

Telephone: **044-22574479**

Extn: 5442

Department of Electrical Engineering  
**Indian Institute of Technology, Madras**  
 I.I.T.P.O., MADRAS – 600 036.

Ref. No.

ELE	DEBD	2019	Turbo molecular pump, Gate Valve and the high vacuum measurement unit (10 <sup>-8</sup> T)
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Date: 01.05.2019

Due Date: 22.05.2019

Under Certificate of posting

To:

Dear Sirs,

1. Quotations are invited in duplicate for the various items shown below/overleaf/enclosed list.
2. The Quotations duly sealed and superscribed on the envelope with the reference no. and due date, should be addressed to the undersigned so as to reach him on or before the due date stipulated above.
3. The Quotations should be valid for sixty days from the due date and period of delivery required should also be clearly indicated.
4. If the item is under DGS & D Rate contract, Rate Contract Number and the price must be mentioned. It may also please be indicated whether the supply can be made direct to us at the Rate Contract price. If so, please send copy of the R.C. (Please note that we are not Direct Demanding Officers).
5. Relevant literature pertaining to the items quoted with full specifications (and drawing, if any) should be sent along with the Quotations, wherever applicable.
6. Local Firms: Quotations should be for free delivery to this Institute. If Quotations are for Ex-Godown, delivery charges should be indicated separately.
7. Firms outside Chennai: Quotations should be F.O.R Chennai. If F.O.R consignor station, freight charge by passenger train / lorry transport must be indicated. If Ex-Godown, packing, forwarding and freight charges must be indicated.
8. The rate of Sales / General Taxes and the percentage of such other taxes legally leviable and intended to be claimed should be distinctly shown along with the price quoted. Where this is not done, claim for Sales / General Taxes will be admitted at any stage and on any ground whatsoever. The taxes leviable should take into consideration that we are entitled to have Concessional Sales Tax applicable to non-Government Educational Institutions run with no profit motive for which a commission Sales Tax certificates will be issued at the time of final settlement of the bill.
9. Goods should be supplied carriage paid and insured.
10. Goods shall not be supplied without an official supply order.
11. Payment: Every attempt will be made to make payment within 30 days from the date of receipt of bill / acceptance of goods, whichever is later.

**Specifications enclosed and quotation to be sent to the below address:**

**Dr. Debdutta Ray**  
 Assistant Professor,  
 Department of Electrical Engineering,  
 Indian Institute of Technology, Madras,  
 Chennai – 600 036.

Yours faithfully,

HEAD / Project Co-Ordinator

**Turbo molecular pump, Gate Valve and the high vacuum measurement unit ( $10^{-8}$ T) with the following specifications for a thin film co-evaporation system:**

Sl. No.	ITEM	SPECIFICATIONS/FEATURES
	<b>Vacuum system</b>	
(a)	Turbo molecular pump (TMP) (1 No.)	<ul style="list-style-type: none"> <li>• Pumping speed (for N<sub>2</sub>): 350 l/s.</li> <li>• Compression ratio for N<sub>2</sub> &gt; 10<sup>9</sup></li> <li>• Rotational speed &gt; 49000 RPM +/- 2%</li> <li>• Run-up time &lt; 4 min</li> <li>• Ultimate pressure: &lt; 5x10<sup>-10</sup> mbar</li> <li>• The pump must be supplied with suitable display control unit and necessary cables (Complete TMP setup)</li> <li>• Mains voltage: 230V, 50Hz, single phase</li> <li>• Flange: DN 100 CF-F</li> </ul>
(b)	Electropneumatic UHV Gate Valve	<ul style="list-style-type: none"> <li>• Nominal Diameter: DN 100 CF-F</li> <li>• Closing/Opening time: &lt; 2 sec.</li> <li>• Service Life: 40000 cycles.</li> <li>• Minimum Pressure: &lt; 10<sup>-8</sup> hPa</li> <li>• Mains voltage: 230V, 50Hz, single phase</li> </ul>
(c)	Pirani and cold cathode gauge (integrated)	<ul style="list-style-type: none"> <li>• Integrated cold cathode and Pirani sensor</li> <li>• A measuring ranges from 10<sup>3</sup> mbar to 10<sup>-8</sup> mbar with digital display of pressure (display can be the pump controller display)</li> </ul>
(d)	Safety accessories	<ul style="list-style-type: none"> <li>• Backing pump relay box</li> <li>• Fore vacuum safety valve</li> <li>• Air cooling of TMP</li> <li>• Splinter screen for TMP</li> <li>• Vibration damper for TMP</li> <li>• Heating jacket for TMP</li> </ul>
(e)	Backing pump	<ul style="list-style-type: none"> <li>• Two stage rotary vane pump.</li> <li>• Pumping speed 20m<sup>3</sup>/h or more.</li> <li>• Mains voltage: 230V, 50Hz, single phase</li> <li>• Integrated gas ballast and HV safety valve.</li> <li>• Magnetic coupling.</li> <li>• adsorption filter, dust separator and oil mist filter.</li> </ul>

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**Important Notes:**

1. Provide break up of cost of each individual items. All items must be quoted. Please provide prices of individual units of the accessories needed for complete operation and connection with a standard physical vapour deposition (PVD) system. We may reject the tender if all items (listed above) are not included.
2. Please provide at least 3 references of laboratories where you have installed similar systems including specification of the systems. We may reject the tender if we find the reference systems unsatisfactory.

3. Please provide details of after sales service. The supplier should have service centre or facility with complete infrastructure in India to handle major repair of the Turbo Molecular Pump or related accessories. Critical spares should be available off the shelf in Indian offices. In case of a break down, maintenance and replacement of parts like bearing, motor parts etc and overall cleaning of the pump should be possible at purchaser's site. We may reject the quote if the after sales service details are found unsatisfactory.

4. Please provide a clear warranty statement.

5. Please provide separate technical and financial bids in sealed envelopes.

6. Please mark tender number on top of the cover envelope.

