



# Indian Institute of Technology Kanpur

## Samtel Centre for Display Technologies

Enquiry number: SCDT/FlexE/2016-17/02

Date:18/05/2016

Sealed Quotations from prospective vendors are invited by Samtel Center for Display Technologies, IIT Kanpur for **REACTIVE ION ETCHING**. Detailed specifications, term and conditions are mentioned below:

Note: **The technical and financial bid should be submitted together in separately sealed envelopes.** The REACTIVE ION ETCHING. Must have following minimum technical specifications.

### Technical specifications for REACTIVE ION ETCHING:

Sl. No	<u>System Specifications:</u>	Complies/Does not comply/Not applicable
1	RIE(Reactive Ion Etching) System for R&D/pilot production, up to one 6" × 6" square sample's process. System should also be able to process odd-shaped smaller samples. The RIE system should be used to anisotropic etching of semiconductors and dielectrics, e.g. Silicon, SiN, and SiO <sub>2</sub>	
2	System Process Module should have a small foot-print. For example, it can house all electronic sub systems, control units, pneumatics and Turbo pump.	
3	System should be fully software controlled. The user interface should allow both automatic and manual operation.	
4	The software interlocks for high voltage, water, gas and vacuum and an emergency shutdown.	
5	Data to be stored in open format SQL database or similar, data logging should adhere to ANSI-ISA 88 standard.	
6	Remote Support: System should come with provision for remote access, such that the OEM should be able to login remotely into the system. The OEM should be able to troubleshoot the system remotely, as well as perform software upgrades.	
7	Software upgrades should be free for the entire life of the system.	
8	The system should be CE certified.	
9	System should provide full safety interlock along with EMO buttons in front and back.	

10	System should have power supply configuration as per Indian standards.	
11	System should have password protected operator access levels.	

Sl. No	<b><u>Chamber Configuration:</u></b>	Complies/Does not comply/Not applicable
12	The chamber should be capable of handling up to 6" X 6" glass substrates. . System should also be able to process odd-shaped smaller samples.	
13	Process Chamber: Should be made of single block of Aluminum to ensure maximum vacuum integrity. The chamber should have viewport(s).	
14	Electrode Size: 200mm diameter or larger.	
15	Electrode cooling: Ambient and/or liquid cooled. Chiller for maintaining electrode temperature should be included with the system.	
16	Electrode Material: Aluminum	
17	RF Electrode Bias: Greater than or equal to 300W solid state RF power supply, 13.56 MHz, coupled with automatic matching network. The matching network should be capable of manual tuning as well.	

Sl. No	<b><u>Vacuum Specifications:</u></b>	Complies/Does not comply/Not applicable
18	Turbo Pump with a mechanical backing pump with fomblin oil charge. The pumps should be capable of handling corrosive gases. Dry pump should be given as an option.	
19	Base Pressure: System should be able to reach $\leq 10^{-4}$ Pa base pressure in less than 1 Hr.	
20	Pump down feature should be such that it minimizes the turbulence, wafer movements and particle generation during the pump down.	
21	Pressure Control: Fast and accurate Automatic Closed Loop Pressure Control with Digitally controlled Valve.	
22	Process Pressure range: 0 to 1000mT. System should be equipped with Digital heated Capacitance Manometer for accurate process pressure control.	
23	Appropriate gauges should also be included for wide range pressure measurement (low to high pressure)	

<b>Sl. No</b> .	<b><u>System Gas Manifold Specifications:</u></b>	Complies/Does not comply/Not applicable
24	Gas Enclosure with extraction point to ensure safety	
25	Digitally controlled Mass Flow Controllers to be provided.	
26	Each gas channel to include a normally closed isolation valve on the inlet and outlet of MFCs.	
27	Gas lines should be constructed of $\leq 10$ RA finish 316 stainless steel tube.	
28	The common process gas mixing manifold should include a normally closed process gas isolation valve.	
29	Gas lines and MFCs to be provided for SF6, CF4, Ar, O2.	
30	SF6 and CF4 gas line to be equipped with Flush/bypass capability	
31	Gas Manifold should be capable of adding 2 more lines in the future.	
32	Gas manifold should be capable of Flush/bypass for future lines	
33	System should come with N2 purge capability	

<b>Sl. No</b> .	<b><u>Process Specifications:</u></b>	Complies/Does not comply/Not applicable
34	Si, SiO2, SiNx, SiOxNy etch recipes should be provided	
35	Appropriate cooling mechanism in order to prevent overheating during the etch process (typical etching time will be 30 seconds to 5 minutes).	
36	Uniformity across 6" wafer should be $\leq \pm 5\%$ .	
37	Batch to batch uniformity should be $\leq \pm 5\%$ .	

Sl. No	<b><u>Scrubber Specification (To be quoted as Optional):</u></b>	Complies/Does not comply/Not applicable
38	System should be supplied with a Scrubber for the abatement of F based by products	
39	Should be compact and stand alone	
40	Should be easy to run and maintain	
41	Should have chemisorption based dry scrubbing technology	
42	Room temperature operation	
43	Single Column based passive system with no utility requirement such as water or power, so that system can continue to function in case of utility failure.	
44	Inlet and outlet of the scrubber should have KF40 connectors	
45	F based exhaust gas concentration at the outlet of scrubber should be below universally accepted Threshold Limit Values	
46	Detector to indicate the life of scrubber should be quoted as optional	
47	Systems components should be from reputed OEM	
48	Systems should require no or minimal maintenance post-installation until the life of the scrubber column	
49	Vendor should provide disposal and replacement service of active media in India	
50	International vendors should have a local agent in India to provide after sales service and technical support. The local agent should have worked with the vendor for at least 3 years.	
51	Technical literature, brochure, catalogue should be provided.	

**Terms and Conditions:**

**Note- (All terms & conditions must be fulfilled by the manufacturer /supplier.)**

1. Detailed compliance sheets are to be attached with Technical Bids for evaluation.
2. Make and build year of all OEM components not manufactured by the vendor should be separately provided.

3. Detailed documentation about (a) installation (b) maintenance (c) servicemanual including OEM parts, circuit drawings should be given preferably on clean room papers. All technical documents should be in English.
4. Technical bid should include Drawing of the system with internal arrangements of sub-assemblies, and system dimensional details/footprint along with peripherals and utilities.
5. Warranty for 2 years should be included in the main quote.
6. Warranty for an additional 2 years should be quoted as optional.
7. The Warranty must start from the date of installation at IITK.
8. Installation and training at customer site should be included in the offer.
9. Installation, demonstration, and training-sessions at IIT Kanpur will have to be provided by the manufacturer or the vendor for the quoted system.
10. Site preparation requirements should be clearly provided.
11. Recipes for Si, SiO<sub>2</sub>, SiN<sub>x</sub>, SiO<sub>x</sub>N<sub>y</sub> should be provided at the time of installation.
12. Recipes should be demonstrated during the time of installation.
13. System should be capable of being upgraded for more gas lines in the future without any change in the main system hardware.
14. Supplier who has supplied similar System in the national and international institutions will be preferred.
15. The vendor should submit the user list along with tender for similar system installed in India and abroad.
16. **Supplier/Vendors should submit technical and financial bids together in separately sealed envelopes.**
17. Financial bid should include all discounts (educational, research, special etc.).
18. Financial bid will be open only for those, who meet tender technical specification.
19. **Please do mention tender number clearly on envelop.**
20. Quotation must indicate FOB prices.
21. Payment terms & condition is 70% against delivery, 20% after installation and 10% after successful running of equipment for 3 months & approval
22. Quotation should carry proper certifications like proprietary certificate, authorization certificate from manufacturer, etc.
23. Validity of quotation should be at least for 60 days.
24. Institute is exempted for partial custom duty (CD applicable to IIT Kanpur is 5.15%).
25. Institute is exempted from payment of Excise Duty under notification No. 10/97.
26. The delivery period should be specifically stated. Earlier delivery may be preferred.
27. The indenter reserves the right to withhold placement of final order. The right to reject all or any of the quotations and to split up the requirements or relax any or all of the above conditions without assigning any reason is reserved.

Kindly send the quotation in sealed envelopes latest by 3:00 pm on dated 31/05/2016 to the following address:

To,

Dr Ashutosh Kumar Tripathi

Room No.310,

Samtel Centre for Display Technologies (SCDT),

Indian Institute of Technology Kanpur,

Kanpur – 208016,

Uttar Pradesh, India

Contact: (+91)07800354333