

**Request for Quote (India based vendors only) for the procurement of  
a pulsed laser deposition system. (Last date: 3<sup>rd</sup> May 2023)**

This is a Request for Quote (RFQ) from **Class I and Class II local suppliers/ manufacturers** only for the procurement of a pulsed laser deposition system, for the Centre for Nano Science and Engineering (CeNSE) at the Indian Institute of Science (IISc), Bangalore. IISc is India's best institution on higher learning and the Center for Nano Science and Engineering is home to one of the best academic fabs in the world that houses a 14,000 sq. ft. cleanroom.

**Only the Indian Original Equipment Manufacturer (OEM) or their distributor shall submit a response demonstrating their capabilities to produce the requested equipment to the primary point of contact listed below. The quotations should be on FOR-IISc Bangalore basis in INR only.**

With respect to this tender, the rules laid out by the Government of India in order No. P45021/2/2017-pp-BE-II issued by the Public Procurement Section, Department or Promotion of Industry and Internal Trade, Ministry of Commerce, and Industry, dated 4th June 2020 will be followed. The bidders must go through the Government of India order stated above and follow all the rules and regulations therein.

Relevant definitions as per Government of India order:

- **Class-I local supplier** - A supplier or service provider, whose goods, services or works offered for procurement, has local content equal to or more than 50%.
- **Class-II local supplier** - A supplier or service provider, whose goods, services or works offered for procurement, has local content more than 20% but less than 50%.
- **Local content** – The amount of value added in India which shall, unless otherwise prescribed by the Nodal Ministry, be the total value of the item procured (excluding net domestic indirect taxes) minus the value of imported content in the item (including all custom duties) as a proportion of the total value, in percent.

**Procedure:**

1. Vendors will be required to submit a technical proposal and a commercial proposal in **two separate sealed envelopes**. The technical bid should contain all commercial terms and conditions, except the price. **Only vendors who will be adjudged by the committee to meet the technical requirements will be considered for the commercial negotiation.**
2. The covering letter should clearly state that whether the vendor is a Class-I or Class-II local supplier distinguished by their "local content". Failing this the bid will be automatically rejected.
3. The vendor must state the percentage of the local content and provide self-certification that the item offered meets the minimum local content requirement. They should also give details of the location(s) at which the local value addition is made.

4. Separate detailed justification needs to be given to substantiate the qualification as Class 1 and Class 2 suppliers and the intender reserves the right to cross-check the factual validity of the same and one if some foreign parts or equipment is being put forward then please submit the “*bill of material*” details for the same for evaluation.
5. **The deadline for submission of proposals is the May 03, 2023, 5:00 pm Indian Standard Time.** Proposals should arrive at the Main office, GF-15, Centre for Nano Science and Engineering, Indian Institute of Science, Bangalore 560012, India, on or before the above deadline.
6. **The technical bid** must contain a point-by-point technical compliance document.
  - a. The technical proposal should contain a compliance table with 5 columns.
    - First column must list the technical requirements, in the order that they are given in the technical requirements below.
    - The second column must provide specification of the instrument against the requirement (please provide quantitative responses wherever possible)
    - The third column should describe the compliance with a “YES” or “NO” only. Ensure that the entries in the column 2 and column 3 are consistent.
    - The fourth column should clearly state the **reasons/explanations/context** for deviations if any. Without clear explanation, just stating YES” or “NO” will not be considered.
    - The fifth column may contain additional remarks. It can be used to highlight the technical features, qualify response of previous columns, or provide additional details.
  - b. Technical capabilities of any *suggested* accessories/add-ons that may enhance the usability, capability, accuracy or reliability of the tool. Vendors are encouraged to quote for as many add-ons as their tool portfolio permits.
  - c. Vendors are encouraged to highlight the advantages of their tools over comparable tools from the competitors
  - d. Items in addition to that listed in the technical table that the vendor would like to bring to the attention, such as data sheets, technical plots etc. can be listed at the end of the compliance table. Vendors are also encouraged to highlight the advantage of their tools over comparable tools from the competitors.
  - e. If multiple systems can fulfil the requirements, vendors can submit multiple bids.
7. The technical proposal will be evaluated against the technical requirement. Deviations from the technical specifications requested are allowed. Such deviations must be highlighted and justified. Their acceptance or rejection will be left to the discretion of the technical committee. Only the vendors, adjudged by the committee to be suitable to meet the technical requirements, will be considered for the commercial negotiation.

8. The commercial bid must contain:
  - a. Itemized cost of the system and *required* accessories, such as software, power supply, etc.
  - b. All accessories needed for the instrument to function as per the technical specification must be listed.
  - c. itemized cost, as an option, for any *suggested* accessories/add-ons that may enhance the usability, capability, accuracy or reliability of the tool. Vendors are encouraged to quote for as many add-ons as their tool portfolio permits.
  - d. The cost of shipping plus insurance up to IISc has to be included. IISc will help the shipping company to take care of the customs clearance at Bangalore Airport.
  - e. Please indicate the warranty provided with the tool. Warrant of 3 years or more is preferred.
  - f. Provide itemized cost for *required/expected* spares for 3 years of operation. For sake of this calculation, the vendor may assume active tool usage of 40 hours/week. This number will be used to estimate the life cycle cost of the tool.
  - g. The cost of annual maintenance contract (AMC). The details of AMC are given below. This number will be used to estimate the life cycle cost of the tool.
  - h. Length of time that the tools will be supported with service and spares from the date of installation. Our requirement is that the tools be supported for at least 5 years from the date of installation. To quote lowest price, vendors often quote for obsolete or soon-to-be obsolete equipment. This is NOT acceptable. For a user-facility like CeNSE, it is vital that the equipment be serviceable and supported for the foreseeable future. The length of guaranteed support will be used to estimate the life cycles cost of the tool.
  - i. The commercial bid should indicate the following separately: (a) equipment price (b) optional items (c) Freight and insurance cost (d) Shipping cost and (e) the Total cost.
  - j. The quotations should be in INR only.
9. As an additional option, provide cost of an annual maintenance contract (AMC) for 3 years, post warranty. The AMC must
  - a. cover 1 scheduled and 1 emergency visit per year.
  - b. The emergency visit should be supported with a 48-hour response window.
  - c. clarify if maintenance will be done by a trained onsite engineer (CeNSE employee) or a specialist from the OEM.
  - d. in case the OEM is foreign, clarify if maintenance will be done by a trained engineer from India (local representative or Indian subsidiary) or by a trained engineer from abroad.
  - e. include an itemized list of spares (e.g., maintenance kits) that are essential for scheduled visits.
10. The commercial bids will be evaluated based on life-cycle cost of the tool. This includes the cost of purchase, maintenance, spares, etc. The final decision will be me made by the committee.
11. The RFQ must include references of 5 previous installations, preferably in India. Please provide the names and contact addresses of the referees, so that the committee can contact

them independently. Details of such systems with model numbers and users should be provided.

12. **The quotations should be on FOR-IISc Bangalore basis in INR only. Please quote the price of each optional line item, separately.**

**All the proposals should be addressed to:**

The Chairperson,  
Attn: Dr. Sreetosh Goswami  
Centre for Nano Science and Engineering  
Indian Institute of Science  
Bangalore – 560012, India

The Proposals should arrive at the Main office, GF-15, Centre for Nano Science and Engineering, Indian Institute of Science, Bangalore 560012, India, on or before the deadline of May 3, 2023, 5:00 pm Indian Standard Time. The parcels should be delivered between 9 am to 5 pm.

Questions regarding this tender should be addressed to Dr. Sreetosh Goswami at the email address [sreetosh@iisc.ac.in](mailto:sreetosh@iisc.ac.in) with the subject line “Query \_Tool name\_Bidder’s name”.

Post such submission all vendors should send an email to [sreetosh@iisc.ac.in](mailto:sreetosh@iisc.ac.in) with the subject line: “Submitted bid\_Bidder’s name\_Tool Name” to intimate him of the submission within one day.

**II. General terms and conditions:**

1. The institute reserves the right to accept or reject any bid, or to annul the bidding process and reject all bids, at any time prior to the award of contract without thereby incurring any liability of the affected bidder or bidders.
2. Previous installations can be used by the committee to disqualify vendors with poor track record of service, build quality, system performance or poor availability of spares.
3. The bidder must not be blacklisted/banned/suspended or have a record of any service-related dispute with any organization in India or elsewhere. A declaration to this effect should be provided.
4. The vendor should be able to repair and maintain the equipment once it is installed. Clarify if periodic (preventive) maintenance can be done by a trained on-site engineer (i.e. IISc employee) or requires a specialist from the OEM. The bidder should have qualified technical service personnel for the equipment based in India and must assure a response time if <24 hours after receiving a service request.
5. All the quotations must be valid for at least 90 days at the time of submission.
6. The quotations should clearly indicate the terms of delivery, delivery schedule, tax, and payment terms.
7. In case of the award of purchase order, the vendor must provide an Order Acknowledgement within 30 days from the receipt of the Purchase Order.

8. The lead-time for the delivery of the equipment should not be more than 3 months from the date of receipt of our purchase order.
9. 100% payments will be released after the completion of delivery and satisfactory installation subject to TDS as per rules. As per GFR no advance payment can be made to domestic vendors, unless an equal amount of bank guarantee is provided.
10. The bidder is responsible for the installation of the equipment in the IISc campus.
11. Necessary training to operate the procured setup and required literature support (in English language) should be provided without additional cost.
12. Bidders should undertake to support the system with spares and software bugfixes, if any, at least for the next 5 years.
13. Data must be supplied along with the technical compliance documents. Technical bids without supporting data can be deemed as technically non-compliant.
14. Printed literature and published papers in support of all compliance to the prescribed specifications are encouraged.
15. All guaranteed specifications will have to be demonstrated, upon request, in an active installation. Failure to demonstrate any promised specifications will be deemed as technical non-compliance.
16. Technical evaluation by the institute must include demonstration to verify functionalities and capabilities of the system quoted. Any discrepancy between the promised specifications and demonstrated specifications will be deemed as technical non-compliance. If the need arises, the vendor must be ready to physically visit IISc for a techno commercial discussion.
17. The intender reserves the right to withhold the placement of the final order. The right to reject all or any of the quotations and to split up the requirements or relax any or all the above conditions without assigning any reason.

### **III. Technical specifications of the pulsed laser deposition (PLD) system:**

The quoted PLD set up needs to be meet the following specifications:

#### **Chamber**

12 to 14"-inch chamber with all ports with all CF ports for turbo, laser entry port, load lock, heater flange, and pressure gauges. Additional viewports must be provided for viewing.

#### **Load lock (optional)**

Load lock for 2" dia sample with magnetic transfer rod for sample and target exchange to and from the chamber. Gate valve should be there to separate the chamber from load lock is provided.

**Target carousel:**

Multi-Target (5 or more) with raster capability bottom mounted.

Target flange:

8" OD (CF 150) flange mounted with programmable stepper motor and DC/ AC motor should be offered. Programmable Controllers are desired for both stepper and DC/ AC motor. The controller should index the targets as well as raster and rotate them in front of the laser beam. The controller should also interface with the laser for multi-layer deposition. Contamination shields must be provided allowing only one target to be exposed to the laser at one time. All magnetic coupled movements must be connected to Windows based PC for operation with software.

**Sample stage with heater:**

A 2-inch sample with rotation is desirable. Radiation or resistive heater for operation in oxygen. The temperature desired is 900°C with 10mT oxygen partial pressure.

The substrate should be able to move up and down by 25 mm. (Bellow sealed) PID programmable temperature controller must be provided for the heater.

There should be a cooling mechanism for the heater electrodes.

**Optics:**

Programmable laser beam raster capability and focusing is necessary to enable large area deposition. Laser windows that can offer multiple depositions without cleaning are desired.

Beam bending optics should be provided for bending the laser beam and delivering it on to the target.

**Mass flow controller:**

MFC for standard gases (N<sub>2</sub>, Ar, O<sub>2</sub>) with isolation valve for complete gas cut-off 0-200SCCM range

**Pumps and gauges:**

Turbo dry pump (preferably 650 l/s or more and 10m<sup>3</sup>/hr or better) should be provided for the main chamber. Dry backing pumps must be provided for both the main chamber and for load lock. The chamber base pressure must go to 10<sup>-7</sup> mbar. A compact turbo vacuum pump should be included as an optional item for the load lock.

A compact full range gauge which can measure pressure from 1000 mbar to 1E-7 mbar should be provided.

**Spares and accessories:**

Laser entry CF viewport made of quartz -2, CF gaskets of appropriate dimensions.

**Gate Valve:**

Should be able to handle pressure differential of at least  $10^{-8}$  in the chamber and the load lock.

**Installation and Training:**

Installation and Training on usage of the machine (hardware and software) must be demonstrated at the Centre for Nanoscience and Engineering at IISc, Bangalore.

While the Laser, Power, gases with regulator, lines, substrate and targets to be provided, following demonstrations are to be done:

1. Base pressure of  $10^{-7}$  mbar or less.
2. Substrate temperature of 900°C or more.
3. Proper focusing of the laser spot on the target.
4. Uniform ITO film on YSZ substrate across 2 inches via substrate rotation along with target rastering and rotation.

Thanking you,

Sreetosh Goswami  
Assistant Professor

Centre for Nano Science and Engineering  
Indian Institute of Science, Bangalore, India 560012.

Office: +91-80-2293-3276

E-mail: [sreetosh@iisc.ac.in](mailto:sreetosh@iisc.ac.in)