should be complete with cooling water circulation and other installation accessories.

Hydride Vapour Generation System

Automatic Flow Injection System for analysis of Mercury and Hydride forming elements.

Auto sampler for standard calibration and sample analysis with Graphite furnace atomiser and preferably with Flame- AAS and HVG-AAS, complete with sample tubes.

Air compressor

Oil free noise less air compressor complete with buffer tank, filters etc.

Double stage Gas Regulators

Double stage stainless steel Acetylene Regulator- 2 numbers

Double stage stainless steel Argon Regulator- one

Double stage stainless steel Nitrous oxide Regulator with heater.- one

Fume hood with exhaust system suitable for AAS.

Microwave digester for AAS sample preparation

Microwave digestion system with temperature and pressure sensor useful for AAS solution preparation. The system can be used for digestion of all type of samples like ore minerals, rocks, soil, sediment, plant tissues, animal tissues, plastics etc.

Spares for five years, please specify.

Price break up for each item.

Manual: Operation & service manuals.

Technical literature with specification for each item.

Warranty: for minimum one year.

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Ref. No.PI/57/2011

The Details specification of A Portable CCD Camera based image processing system for Particle Velocity & Temperature measurement etc:

1. Hardware should consist of:

- A CCD camera based image processing system (No of Pixel 1280X1024 or above)
- A lens protection from the hot spray particles using air knife (with compressed air)
- A computer for running the software.

2. Application Software should have at least the following features:

- Spray particle temperature, velocity, flux density and size measurement in real time.
- Display the distribution of temperature, velocity and flux density in graphical form.
- Show the flame/spray stream width & divergence.
- External triggering to carry out the analysis as per the frequency of throwing the particles.
- While making samples from the spray, a continuous monitoring of the sample temperature should be available.
- For presentation and documentation purpose, the camera should give the real captured pictures of spray corresponding to the measured values thus allowing the visualization between the flame/spray appearance and measured data.

3. Continuous real-time measurement of all process parameters, such as:

- Particle Temperature : Range-(1000-4000)°C, resolution- 1°C
- Particle Velocity : Range-(1-2000) m/sec, resolution(0.1-5)m/sec
- Spray vertical position : ± 10 mm, resolution-0.1 mm
- Spray width : 1-36 mm, resolution-0.1 mm
- Spray angle : $\pm 10^\circ$, resolution- 0.5°
- Spray divergence : $\pm 15^\circ$, resolution- 0.5°
- Particle size : 10 μm to 500 μm
- In-built Software with Laptop (core i7 processor, 6 GB RAM)

Other Requirement:

The company should have supplied the similar system in India.

Optional :

Attachment for On-line measurement of temperature of substrate during spraying.

General Conditions:

- (i) Spares and accessories required for the system for 2 years may be quoted.
- (ii) Warranty and guarantee conditions are to be offered for 36 months from date of installation of instruments.
- (iii) Pre-installation requirement should be given.
- (iv) Vendor to indicate the after sales service back up in India

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