

GOVERNMENT COLLEGE UNIVERSITY, FAISALABAD.

(DEPARTMENT OF PHYSICS)



Tender Document No.01/2023

Sealed Tenders are invited from reputed firms/Suppliers who are registered with Sales Tax and Income Tax Departments, for the provision of Semiconductor Physics and Renewable Energy Laboratory Equipment to be delivered at Government College University, Faisalabad.

GENERAL TERMS & CONDITIONS

1. Tender Opening Date & Procedure:

- 1.1 The procurement shall be completed in accordance with Punjab Procurement Rules 2014, on **Single Stage - Two Envelope** Bidding Procedure.
- 1.2 Bids in complete conformity with Tender Documents will be dropped in Tender Box placed at the office of undersigned, not later than **05-12-2023** on **11:00 A.M** which shall be opened on same day at **11:30 A.M** in Office of the Principal Investigator.

Note:

- Tender Number must be mentioned on envelope.
- Both Technical and financial proposal shall be written on the letter head of the company/ firm along with other prescribed documents.
- All pages of the bid must be properly counter signed.

2. Tender Fee, Bid Security and Performance Security:

- 2.1 The Bid must be accompanied by Tender Fee of Rs:1000/- (non refundable) in shape of Call Deposit Receipt (CDR) in original and Bid Security of 2% of Estimated Price of Rs.22,656,925/- (refundable) in shape of Call Deposit Receipt (CDR) in original.
- 2.2 CDRs must be in favor of Treasurer, Government College University, Faisalabad. The rates / bids should be inclusive of all applicable Govt. Taxes.

3. Validity of Offers.

- 3.1 Offers shall be valid for 120 days from the date of submission of bids.
- 3.2 Withdrawal / modification of the original offer within the validity period shall entitle the University to forfeit Bid Security.
- 3.3 Sales Tax Number and NTN Number must be mentioned on the letter head and bidding documents.

4.Failures and Terminations:

No offer of a supplier / firm will be considered if:-

- 4.1 Bid received without Bid Security / Call Deposit or less CDR than the required.
- 4.2 Bids received not in accordance with specifications of Tender Documents.
- 4.3 Bid received later than the date and time fixed for tender.
- 4.4 Tender is incomplete in any respect or is unsigned.
- 4.5 Offer is ambiguous and the offer is conditional.
- 4.6 Offer from a firm which is black listed at any level.
- 4.7 Any erasing / cutting / overwriting etc.
- 4.8 If offer is not accompanied by Authorization letter from the manufacturer specific to this tender.
- 4.9 The supplier fails to deliver the consignment within specified delivery period strictly in accordance with the terms and conditions as laid down in the Purchase Order.
- 4.10 Situation warranted, then University is authorized to forfeit the bid Security and the firm may also be black listed.

5. Other special conditions:

- 5.1 The decision of the Vice Chancellor of Government College University, Faisalabad, would be final & binding on both the parties and not challengeable in any court of law.
- 5.2 05% performance security under the rules shall be deducted from the final bill of the successful bidder as per PPRA Rules 2014 and shall be released upon successful completion of warranty period of 1 year.
- 5.3 All Government Taxes will be deducted according to applicable rules.
- 5.4 The University may reject all bids/proposals at any time prior to the acceptance of a bid or proposal as per PPRA Punjab rule 35, however upon bidder request the ground of rejection will be communicated to the concerned but no justification will be given as per PPRA rule 35 (2).

Issued By:

Dr. Sofia Akbar Tahir
Principal Investigator
Reference No. 006327/D/ISB/008/2021
Department of Physics
Government College University, Faisalabad
0301-6073960



TENDER DOCUMENT No.01/2023

Sr. No.	Item	Specification OR Equivalent	Quantity	Unit Price including taxes (PKR)	Total Price
1	Atomic layer deposition (ALD) system Uk, China, Italy, Australia or Equivalent	Material: Al ₂ O ₃ OR Hf O ₂ Maximum size - Up to 4" diameter samples - Porous materials, materials with high aspect ratio features and 3-D substrates up to 11mm tall. System - Small form factor table-top ALD system - PLC controlled with 16-bit 7" High Resolution Color Touchscreen Interface. - Ultra small foot print: <0.15m³ and fits easily on any standard bench or table top. No separate computer to accommodate either. - No elastomeric rings present near or upstream of deposition zone. - Clean room compatible. Deposition System: Deposition Chamber(s) - Hot wall deposition chamber compatible for metal oxide, metal nitride, sulfide and pure metal processes. - Deposition chamber utilizes a metal sealed, point source precursor inlet upstream and a large vacuum port outlet downstream, with the sample introduction door, further downstream. - Separate flow paths for metal sources and counter	01		

		reactants. - Flow optimized deposition chamber with minimized chamber volume: - Chamber volume <750cubic centimeters - Computer controlled standard deposition temperature range up to 315-degree Cwith an accuracy of $\pm 1^{\circ}\text{C}$. - Chamber machined from semiconductor grade 6061-T6 aluminum. - Deposition chamber heat up times (<10 min from 100 °C to 200 °C) and cool down times (<15 min from 200 °C to 100 °C) - Fully automated temperature control system for bottles, dosevolumes, precursor delivery manifold and chamber - Edwards E2M18F Mechanical Direct Drive Pump for PFPE oil - 335 L/M, 12.1 CFM (pumping speed) - 2 Stage, Single Phase, .75 HP - Flomblin included Precursor Sources - Total of five (5) precursor sources installed simultaneously - Two (2) counter reactants like H₂O or H₂S. - Three (3) metal sources like trimethylaluminum			
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		2. Up to three (3) of the metal sources can be heated with optional Custom, conformal heating jacket for temperatures up to 140 °C. Precursor Lines 1. All organometallic sources pass through a path within the gas distribution manifold separate from oxidants and reductants to minimize chemical cross talk or cross-contamination during deposition processes. 2. Prevents cross-contamination and reaction between precursors before they enter the reaction chamber. 3. Defined Dose Volume Pulsing (DDVP): The dose of each precursor into the deposition chamber is determined by the precursor temperature and a fixed volume between the precursor valve and the dose valve for each source. 4. Three-way thermal ALD valves after dose volume for fast pulsing, high reliability 5. All Source Lines are electro polished stainless steel tubes with metal sealed VCR fittings. 6. Fujikin metal sealed, 200 sccm MFC for N₂ or Ar purge flow control 7. Model 330040 POSI-TRAP 4 with NW-20 ports 8. -Activated charcoal filter installed for precursor abatement 9. 3ft NW25 SS bellows hose to connect vac inlet to			
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		AT400 Cycling capability 1. 6-10 cycles/min or up to 1.2nm/min of Al₂O₃ Heated Source Delivery System 1. Capable of delivering low vapor pressure liquid, solid (> 10 mbar) at variable source temperatures. 2. Source heating temperature range up to 145°C with ±1 °C accuracy. 3. Compatible with thermally stable metal chemicals including metal halides, metal-organic compounds and organometallic chemicals. 4. Stainless Steel container volume up to 50 ml. 5. VCR Metal Sealed gas flow system. 6. Easy to use and change container. Safety 1. Vacuum switch and separate capacitance manometer pressure measurement to insure system is under vacuum during processing. 2. Hardware interlock for overheating; two temperature sensors on chamber with one acting as the failsafe for the main control sensor. 3. Bottle over heat software interlocks. 4. Physical emergency off (EMO) button on front panel. 5. Normally closed pneumatic valves (all valves will be			
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		closed in the event of a system failure or EMO) 6. All exterior surfaces are touch safe. Automated Flow Control 1. Exhaust line is equipped with a HMI-controlled pneumatic valve and the deposition chamber is evacuated and vented via HMI. Precursors 1. Precursors used for Al₂O₃ or Hf O₂ deposition. 2. Nitrogen Gas Cylinder with 2 stage Regulator (Qty 01)			
2	Cz-Crystalline silicon wafers Uk, China, Italy, Australia or Equivalent	Specifications 1. 2-inch Solar Silicon wafer (Mono-crystalline) Dopant: P-type/Boron-doped Orientation: <100> Size: 50.8 x 50.8mm ±0.5mm Thickness: 180~200µm ±25µm Polishing: As-cut Resistivity: 1~5 ohm-cm Quantity: 70 2. 3-inch Solar Silicon wafer (Mono-crystalline) Dopant: P-type/Boron-doped Orientation: <100> Size: 76.2 x 76.2mm ±0.5mm Thickness: 180~200µm ±25µm Polishing: As-cut Resistivity: 1~5 ohm-cm Quantity: 65 3. 4-inch Solar Silicon wafer (Mono-crystalline) Dopant: P-type/Boron-doped Orientation: <100>	200 Wafers		

		Size: 100 x 100mm $\pm$ 0.5mm			
		Thickness: 180~200 μ m $\pm$ 25 μ m			
		Polishing: As-cut			
		Resistivity: 1~5 ohm-cm			
		Quantity: 65			

Please contact Dr. Sofia Akbar Tahir, Principal Investigator for any inquiry regarding the specification of Tender.

Details of Call Deposit Receipt (CDR)

Signature_____

No. _____ Amount _____ Name of Bidder_____

Bank_____Branch_____City_____ NIC No _____

Name of Firm & Address_____ Ph. No. _____

N.T.No._____ Sales Tax No. _____

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