



NATIONAL PHYSICAL LABORATORY

(Council of Scientific & Industrial Research)

Dr. K. S. Krishnan Marg, Near Pusa Campus,
New Delhi -110 012.

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Global/Open Tender Notice No: 05/2011

Director, NPL invites tenders from reputed Indian / foreign manufacturers for the supply of the following item(s) under two bid systems:

| SN. | TENDER NO. | ITEM | QTY | EMD (In ₹) |
|-----|-----------------------------------|---|---------|---------------|
| 1. | 14-VII/BD(252)11-PB / T-64 | Mask Aligner for Photolithography | One No. | 3.00 Lacs |
| 2. | 14-VII/PK(2304)11-PB/ T-65 | Glove Boxes Integrated with Thermal Evaporator | One No. | 4.00 Lacs |
| 3. | 14-VII/MK(2306)11-PB/ T-66 | Ultrafast Transient Absorption Spectroscopy System with femto-second Pulsed laser | One No. | 10.00 Lacs |

The detailed Tender Documents with complete terms & conditions with technical specifications are available on our website <http://www.nplindia.org>.

Last date of receipt of complete tender(s) is **NOVEMBER 18, 2011 up to 12.00 Noon. (IST)**.

The date of opening of technical bid(s) is **NOVEMBER 18, 2011 at 02.30 PM. (IST) onwards**.

Stores & Purchase Officer



NATIONAL PHYSICAL LABORATORY

(Council of Scientific & Industrial Research)

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Global/Open Tender Notice No.- 05/2011

October 14, 2011

Director, NPL invites tenders in closed/sealed covers with wax/cello tape/ company seal from the reputed Indian/foreign manufacturers or sole authorized dealers/distributors for the supply of the following item(s):

| S. No. | Tender Number | Name of the Item | Qty. | EMD (In ₹) | Tender Fee (In ₹) | TB/SB* |
|--------|-----------------------------------|---|---------|------------|-------------------------|--------|
| 1. | 14-VII/BD(252)11-PB / T-64 | Mask Aligner for Photolithography | One No. | 3.00 Lacs | 300/- (If buy from NPL) | TB |
| 2. | 14-VII/PK(2304)11-PB/ T-65 | Glove Boxes Integrated with Thermal Evaporator | One No. | 4.00 Lacs | 300/- (If buy from NPL) | TB |
| 3. | 14-VII/MK(2306)11-PB/ T-66 | Ultrafast Transient Absorption Spectroscopy System with femto-second Pulsed laser | One No. | 10.00 Lacs | 300/- (If buy from NPL) | TB |

Interested parties may download the tender documents directly from the website free of cost & submit them without depositing any tender fee. Both the bids i.e. the Technical & Price bids must be **submitted** on or before **NOVEMBER 18, 2011 up to 12.00 Noon.** along with EMD.

Alternatively, the same may be **purchased** from Room No. 227-A, Purchase Branch up to **November 14, 2011** against a request letter along with Draft of Rs. 300/- in Indian Rupees or in equivalent Foreign Currency in favour of The Director, NPL, New Delhi towards the non refundable & non- transferable tender fee.

All the bids except the price bids of two bid system will be **opened** on **NOVEMBER 18, 2011 at 02.30 PM.** onwards in the presence of the bidders, who wish to be present. The Director, NPL, reserves the right to accept/reject any offer in part or full without assigning any reason.

*TB – Two Bid Tender System

SB – Single Bid Tender System

STORES & PURCHASE OFFICER



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Global/Open Tender Notice No.- 05/2011

October 14, 2011

TENDER DOCUMENT FOR OPEN/ GLOBAL TENDER

(TERMS & CONDITIONS INCLUDING INSTRUCTION TO BIDDERS AND CONDITIONS OF CONTRACT)

1. **GENERAL:** Quotations in closed cover are invited on behalf of the Director, National Physical Laboratory, New Delhi from the reputed Indian and foreign manufacturer. **The offer/ quotation must be strictly as per required specifications and the tender terms & conditions.**

ELIGIBILITY CRITERIA: *The Bidders should comply fully with the Technical Specifications in the tender documents.*

2. **PREPARATION AND SUBMISSION OF OFFERS:**

- a) Quotation should be submitted directly by the original manufacturer/supplier or its sole authorized distributor/dealer/Indian Agent. In case of bid by authorized dealer/distributor/Indian Agent, the manufacturer authorization should be attached with the technical bid as per **Annexure-'F'**.
One Indian Agent can participate in a tender on behalf of one manufacturer. No offer will be entertained if the same Indian Agent is representing another manufacturer.
- b) In case a bidder is not doing business within India, it shall furnish the certificate to the effect that the bidder is or will be represented by an agent in India equipped and able to carry out the supply, maintenance, repair obligations etc. during the warranty and post-warranty period or ensure a mechanism at place for carrying out the supply, maintenance, repair obligations etc. during the warranty and post-warranty period.
- c) The bidder shall bear all costs associated with the preparation and submission of its bid irrespective of the conduct or outcome of the bidding process.
- d) The bidder should not indulge in any corrupt, fraudulent, collusive, coercive practices during the entire process of procurement and execution of contract/order.
- e) Before the deadline for submission of the bid, NPL reserves the right to modify the bidding document and to extend or not to extend the date of submission. Such amendment/modification will be notified to bidders receiving the bidding document in writing or by cable/fax/ email and will also be hosted on NPL website.
- f) Conditional tenders will be summarily rejected.
- g) A bidder may withdraw, substitute, or modify its bid after it has been submitted by sending a written notice signed by the authorized signatory before the date of submission of the bid. Any re-submission or modification in the bid should be submitted before the date & time of submission of bid as originally conveyed in the invitation of bid.
- h) No bid may be withdrawn, substituted or modified in the interval between the deadline for submission of bids and the expiration of the period of bid validity specified by the Bidder on the Bid Form or any extension thereof.
- i) First envelope marked "WITHDRAWAL" shall not be opened, but returned to the Bidder subject to submission of valid authorization to request the withdrawal. In case of substituted and modified bid, only the substituted bids and modified bids will be opened subject to production of authorization from the bidders.
- j) The quotation should be addressed to the Director, National Physical Laboratory, New Delhi and sent to the Stores & Purchase Officer.
- k) Each offer/quotation should be kept in separate envelope against each item of the tender notice.
- l) For items covered under Two-Bid -Tender System, quotation/offer should be submitted in two separate envelopes containing Techno-Commercial bid and Price bid and these put in one envelope.

m) **The outer cover containing the offer/quote should be super-scribed with our Tender No. (Not the Open/ Global/ Tender Notice No.), Due date and Date of opening of tender.**

n) **The offers must contain** the following documents :-

(A) Techno-commercial offers must contain:

- i.** Manufacturer authorization (as per clause 2(a)) as per **Annexure –‘F’**.
- ii.** Certificate by bidder not doing business in India as per clause 2(b).
- iii.** Technical literature/ leaflets and complete specifications of quoted model(s) along with commercial terms and conditions.
- iv.** Compliance statement/questionnaire of tender terms and conditions as per **Annexure-‘A’**
- v.** Compliance statement of specifications as per **Annexure- ‘B’**
- vi.** Bid Security/EMD (as per clause -4) as per **Annexure- ‘C’**
- vii.** In case of exemption from submission of Bid security, proof of registration with DGS&D/NSIC as per clause 4(a).
- viii.** Copies of previous supply orders (as per clause 9(c) and clause 24) as per **Annexure –‘G’**.
- ix.** Details of supplies of similar equipments as per clause 9(d).

(B) Price Bid offers must contain: (Only in case of two bid system)

- i.** Bid price as per clause 5 in format enclosed as **Annexure- ‘D’** or **Annexure- ‘E’** as applicable.
- ii.** Certificate of price reasonability as per clause 9(b).

3. **DUE & OPENING DATES:** The Offer/Quotations must **reach** at NPL on or before **NOVEMBER 18, 2011 up to 12.00 Noon**. The tenders will be **opened** at **2.30 P.M. on NOVEMBER 18, 2011** in the presence of bidders, who wish to present themselves at the time of opening of tender. In case opening date happens to be a holiday, the tender will be opened on next working day at the same time & location. The price bids of two bid tender system shall be opened after technical evaluation of technical bids. The date of opening of price bids shall be informed to the bidders found suitable in technical evaluation. No request for extension in the date of submission & opening of tender will be entertained. However NPL, may at its discretion, extend the deadline for submission of bids under intimation to bidders.

4. **EARNEST MONEY DEPOSIT (EMD):**

- a.** EMD in the form of Bank guarantee (**As per format enclosed as ANNEXURE- ‘C’**) or Term Deposit Receipt/FDR or Bank Draft of a scheduled bank pledged in the name of Director, National Physical Laboratory, New Delhi **valid for 180 days** from the date of opening of the tender for the required amount as mentioned in the tender notice separate for each item must be submitted along with the quotation (with the techno-commercial quotation in case of two-bid system and photocopy of the same enclosed with the price bid **and for foreign manufacturers they should furnish the EMD in foreign currency equivalent to Indian rupees**, otherwise quotation may not be considered. The firm registered with DGS&D/NSIC as manufacturer for the supply of the same category of item for which the party is submitting quotation will be exempted from submission of EMD. Intended parties will have to give proof of registration along with their quotation. EMD of the unsuccessful bidders shall be refunded without any interest at the earliest after finalization of the purchase of concerned item. The party must therefore, submit a pre-receipted Bill in triplicate along with the quotation (in case of EMD sent in form of Bank Draft) to enable us to refund their EMD.
- b.** The bid security /EMD may be forfeited if a bidder withdraws or amends or impairs or derogates its bid during the period of bid validity.

5. **PRICES**

Bid prices should be filled in the appropriate format enclosed as **Annexure ‘D’ and ‘E’**.

A. For goods manufactured in India:

- (i) The price of goods quoted Ex-Works including taxes already paid.
- (ii) VAT and other taxes like excise duty etc. which will be payable on the goods if the contract is awarded.
 - (a) The charges for inland transportation, insurance and other local service required for delivering the goods at the desired destination as specified in the price schedule form.
 - (b) The installation, commissioning and training charges including any incidental services, if any.

B. For goods manufactured abroad:

- (i) The price of the goods, quoted on FCA (Named place of delivery abroad) or FOB (Named port of shipment), as specified in the schedule form.
- (ii) The charges for insurance and transportation of the goods to the port/place of destination.
- (iii) The agency commission charges, if any.
- (iv) The installation, commissioning and training charges including any incidental services, if any.

C. We are exempted from payment of Excise Duty under notification number 10/97 dated 01.03.1997 and Customs Duty under notification No.51/96 dated 23.07.1996. **Hence Excise Duty and Customs Duty, if any, should be shown separately. No other charges than those mentioned clearly in the quotation will be paid.**

D. Sales Tax: We are not authorized to issue any Sales Tax Form 'C' & 'D'. However, being R&D Organization concessional Sales Tax Forms can be issued, if it is applicable in your states from where the material is being supplied.

6. VALIDITY OF OFFER :

The prices must be valid at least for a period of **90 days for indigenous supplies & 180 days for imports** from the date of opening of the Tender. No changes in prices will be acceptable in any condition after opening of tender till the validity of the offer or execution of the order whichever is later.

7. EVALUATION OF BIDS: Before submission of bid, the bidder is expected to examine all the instructions, forms, terms and specifications in the bidding document and should ensure that the following conditions are fulfilled:

- a)** Bidder Information form as per **Annexure-'H'**.
- b)** The price schedule should be enclosed and must be signed.
- c)** The bid validity should not be shorter than required.
- d)** The manufacturer's authorization should be enclosed in case the bidder is authorized dealer/ distributor.
- e)** The bidders should agree to provide the Performance Security.
- f)** The quoted goods should be as per required specifications.
- g)** In case the bid is substantially responsive, the purchase may request that bidder may submit the necessary information, documentations, within a reasonable period of time, to rectify, non-material, non-conformities or omission in the bid related to documentation requirements. Failure of the bidders to comply with the request may result in the rejection of its bids. But in case of the material deviation/reservation or omission which limits or is inconsistent with the bidding documents and the Purchaser's Rights or Bidders obligation under the contract or which if rectified, would unfairly affect the other bidders, the bid will be rejected.
- h)** The Purchaser shall correct arithmetical errors on the following basis:
 - (i)** If there is a discrepancy between the unit price and the line item total that is obtained by multiplying the unit price by the quantity, the unit price shall prevail and the line item total shall be corrected, unless in the opinion of the Purchaser there is an obvious misplacement of the decimal point in the unit price, in which case the line item total as quoted shall govern and the unit price shall be corrected.
 - (ii)** If there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and
 - (iii)** If there is a discrepancy between words & figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (i) and (ii) above.
- i)** Selling exchange rate/equivalent to Indian currency will be as on the date of bid opening in the case of single bidding and the rate on the date of opening of the priced bids in the case of two-part bidding.
- j)** The bids shall be evaluated on the basis of final landing cost as per **Annexure -'D'** in case of import and **Annexure -'E'** in case of indigenous items.
- k)** The comparison between the indigenous and the foreign offers shall be made on FOR destination basis and CIF/CIP basis respectively. However the CIF/CIP prices quoted by any foreign bidders shall be loaded further as under :
 - (a)** Towards customs duty and other statutory levies-as per applicable rates.
 - (b)** Towards custom clearance, inland transportation etc. – 2% of the CIF/CIP value.
- l)** Where the price quoted on FOB/FCA and CIF/CIP basis are the same, the Contract would be made on CIF/CIP basis only.

- m) The Purchaser reserves the right at the time of Contract award to increase or decrease the quantity of goods and services originally specified in the tender document without any change in unit price or other terms and conditions. Further, at the discretion of the purchaser, the quantities in the contract may be enhanced by 30% within the delivery period.

8. The Vague terms like “packing, forwarding, transportation..... etc. extra” without mentioning the specific amount/percentage of these charges will not be accepted. Such offers shall be treated as incomplete and rejected.

9. REASONABILITY OF PRICES :

- a) Please quote best minimum prices applicable for a premiere Research Institution, **leaving no scope for any further negotiations on prices.**
- b) **The quoting party should give a certificate to the effect that** the quoted prices are the minimum and they have not quoted the same item on lesser rates than those being offered to NPL to any other customer nor they will do so till the validity of offer or execution of the purchase order, which ever is later.
- c) Copies of **at least last three supply orders of the last 3 years** received from other customers along with details of such supply orders preferably in India for the same item/model **may be submitted with the offer** giving reasons of price difference of their supply order & those quoted to us, if any. (As per **Annexure –‘G’**).
- d) The party must give details of identical or similar equipment, if any, supplied to any CSIR lab during last three years along with the final price paid and Performance certificate from them.

10. ANNUAL MAINTENANCE CHARGES: The party **must** mention in the quotation, the rate/amount of annual maintenance charges, if we opt for maintenance contract after expiry of the warranty period. This is mandatory to mention.

11. SPECIFICATIONS:

- A. Specifications are basic essence of the product. It must be ensured that the offers must be strictly as per our specifications. At the same time it must be kept in mind that merely copying our specifications in the quotation shall not make the parties eligible for consideration of the quotation. A quotation has to be supported with the printed technical leaflet/literature of the quoted model of the item by the quoting party/manufacturer and the specifications mentioned in the quotation must be reflected/supported by the printed technical leaflet/literature. Therefore the model quoted invariably be highlighted in the leaflet/literature enclosed with the quotation. Non-compliance of the above shall be treated as incomplete/ambiguous and the offer can be ignored without giving an opportunity for clarification/negotiation etc. to the quoting party
- B. **The technical bid shall be evaluated for acceptability by the technical committee and may call the tenderers for discussion. If necessary, the committee may modify the technical specification to suit the NPL requirement. In such case the opportunity shall be given to the participating bidders for submitting the revised bid as per modified specifications, if any.**

12. COMPLIANCE STATEMENTS:

- a. **Bidders must furnish a Compliance Statement of each and every required Specification of our tender in the format at ANNEXURE –‘B’.** The deviations, if any, from the tendered specifications should be clearly brought out in the statement. Technical literature/leaflet showing the compliance of the specification may also be attached with the quotation.
- b. Similarly, **the Compliance Statement/questionnaire for Terms & Conditions of the tender may be furnished, as per the enclosed format at Annexure –‘A’**, along with quotation (with techno- commercial bid in case of two bid tender system).
- c. The firms are advised to submit both the compliance statements essentially along with their quotation failing which their offer may not be considered.

- 13. PERIOD & MODE OF DELIVERY:** The delivery period is the essence of supply; hence it must be indicated specifically in the quotation. Mode of delivery, tentative size and weight of consignment may also be indicated in the quotation.
- 14. PERFORMANCE SECURITY:** All the successful bidders will have to submit the Performance Bank Guarantee or establish a Standby Letter of Credit (SLOC) or a Bankers cheque / or FDR pledged in favour of DIRECTOR, NPL for required amount as per payment terms mentioned at clause **15** below except where supplier opts for release of amount equivalent to PBG after expiry of warranty period. The PBG format shall be provided to the successful bidder later on along with the purchase order.
- 15. PAYMENT CONDITION:**
- A. FOR INDIGENEOUS SUPPLIES:**
Payment on Bill Basis after supply: For local supplies the payment will be made only after satisfactory installation, commissioning and performance of the equipment at National Physical Laboratory, New Delhi and after certification by our technical expert/scientist. However, supplier will be required either to submit performance bank guarantee for **10%** amount of the total value of equipment, after installation of the material, valid up to 60 days after the expiry of warranty period or the equivalent amount shall be released after expiry of the satisfactory warranty period.
- B. FOR IMPORTS:**
The payment against imports shall be made through irrevocable L/C. **L/C will be opened for 100% FOB value. 90% of L/C** amount shall be released on presentation of complete and clear shipping documents and remaining **10%** shall be released after installation/demonstration/commissioning, subject to submission of PBG of equivalent amount to cover the warranty period. The PBG should remain valid up to 60 days after the expiry of warranty period. **In case of non-submission of PBG after installations/demonstration/commissioning, remaining payment i.e. 10% will be released only after the completion of warranty period.**
- 16. COMMENCEMENT OF WARRANTY PERIOD:** The warranty period of an item shall commence from the date of receipt of the item in good working condition and satisfactory installation/commissioning/demonstration at the project site in National Physical Laboratory, New Delhi. The warranty period and validity of Performance Guarantee shall be extended for the period of delay in satisfactory installation and delay in warranty services.
- 17. NO ADVANCE PAYMENT:** No advance payment will be made to any supplier.
- 18. INSTALLATION:** **The equipment should be installed/commissioned and demonstrated, by the supplier at the lab immediately** but in any case within **TWO MONTHS** after receipt of the item in the lab and the same will be put under operation to the satisfaction of our technical expert/Scientist who will test the performance of the equipment. No separate charges for installation etc. will be paid to the party beyond the quoted prices.
- 19. GUARANTEE/WARRANTY:** The equipment/instrument must be guaranteed/warranted for a period of at least **one year, if not specifically mentioned otherwise in the specifications sheet, from the date of its satisfactory installation/commissioning** against all manufacturing defects. If the equipment is found defective during this period the whole equipment or part thereof will have to be replaced/repared by the supplier free of cost at the lab. or at site of the supplier for which 'to and fro' expenses will be borne by the supplier. However, if the items are guaranteed for a period of more than one year, it may be specifically mentioned in the quotation.
- 20. SPARE PARTS:** Availability of spare parts of the equipment/instrument must be guaranteed for a period of at least seven years from the date of supply.
- 21. AFTER SALES SERVICES:** It should be clearly mentioned in the quotation whether the after sales services during and after the completion of warranty shall be provided directly by the supplier or their authorized agent/representative. Terms of the after sales services, if any, may be mentioned in the offer. However, in both the cases the original supplier shall be responsible for poor performance/services.

22. INSPECTION :

- a) The inspection of the system will be done by our technical expert /Scientist in the presence of firm's representative.
- b) In case of receipt of the material in short supply or damaged condition the supplier will have to arrange the supplies/ replacement of goods free of cost pending the settlement of the insurance case wherever applicable on FOR at the lab. or CIF basis till satisfactory installation of the system.
- c) The supplier **should arrange for physical inspection of the items directly or through their authorized representative within seven days of arrival of the consignment failing which they will be responsible for the losses.** After the shipment is effected, the supplier/its representative/Indian agents must remain in touch with the lab/instit. to ascertain the date of arrival of consignment.

23. AUTHORIZATION OF INDIAN AGENTS & INDIAN REPRESENTATIVE:

- a) In case there is involvement of an /Indian agent/representative in any form as mentioned at (b) below, an authority letter / copy of agreement from the principal manufacturer must be submitted with the quotation.
- b) Where quoting party/Indian representative claims to be the subsidiary or branch office or an authorized representative of the principal foreign manufacturer/supplier in India, then a copy of approval from RBI/Ministry for operating business in India as Subsidiary/Branch/Liaison office or Joint-Venture may be submitted with offer.
- c) The details of all supplies involving the foreign exchange shall be furnished to the Enforcement Directorate, New Delhi as per rule. It may be noted that only the quoting parties & their principals shall be responsible for violation of Foreign Exchange Management Act (FEMA) for not declaring the actual bilateral mutual interests, if any.
- d) Indian agency commission shall be paid only to the Indian Agents in Indian Rupee out of the quoted FOB/Ex-works prices, after receipt of goods in good working condition & satisfactory installation/demonstration/commissioning of the items.

24. USERS LIST :

- a. The list of users specifically for the same model/make of the quoted item (not the list of general users) along with the complete name, address & contact numbers of the user organizations/persons may be submitted with the quotation along with the performance certificates from all/some of them.
- b. **If you have supplied identical or similar equipment to other CSIR Labs./Instts., the details of such supplies for the preceding three years shall be given together with the prices finally paid.**

25. PENALTY CLAUSE FOR LATE DELIVERY & LATE INSTALLATION:

- a) **Subject to operation of Force Majeure, time for delivery and acceptance is the essence of this contract. The supplier shall arrange to ship the ordered materials within the delivery period mentioned in the order unless extended with/without penalty.**
- b) In case of delay in supply and/or late installation of the equipment/instrument on part of the supplier, a penalty @ 0.5% per week of Order/FOB value will be charged for delayed period subject to a maximum of 10% of order/FOB value.
- c) If the delay in the shipment of the ordered materials attributable to the supplier exceeds agreed time period from the date of original agreed upon date of shipment and extended with/without penalty, the National Physical Laboratory, New Delhi shall have the right to cancel the contract/purchase order and recover the liquidated damages from other dues of the party or by legal means. It will also affect the other/future business dealings with such suppliers.

26. TRAINING: Wherever needed, Our Scientist/Technical persons should be trained by the supplier at the project site free of cost. In case the person is to be trained at supplier's site abroad or in India it should be mentioned in the quotation clearly. The supplier should bear all the expenses for such training including 'to & fro' fares and lodging & boarding charges.

27. NON-SUBMISSION OF TENDER: In case you are unable to submit your quotation against our tender enquiry we would appreciate and expect a note of regret from your side giving in brief, reasons for not quoting.

28. DELETION OF NAME : Names of bidders, backing-out/defaulting after opening of tenders will be recommended for deletion from the list of suppliers in addition to forfeiture of EMD submitted by them, if any.

- 29. LATE/ DELAYED /UNSOLICITED QUOTATION:** Late or delayed/Unsolicited quotations/offers shall not be considered at all. These will be returned to the firms as it is. Post tender revisions/corrections shall also not be considered.
- 30. ACCEPTANCE OR REJECTION OF OFFER:** The Director, National Physical Laboratory, New Delhi reserves the right to accept or reject any quotation /tender in part or full without assigning any reason thereof. The successful bidder should submit Order acceptance within 15 days from the date of issue.
- 31. PAGE NUMBERING & SIGNATURES:** Your offer should be a page numbered and signed by an authorized signatory giving his/her name and designation below the signatures.
- 32. INTERIM ENQUIRIES:** No interim inquiries will be attended.
- 33. FORCE MAJEURE:** The Supplier shall not be liable for forfeiture of its performance bank guarantee, liquidated damages or termination for default, if and to the extent that, it's delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure. For purposes of this Clause, "Force Majeure" means an event beyond the control of the Supplier and not involving the Supplier's fault or negligence and not foreseeable. Such events may include, but are not limited to, acts of the Purchaser either in its sovereign or contractual capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes.

If a Force Majeure situation arises, the Supplier shall promptly notify the Purchaser in writing of such conditions and the cause thereof. Unless otherwise directed by the Purchaser in writing, the Supplier shall continue to perform its obligations under the contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.

- 34. DISPUTE SETTLEMENT:** The Purchaser and the Supplier shall make every effort to resolve amicably by direct informal negotiation any disagreement or dispute arising between them under or in connection with the Contract.

If, after twenty-one (21) days, the parties have failed to resolve their dispute or difference by such mutual consultation, then either the Purchaser or the Supplier may give notice to the other party of its intention to commence arbitration, as hereinafter provided, as to the matter in dispute, and no arbitration in respect of this matter may be commenced unless such notice is given. Any dispute or difference in respect of which a notice of intention to commence arbitration has been given in accordance with this Clause shall be finally settled by arbitration. Arbitration may be commenced prior to or after delivery of the Goods under the Contract.

The dispute settlement mechanism/arbitration proceedings shall be concluded as under:

- (a)** In case of Dispute or difference arising between the Purchaser and a domestic supplier relating to any matter arising out of or connected with this agreement, such disputes or difference shall be settled in accordance with the Indian Arbitration & Conciliation Act, 1996, the rules there under and any statutory modifications or re-enactments thereof shall apply to the arbitration proceedings. The dispute shall be referred to the Director General, Council of Scientific & Industrial Research and if he is unable to unwilling to act, to the sole arbitration of some other person appointed by his willing to act as such Arbitrator. The award of the arbitrator so appointed shall be final, conclusive and binding on all parties to this order.
- (b)** In the case of a dispute between the Purchase and a Foreign supplier, the dispute shall be settled by arbitration in accordance with provision of sub-clause (a) above. But if this is not acceptable to the supplier then the dispute shall be settled in accordance with provisions of UNCITRAL (United Nations Commission on International Trade Law) Arbitration Rules.

The venue of the arbitration shall be the place from where the purchase order or contract is issued.

Notwithstanding any reference to arbitration herein,

- (a)** The parties shall continue to perform their respective obligations under the contract unless they otherwise agree; and
(b) The purchase shall pay the Supplier any monies due the Supplier.

(Stores & Purchase Officer)

Encl:

- 1.** Format for Compliance of Terms & Conditions.
- 2.** Different Forms/ Formats enclosed as Annexure(s)
- 3.** Set of Specifications

FORMAT/QUESTIONNAIR FOR COMPLIANCE OF TERMS AND CONDITIONS

Tender No.: _____

Due Date _____

NOTE:

1. **Quotation will not be considered without submission of this format.**
2. **If a particular question is not at all applicable please write NA in compliance part in Col. No. 4 below.**
3. **Kindly see the relevant terms & conditions of the tender document as mentioned in Col. No. 3 in each question before replying to the questions mentioned in Col. 2 below).**

| SNo | Terms & condition of Tender document | Relevant Clause No. of the tender terms & conditions of the tender | Whether acceptable (say 'Yes' or 'No' (preferably use different colour ink for 'No') | Deviation from tender terms, if any, with reasons for noncompliance or alternative condition quoted for |
|-----|---|--|--|---|
| 1 | 2 | 3 | 4 | 5 |
| 1 | a.) Whether quotation is direct from Principal supplier/manufacturer or their own office in India (Please specify) | Clause 2(a) | | |
| | b) Whether quotation is being submitted by Indian Agent/authorized distributor/ dealer | Clause 2(a) | | |
| | c) Whether the agent is registered with DGS&D/NSIC | Clause 4(a) | | |
| 2 | a) Whether the Techno-commercial and price bids (for two bid tender system only) have been kept in separate envelopes duly marked with "Techno-commercial Bid" and "Price Bids" respectively. | Clause 2(l) | | |
| | b) Whether the tender No., Due date & Opening dates have been written outside all the envelopes. | Clause 2 (m) | | |
| 3 | Whether techno-commercial Bid contains EMD, technical literature/leaflets, detailed specifications & commercial terms & conditions etc. as applicable. | Clause 2(n)(A) | | |

| | | | | |
|----|--|-------------------------|--|--|
| 4 | a) Whether the required EMD is being submitted with the quotation | Clause 4 | | |
| | b) Please specify the form of EMD whether in the form of DD/bank guarantee or TDR/FDR (Please mention No., date & amount of EMD documents.) or Bid Security Format at Annexure –‘C’ | Clause 4 | | |
| | c) Pre-receipted bill for refund of EMD is enclosed (for bank drafts only) | Clause 4 | | |
| 5 | a) If the prices are on Ex-Works basis or FOB (names port of shipment) or FCA (named place of delivery abroad) | Clause 5 (A) & (B) | | |
| | b) Whether specific amounts or percentage of expenses like packing, forwarding, handling, freight, insurance, documentation etc. have been mentioned in quotation separately in clear terms. | Clause 5(B), (C) & (D) | | |
| 6 | a) Whether prevailing rates of sales tax, excise duty & other govt. levies (for indigenous supplies) have been given in quotation | Clause 5 (A), (C) & (D) | | |
| 7 | Have you mentioned the validity period of the quotation as per our requirements | Clause 6 | | |
| 8 | a) Whether the Price reasonability Certificate is submitted with quotation | Clause 9 (b) | | |
| | b) Whether copies of last two supply orders of the same item from other customers have been attached with the quotation | Clause 9 (c) | | |
| | c) If there is any difference in prices of last two orders & those quoted to us. If yes, please give reasons for the same | Clause 9 (c) | | |
| | d) Whether supplied in CSIR Labs. | Clause 9 (d) | | |
| 9 | Whether rates/amount of AMC after the warranty period is over has been mentioned | Clause 10 | | |
| 10 | Have you gone through the specification Clause & complied with the same | Clause 11 (A) & (B) | | |
| 11 | Whether the Make/Brand, Model number and name of manufacturer has been mentioned in the quotation and Printed technical literature/ leaflets of quoted items have been submitted | | | |

| | | | | |
|----|--|-------------------------------|--|------------------------|
| 12 | Whether compliance statement of specifications has been attached with the quotation. | Clause 12 (a) & annexure- 'B' | | |
| 13 | a) Whether the delivery period for supply of the items has been mentioned | Clause 13 | | |
| | b) Whether mode of delivery & tentative size & weight of the consignment has also been indicated | Clause 13 | | |
| 14 | Do you agree to the submission of Performance Bank Guarantee/Standby L/C and have you mentioned in your quotation about this. | Clause 14 | | |
| 15 | a) Do you agree with the payment terms for indigenous supplies? | Clause 15A | | No deviation permitted |
| | b) Do you agree with the payment terms for imports supplies? | Clause 15 B | | |
| 16 | Do you agree about the date of commencement of warranty period & its extension is necessary. | Clause 16 | | |
| 17 | a) Who will install/commission and demonstrate the equipment at lab. FREE OF COST | Clause 18 | | |
| | b) Will you be able to do it within a month | Clause 18 | | |
| 18 | Have you mentioned the guarantee/warranty period in your quotation and do you agree with guarantee clause? | Clause 19 | | |
| 19 | Spare parts | Clause 20 | | |
| 20 | After Sales service | Clause 21 | | |
| 21 | a) Do you agree that on receipt of material in damaged condition or short supply you will replace the same on CIF basis, free of cost pending the settlement of the insurance claim? | Clause 22 (b) | | |
| | b) Do you agree with the clause of physical inspection? | Clause 22 (c) | | |
| 22 | For Import Cases only: | Clause 23 | | |
| | a) Whether the Indian agent is registered with DGS&D | | | |
| | b) Whether the valid DGS& D registration certificate has been enclosed with the offer | Clause 23 (b) | | |
| | c) If the party is a subsidiary or corporate branch office of the foreign supplier, then whether copy of the approval from Reserve Bank of India is attached with the offer | Clause 23 (c) | | |

| | | | | |
|----|---|--------------------|--|--|
| 23 | Whether list of specific user's for the same item & model as quoted along-with performance certificates from the users is submitted with offer | Clause 24 | | |
| 24 | Whether you agree to the penalty clause for late delivery & installation? | Clause 25 (a to d) | | |
| 25 | Whether training to our scientist/technical person will be given free of cost . If yes, have you specified in quotation whether it will be in our lab? Or at supplier's site in India or abroad. | Clause 26 | | |
| 26 | a) Whether all the pages have been page numbered? | Clause 31 | | |
| | b) Whether quotation has been signed and designation & name of signatory mentioned. | Clause 31 | | |
| 27 | Do you agree to settle the issue as per the terms of Clause -34 of tender documents? | Clause 34 | | |

Signatures of the authorized signatory _____

Name of the signatory _____

Designation _____

Name & Seal of the quoting party _____

Dated: _____

FORMAT OF COMPLIANCE STATEMENT OF SPECIFICATIONS

| S. N. | Name of specifications/ part / Accessories of tender enquiry | Specifications of quoted Model/ Item | Compliance Whether “YES” Or “NO” | Deviation, if any, to be indicated in unambiguous terms | Whether the compliance / deviation is clearly mentioned in technical leaflet/ literature |
|----------|--|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
| | | | | | |

BID SECURITY FORM

Whereas (Hereinafter called “the tenderer”) has submitted their offer dated for the supply of (Hereinafter called “the tender”) against the purchaser’s tender enquiry No. _____

KNOW ALL MEN by these presents that WE (Name of bank) of (Name of country), having our registered office at (Address of bank) (Hereinafter called the “Bank”), are bound unto (Name of purchaser) (Hereinafter called “the purchaser”) in the sum of for which payment will 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..... 20.....

THE CONDITIONS OF THESE OBLIGATIONS ARE:

1. If the tenderer withdraws or amends, impairs or derogates from the tender in any respect within the period of validity of this tender.
2. If the tenderer having been notified of the acceptance of his tender by the Purchaser during the period of its validity.
3. If the tenderer fails to furnish the Performance Security for the due Performance of the contract.
4. Fails or refuses to accept/execute the contract.

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 Purchase 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.

The 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 authorized officer of the Bank)

Name and Designation of the Officer
Seal, Name & Address of the Bank and address of the branch

PRICE SCHEDULE FOR GOODS BEING OFFERED FROM ABROAD

Name of the Bidder _____

Tender No. _____

| 1 Sl No | 2 Item Description | 3 Country of origin | 4 Unit | 5 Qty | 6 Unit Price | | 7 Total price (5x6) | | 8 Charges for Insurance & transportation to port/ place of destination | | 9 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 | |
| | | | | | | | | | | | |

Total Bid price in foreign Currency _____ in words.

Signature of Bidder**Name:****Business Address:****Note:**

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

PRICE SCHEDULE FOR GOODS BEING OFFERED FROM INDIA

Name of the Bidder _____

Tender No. _____

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---------|------------------|-------------------|------|-----|--|--|--|--|---|---|
| Sl. No. | Item Description | Country of Origin | Unit | Qty | 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 & forwarding up to station of dispatch, if any | Charges of inland transportation, insurance up to Lab./Instt. | Installation, Commissioning & 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 _____

MANUFACTURER’S AUTHORIZATION FORM

[The Bidder shall require the Manufacturer to fill in this Form in accordance with the instructions indicated. This letter of authorization should be on the letterhead of the Manufacturer and should be signed by a person with the proper authority to sign documents that re binding on the Manufacturer]

Date: *[Insert date (as Day, month and year) of Bid submission]*

Tender No.: *[Insert number from Invitation for Bids]*

To: *[Insert complete name and address of Purchaser]*

WHEREAS

We *[insert complete name of Manufacturer]*, who are official manufacturers of *[Insert type of goods manufactured]* having factories at *[insert full address of Manufacturer’s factories]*, do hereby authorize *[insert complete name of Bidder]* to submit a bid the purpose of which is to provide the following goods, manufactured by us *[insert name and or brief description of the goods]*, and to subsequently negotiate and sign the contract.

We hereby extend our full guarantee and warranty in accordance with **Clause 19** of the Terms and Conditions of Contract with respect to the Goods offered by the above firm.

Signed: *[insert signature(s) of authorized representative(s) of the Manufacturer]*

Name: *[insert complete name(s) of authorized representative(s) of the Manufacturer]*

Title: *[insert title]*

Duly authorized to sign this Authorization on behalf of: *[insert complete name of Bidder]*

Dated on _____ day of _____ *[insert date of signing]*

PREVIOUS SUPPLY ORDERS FORMAT

Name of the Firm _____

| Order placed by {Full address of Purchaser} | Order No. and Date | Description and quantity of ordered equipment | Value of order | Date of completion of delivery as per contract | Date of actual completion of delivery | Remarks indicating reasons for late delivery, if any and justification for price difference of their supply order & those quoted to us. | Has the equipment been installed satisfactoril y? (Attach a certificate from the Purchaser/ Consigner] | Contact Person along with Telephone no., Fax no. and e-mail address. |
|---|-----------------------|---|-------------------|---|--|--|--|--|
| | | | | | | | | |

Signature and Seal of the Manufacturer/ bidder

Place:

Date:

BIDDER INFORMATION FORM

[The Bidder shall fill in this form in accordance with the instructions indicated below. No alterations to its format shall be permitted and no substitutions shall be accepted. This should be done on the letter head of the firm]

Date: *[Insert date (as day, month and year) of Bid Submission]*

Tender No.: *[Insert number from invitation of bids]*

Page 1 of _____ pages

- 1.** Bidder’s Legal Name *[Insert Bidder’s legal name]*
- 2.** In case of JV, legal name of each party: *[insert legal name of each party in JV]*
- 3.** Bidders actual or intended Country of Registration : *[insert actual or intended country of registration]*
- 4.** Bidder’s year of registration: *[insert Bidder’s year of registration]*
- 5.** Bidder’s Legal Address in Country of Registration: *[insert bidder’s legal address in country of registration]*
- 6.** Bidder’s Authorization Representative Information
Name: *[insert Authorization Representative’s name]*
Address: *[insert Authorization Representative’s address]*
Telephone/Fax numbers: *[insert Authorization Representative’s telephone/fax numbers]*
Email address: *[insert Authorization Representative’s email address]*
- 7.** Attach are copies of original documents of : *[check the box(es) of the attached original documents]*
Articles of Incorporation or Registration of firm names in 1 above.

Specification for Maskless exposer system for Pholithography with Microfluidics Option.

1 Maskless exposer system

Exposure Optics,

2 Light Source: 200 W mercury arc lamp/ Laser (UV diode)

2.1 Light source lamp lifetime: >1000 hours usage

2.2 Available wavelengths

a) 370 nm \pm 10 nm

b) 420 nm \pm 20 nm

2.3 Must give final Feature Sizes (structure size) of one micrometer or better

2.4 Should also consist module for Feature size of 5 micrometer or above

3 Must include gray scale exposer mode

4 Should be possible to pattern entire XY motion of the stage provided.

5 camera for substrate viewing, focusing and Alignment.

6 Integrated hardware and Software Functions

6.1 Auto-focus

6.2 Field calibration of optics/stage

6.3 Administrator control of user access privileges

6.4 Program storage/retrieval

6.5 Automated level to level alignment

7 Automated Stage Assembly

7.1 stage size 150mm x 150mm or above for square substrates.

7.2 Stage X and Y Movement Total travel: 150 mm

7.3 Accuracy: ± 1 micron over entire length of travel per axis

7.4 Z Movement, Total travel: 5 mm or better

7.5 Universal vacuum chuck to support 150 mm x 150 mm substrates

8 Substrate size 150 mm x 150 mm or above

9 Training on operation, maintenance of the equipment at user site.

10 Operation and Maintenance Manuals (in English language) to be supplied on clean room compatible Paper

11 Detail of utilities and foot print of the equipment required to be mentioned.

12 Operating voltage 230V, 50Hz single phase

13 Provide the list of labs/ foundries with minimum one installation in India or abroad where the company has already installed their Mask aligners with similar or better configuration.

14 Installation should be by the manufacturer's engineer.

15 A standard warranty for a minimum period of one year from the date of

installation and acceptance.

16 Essential spares for 5 years trouble free operation to be quoted separately.

17 Optional items:

- Intensity meter with 370 nm \pm 10 nm and 420 nm \pm 20 nm laser
- Custom bandpass and energy control filters
- Spare lamp assemblies
- Additional reduction lenses for varying pixel size
- Standard optics and 3X reduction lens for larger feature patterning.
- Upgrade X and Y stage travel to larger sizes
- Microfluidics research platform for stage area
- Rotational stage for cylindrical substrate patterning
 - Automatic alignment system

Glove boxes integrated with thermal evaporator

Technical Specifications:

Glove Box 1:

1. Made of Stainless Steel with dimension ~ 1500 x 900 x 780 mm³.
2. Should contain at least three shelves mounted at the backside of the glove box for storage of materials.
3. Polycarbonate window with 3 glove-ports (~ 220 mm in dia) in box front side.
4. Controlled ambient atmosphere; Moisture < 1ppm, Oxygen < 1ppm: Pressure range -15 to +15 mbar: Working gases Nitrogen, Argon.
5. Should contain oxygen sensors with measurement range < 1 ppm - 1000 ppm and 1000 ppm - 20 %. Should contain moisture sensor with range < 1 ppm - 1000 ppm and 1000 ppm to ~ 50 %.
6. Should contain gas purifier for removal of solvents, oxygen and moisture from the glove box to maintain the above controlled atmosphere. Gas purifier should have regeneration facility so that it can be used for long term.
7. Should contain a solvent trapping system with activated charcoal load for solvent removal from the glove box.
8. The glove box should contain lighting provision mounted on the front side.
9. Should contain two HEPA dust filters for gas inlet and outlet.
10. At least five number of KF 40 flanges for power feed throughs/vacuum/gasses/liquid lines.
11. Should contain all the necessary cables and connectors.
12. Power supply: 220 V AC, 50 Htz, single phase.
13. Should contain interlock and emergency switches for safe operation.
14. Complete operation through PLC controller with PC and LCD touch screen monitor.
15. All the valves should be electro-pneumatically controlled.
16. Should contain a mini antechamber of diameter of ~150 mm and length of ~ 400 mm to transfer small substrates and material into the glove box.
17. Should contain an antechamber of diameter of ~ 400 mm and length of ~ 800 mm on the left hand side of the glove box.

18. Should contain oil free rotary pump connected to the antechambers and glove box with throughput speed of $10 \text{ m}^3/\text{h}$ and 210 l/s for N_2 , with digital gauges for pressure/vacuum measurements.
19. Should contain a UV-Ozone/plasma cleaner with max substrate size of $160 \times 160 \text{ mm}$ with gas input through needle valve.
20. Should contain an integrated programmable spin coater with speed $\sim 0\text{-}6000 \text{ rpm}$ with vacuum chucks for $1'' \times 1''$ to $4'' \times 4''$ substrate.
21. Should contain a programmable hot plate with dimensions $200 \times 300 \text{ mm}^2$, for sample curing. The hot plate should be of $\sim 1000 \text{ W}$ with temperature range $\sim 30^\circ\text{C}\text{-}300^\circ\text{C}$ with accuracy of $\pm 1^\circ\text{C}$.
22. Should be integrated with the Glove box 2 with a manually operated T-shaped antechamber of diameter of $\sim 150 \text{ mm}$ and length of $\sim 400 \text{ mm}$ with tray and platform arrangement.

Glove Box 2:

1. Made of Stainless Steel with dimension $\sim 1200 \times 900 \times 780 \text{ mm}^3$.
2. Polycarbonate window with 2 glove-ports ($\sim 220 \text{ mm}$ in dia) in box front side
3. Same as items 4-15 of Glove box 1 mentioned above.
4. Should contain oil free rotary pump connected to the antechambers and glove box with throughput speed of $10 \text{ m}^3/\text{h}$ and 210 l/s for N_2 , with digital gauges for pressure/vacuum measurements.
5. Should be integrated with a vacuum evaporation chamber (please see the specification given after specification of Glove box 3).
6. The thermal evaporator should contain the manually operated door with front opening for easy transportation of the substrate and materials from the glove box to the evaporation chamber.
7. Should be integrated with the Glove box 3 with T shaped ante chamber of diameter of $\sim 400 \text{ mm}$ and length of $\sim 800 \text{ mm}$, with tray and platform arrangement, to transfer big instruments into the glove box.

Glove Box 3:

1. Same as 1-16 of Glove box 1.
2. Should contain the robotic glue dispenser for encapsulation and sealing of devices of $\sim 150 \times 150 \text{ mm}^2$.
3. Should contain a UV-curing lamp of $\sim 250 \text{ watt}$ with intensity $\sim 250 \text{ mW/cm}^2$.

Vacuum evaporation chamber

1. Made up of stainless steel.
2. Should be integrated/interfaced with the glove box 2 for the free access from inside the glove box as well as from outside through the outside service door.
3. The chamber size should be of $\sim 500 \times 500 \times 500 \text{ mm}$.
4. Should be integrated with the oil free pump with combination of diaphragm & turbo pump to back the cryo pump to give the base pressure better than $1 \times 10^{-6} \text{ Torr}$ in the chamber. The cryo pump should be integrated with the evaporation chamber by the gate valve.
5. The size of the front opening door inside the glove box should be of the size of the evaporation chamber (i.e. $\sim 500 \text{ mm}$).
6. The door of the chamber opening from outside should contain a view port of at least 100 mm .
7. The doors of the chamber can have manual opening/closing mechanism.
8. Should contain 6 set of evaporation (4 for organics and 2 for metals) sources where all the sources should have separate low tension power supplies. Each source should have independently operated individual shutter and individual shutters for the substrates. There must be the co-evaporation facility for the sources.
9. Shield should be provided between the evaporation sources to avoid the contamination of the sources.
10. Should contain at least 3 quartz crystal thickness monitors (one for two sources) and controllers with water cooling.
11. The organic sources should be suitable for evaporation of organic small molecules.
12. The temperature of the source should be precisely controllable with current $0\text{-}300 \text{ Amp}$, and $0\text{-}10 \text{ V}$.

13. Should contain removable substrate holder with substrate rotator with rotational speed ~ 5-50 rpm.
14. The substrate holder should be suitable for processing of four piece of ITO substrate of ~25 x 25 mm².
15. Should have digital magnetron inverted and pirani gauges for vacuum measurements.
16. Should have substrate heating facility upto ~ 250°C.
17. The operation of the system should be completely programmable with integrated calculation functions and touch panel control units with PC.
18. Should contain gas inlets and outlets with MFCs.
19. Should contain all the necessary cables and connectors.
20. Power supply: 440 V AC, 50 Htz, 3-phase.
21. Should contain the gate valve interlock facility and emergency switches for the safe operation.

Other

1. The company should install the system at the user place and give operational training with test evaporations of OPV structures.
2. At least one year warranty.

Specifications for Ultrafast Transient Absorption Spectroscopy System with Femto-second Pulsed Laser

A. Specifications for Individual components as part of the femto-second laser system consisting of Oscillator, Amplifier OPA, suitable diagnostics etc.

1. Broadband Ti:Sapphire oscillator for the amplifier system with an option to split the beam for performing other experiments using different spectrometers along with an integrated pump laser (Green) with $\geq 5W$

- Tunable wavelength from 780-820 nm
- Adjustable Pulse-width: greater than 35 fs to less than 25fs
- Adjustable bandwidth 30-60 nm
- Rep. rate: 70-90 MHz
- Pulse energy: ≥ 350 mW
- Beam divergence: ≤ 4 m rad
- Beam Quality: $M^2 \leq 1.3$
- Beam Dia: 0.75-2 mm
- Polarization: Linear
- Noise: $\leq 1\%$ rms
- Suitable beam splitters

2. Ti: Sapphire Regenerative Amplifier capable of pumping OPA and harmonics generator with the provision to split and route the beam to perform other experiments with different spectrometers. (The amplifier must be able to control the injection time, ejection time of the pockel cells in synchronization with seed oscillator and with the repetition rates of the amplifier.)

- ❖ Two Pockel cells system
- ❖ Pulse energy ≥ 4 mJ @800nm
- ❖ Rep Rate: 1 KHz
- ❖ Pulse duration : ≤ 35 fs
- ❖ The energy should be stable up to 8-10 hours of operation within 1% rms
- ❖ Beam quality: $M^2 \leq 1.3$

- ❖ Contrast Ratio : 1000: 1 Pre pulse and
100: 1 post pulse
Same or better
- ❖ Suitable beam splitters

Pump laser:

- i. Wavelength 527/532nm
- ii. Pulse Repetition Rate 1 kHz
- iii. Pulse Energy >20 mJ at 1 kHz
- iv. Pulse width <350 ns at 1 kHz
- v. Energy Stability < 1% rms for a long period of 8-10 hours

3. Optical Parametric Amplifier (OPA) System should be able to operate in the wavelength region from 190-2600 nm.

- The OPA system must be fully computer controlled for all of the components
- Repetition Rate: 1 kHz
- Output pulse duration should be less than 80 fs for any of the wavelength, with suitable optics (may also be provided if required).
- To be operated at 2mJ with damage threshold of ≥ 4 mJ.

4. High Harmonics generator: for generating up to 3rd harmonics of Ti:Sapphire amplifier.

5. Autocorrelator:

- Temporal width of amplified pulses 80 fs or less
- Pulse damage threshold: 5 mJ
- Wavelengths range from or 450-1600nm or better range

6. Fiber optic Spectrometer: 350-1000 nm with coupling fiber cable of length more than 2 m.

IR/UV Viewer: Wavelength from 350-1500 nm

8. Power meter: Capable of measuring average power output of all pumps, amplifier and oscillator sources

- from wavelength 190 -10,000 nm up to 30 Watt.
- Traceable to any NMI, namely, NIST, PTB etc.

9. Safety goggles for protecting from intense laser lines (at least 12 sets on the emission wavelengths)

B. Femto-second Transient absorption spectrometer: should be designed to work with a mode locked amplified femto-second laser to produce the spectral and kinetic data needed for investigations of photo excitation events on the few femto second and longer timescale i.e. 50fs onwards preferably in the sub-femto-second regimes.

- System should be a multichannel pump-probe transient absorption spectrometer.
- Continuum generation from 370 – 1600 nm Optional upto 2400nm.
- Capable of probing with White light continuum as well as single wavelength in the range from 240-1700 nm.
- Intrinsic resolution: less than 3 fs.
- Delay line: 8 ns fully operated with PC. Option for Extension to longer time window up to 1 ms.
- Transient absorption apparatus for simultaneous spectral data acquisition in 300-1700 nm optional upto 2400 nm spectral range.
- Inbuilt Beam alignment : suitable integrated camera
- To be able to work in transmission and reflection modes.
- Magnetically stirred sample chamber for liquid samples and a 2D translation holder for solid samples from size 10mmx10 mm to 1-2 inch circular wafers.
- Integrated cryostat for doing measurements at low sample temperature up to 5 K.
- Comprehensive softwares for automation and the data collection, analysis and display (3D) on a suitable monitor integrated with high end PC with latest configuration.

C. Vibration isolation optical table System - Two No.s

Two tables with 10x5 and 6x4 feet or nearest metric equivalent to be arranged in L shape. Thickness: 12 inches

- Working Surface: Ferromagnetic stainless steel, approx 4-6 mm thick with integrated damping layer
- Deflection Under Load (120 Kg): $<1.3 \times 10^{-3}$ mm
- Maximum Dynamic Deflection Coefficient: 0.4×10^{-3}
- Surface Flatness: ± 0.004 in. over 2 ft. square
- Mounting holes: M6 holes on 1 in. grid,

Pneumatic isolators and compressor system

- Stabilizer Pneumatic Isolators with Automatic Re-Leveling
- Air compressor (220V) to supply air to pneumatic isolators
- Max air pressure: 100 psi

Chillers wherever required.

AMC of all the systems and the extended warranty up to three years on the pump lasers, chillers.

Training:

- (1) At the installation site training for reinstalling and optimizing the performance of system to get hand-on experience with the system.
- (2) System and demonstration on standard samples available in lab or with the companies. On sight demonstration of all the characteristics.
