

Tender Notification for the procurement of a Reactive Ion Etching (RIE) system with a Load lock

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Dear Sir/Madam,

Kindly send the lowest quotation for the following item on C.I.P. Bangalore basis. The quotation should clearly indicate the terms of delivery, delivery schedule, transportation charges if any, payment terms etc. The general terms and conditions are given in the last section below.

General terms and conditions:

1. The commercial bid and technical bids must be submitted in two separate envelopes. A technical bid must contain a point-by-point technical compliance document. The technical bid must not contain any price information.
2. The technical proposal should contain a compliance table with 5 columns. The first column must list the technical requirements in the order that they are given in the technical configuration below. The second column should describe your compliance in a "Yes" or "No" response. If "No" the third column should provide the extent of the deviation (please provide quantitative responses). The fourth column should state the reasons for the deviation if any. The fourth column can be used to compare your tool with that of your competitors or provide details as requested in the technical requirements table below.
3. As an option, please provide itemized cost 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 under the optional items.
4. Clarify if periodic (preventive) maintenance be done by a trained on-site engineer or requires a specialist from the OEM.
5. If maintenance requires OEM, as an additional option, provide the cost of an annual maintenance contract (AMC) for 3 years, post-warranty. The AMC must cover 1 scheduled and 1 emergency visit per year. It must also indicate who will service the AMC, an Indian agent, or the OEM. The AMC cost must also include an itemized list of spares that are essential for the scheduled visits.
6. The bid must include references of 3 previous installations, preferable in India. Please provide the names and contact addresses of the referees so that the committee can contact them independently.
7. A pre-tender meeting for any technical clarifications can be scheduled with the undersigned by sending an email.
8. Payment terms should be mentioned in the technical bid.
9. If multiple systems can fulfill the requirements, vendors can submit multiple bids.
10. After the award of the Purchase Order (PO), the vendor must provide an Order Acknowledgement within 15 days from the receipt of the PO.
11. Training for at least 2 users from IISc should be provided to make them well familiar with the operation of various components and successful day-to-day operation.
12. The purchase of optional items is subject to budgetary constraints.
13. The bidder must confirm that the system manufacturer runs his own clean room with at least 2 systems of the quoted type installed there.
14. Spare parts of the system must be available for min 7 years.
15. Supplier must confirm that he runs a free of charge service hotline. Include the telephone number and email and persons on the hotline. Telephone response time max 30 min.
16. Service visit response time by OEM engineer not agent max 2 working days.
17. IISc is registered with DSIR for availing custom duty exemption (CDE) for import orders and GST exemption (for INR orders in India). IGST is NIL for import order for IISc. Bidders should consider all these facts while submitting their bid. For import order, the Bill of Entry must be in the name of IISc for availing CDE. GST exemption certificate will be provided subject to the submission of the proforma invoice.
18. The purchaser reserves the right to accept or reject any bid and to annul the bidding process and reject all bids at any time before the award of contract without thereby incurring any liability of the affected bidder or bidders.

Technical specification of the RIE system:

1.	Etching Chamber design and construction	<ul style="list-style-type: none"> i. Chamber and all the parts inside the chamber must be compatible for etching different materials using Chlorine and Fluorine chemistry based on the following gases: SF₆, CHF₃, He, Ar, O₂, Cl₂, HBr, BCl₃ ii. 40 mm flange (larger) viewport and a side port for OES iii. No additional sealing or welds inside the process chamber iv. Heating up to 60 C v. The design of plasma source and pumping must be radially symmetric to ensure the best uniformity over a wide parameter range
2.	Console	<ul style="list-style-type: none"> i. Within an all-steel enclosure, the module should house all the electronic subsystems, control units, pneumatics, water, gas services, and the dedicated module control processor.
3.	Electrode	<ul style="list-style-type: none"> i. Substrate electrode for up to 150 mm wafers. ii. Grounded upper electrode with integrated shower head iii. Gas supply by 4 VCR connection iv. Helium heat transfer with mechanical clamping v. Electrode should be cooled by fluid vi. Temperature measurement should be by thermocouple embedded in the electrode. vii. Remote controlled chiller unit for electrode temperature control from -5 to 40 C viii. The full range of temperature control should automatically be controlled from the recipe without user intervention between the cooling and heating ranges.
4.	RF power supply	<ul style="list-style-type: none"> i. 600W, 13.56 MHz and directly coupled with auto-tuning, fixed capacitor positions controlled by PC ii. Measuring and visualization of forward and reflected power, dc bias voltage iii. Air cooled
5.	Vacuum system	<ul style="list-style-type: none"> i. Base pressure < 1e-5 mbar ii. Turbomolecular pump, pumping capacity at least 350lps, magnetic bearings and heated iii. Dry backing pump, 90m³/hr or better iv. 200mm VAT high vacuum gate and automatic throttle valve. Smaller throttle valve is not acceptable as it reduces the pumping throughput v. 100 mTorr heated CM gauge temperature compensated Penning gauge, vacuum pipework with electrical heating up to 60 C
6.	Gas supply	<ul style="list-style-type: none"> i. Gas pod for up to 8 MFC controlled gas lines ii. 5 non-hazardous lines and viton sealed MFC iii. Lines should be fitted with one electro-pneumatic isolation valve and in-line iv. Gases for immediate use: SF₆, CHF₃, He, Ar, O₂ v. Other three lines MUST be compatible and ready to use for a possible future upgrade with Hazardous gases such – Cl₂, HBr, BCl₃ vi. Setpoints of the MFCs can be adjusted from the user interface vii. Visualization of the setpoints as well as actual flow rates on PC monitor
7.	Load lock	<ul style="list-style-type: none"> i. Vacuum load-lock with small volume (approx. 6 lt) ii. Inter-chamber valve; VAT MonoVAT iii. Suitable independent dry pump iv. On starting a process request from the PC, the wafer should be automatically loaded for processing and returned to the load-lock and left under vacuum until the user is ready to retrieve it.

8.	Control, automation, and safety	<ul style="list-style-type: none"> i. Computer controlled system with software based on latest Windows OS ii. Including an automatic leak check and automatic MFC check iii. It should have a Plasma hold function between process steps to maintain power-on iv. Main system controller must be Programmable Logic Controller (PLC) v. The software should include full data logging capability of user-selectable run-time process parameters, to allow off-line verification and analysis of process conditions. vi. The system should not have a limit to the number of recipes it can store. vii. System tolerances should be editable by advanced user through the GUI. viii. It must be possible to mount the gas pod and PC separately. ix. The system is should be fully interlocked to protect the system hardware from any service failure (e.g. failed water supply for cooling purposes) and to protect the operator from electrical shock during maintenance procedures x. System should be left in a safe state, under vacuum, in case of failure.
9.	Data Logging	<ul style="list-style-type: none"> i. Should have a Graphical display of any parameter ii. Able to load in multiple steps and graph parameters iii. Able to graph parameters in various ways – as measured value, measured value and set value, set value – measured value iv. Ability to load in multiple recipes (and compare them graphically) v. Ability to display alarms and alerts associated with recipe steps loaded
10.	Mains	<ul style="list-style-type: none"> i. The system should be powered from a single 380-415v 50Hz 3-phase supply.
11.	Documentation and commissioning	<ul style="list-style-type: none"> i. Operation and maintenance Manuals on CD, and OEM manuals. ii. The systems should be commissioned and demonstrated to meet up to three standard processes. iii. Recipes to be provided for all requested process with starting points and trend information.
12.	Software and control system	The control and process software should be supported life-long. The operating system should be supported by the OEM.
13.	Compatibility with future upgrades	The system should be compatible with a future upgrade to ICP
	Optional Items:	
	(a)	Aluminum liner
	(b)	Optical Emission Spectroscopy for Process Control 250-900 nm wavelength range, complete with optical sensor attached to window of plasma reactor, optical fiber, CCD spectrometer, USB interface to PC and software
	(c)	Laser interferometer, end point detector 670 nm wavelength, motorized or manual x-y stage 20 mm x 20 mm Camera, view field 1 mm x 1 mm

Vibhor Singh
Dept of Physics
Indian Institute of Science, Bangalore
v.singh@iisc.ac.in