



SCHOOL OF CHEMICAL SCIENCES
MAHATMA GANDHI UNIVERSITY
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Tender No.: SCS/EEQ/Pro/SKB/E01/2024

Dated: 27/02/2024

NOTICE INVITING E-TENDER

The Registrar, Mahatma Gandhi University, Kottayam for and on behalf of **Dr. Subila K.B., PI, EEQ/2023/000374, School of Chemical Sciences, Mahatma Gandhi University**, invites online bid (technical and financial bid) for supply and installation of the Scientific equipment **“CSS Unit”** from reputed firms.

1	Name of the scientific equipment	<i>CSS Unit</i>
2	Earnest money deposit (EMD)	Rs. 18542.11–(1% of the estimated value)
3	Tender submission fee	Rs.3710 (0.2% of the cost of the equipment rounded to the nearest multiple of 100, subject to a maximum of 25,000/- + GST as applicable)
4	Period of supply and installation	Within 90 days from the LC Opening Date
5	Mode of submission of Bid	Online
6	Tender Documents	Can be downloaded from the website www.etenders.kerala.gov.in
7	Last date and Time of submission of tender by online	12/03/2024, 4.00 pm
8	Last date and Time of submission of relevant documents by speed post	13/03/2024, 12.00 pm
9	Date and time of opening of technical bid	13/03/2024, 4.00 pm

General tender documents and tender schedule can be downloaded in A4 plain size paper free of cost from the website www.etenders.kerala.gov.in. Duly filled up and signed tender schedule along with relevant documents should also be sent to **Dr. Subila K.B., PI, EEQ/2023/000374, School of Chemical Sciences, Mahatma Gandhi University Mahatma Gandhi University, Kottayam, Kerala Pin-686560**, by speed post so as to reach before the date and time specified.

The cover containing the documents should super scribe the name of the scientific equipment, tender number, and last date of submission of tender.

Documents to be submitted along with bid through online/speed post

Sl.No	Through online	Through speed post
1	Scanned copy of valid registration certificate/dealership certificate	Copy of valid registration certificate attested by a gazette officer/ dealership certificate
2	Scanned copy of duly filled e-payment form	Duly filled e-payment requisition.
3	Scanned copy of other certificates required, if any, for tender acceptance	Copy of other certificates required, if any, for tender acceptance.
4	Scanned Copy of duly filled preliminary Agreement in stamp paper of Rs.200/-	Preliminary Agreement in original
5	BOQ	Not Required

Specification for Instrument

1. A two heating zone rapid thermal processing furnace with 11" I.D. quartz tube, designed for CSS (Close Spaced Sublimation) film coating up to 3" diameter or 2"x2" square.
2. The furnace is heated by two group of halogen heaters (Top and Bottom) separately with max. 20°C/s heating rate.
3. Two 30 segment precision temperature controllers are built in with +/-1°C accuracy.
4. Furnace Structure Spec.: Furnace, two temperature controllers, two channel gas flow meters are integrated into a mobile aluminum alloy frame. The chamber is made of high purity fused quartz tube. Quartz tube size: 11" OD/10.8" ID x 9" H. The vacuum flanges are made of Stainless Steel 316
5. Vacuum Flanges: Top Flange with one KFD-25 vacuum port and one gas outlet (1/4" pipe required) can slide up or down manually to load and unload substrate and evaporated material easily. Bottom flange has one KFD-25 vacuum port with one gas inlet (1/4" pipe required) with needle valves. Flange is sealed by double silicone o-rings and can achieve max. vacuum pressure of 10E-2 Torr by a quality mechanical pump and 10E-5 Torr by molecular pump (vacuum pump is not included, please order separately). One digital vacuum gauge is installed on the top flange.

6. Gas flow meters : Gas mixer integrated with two float-meters with adjustable measurement ranges of: 16 -160 mL/m 500 - 5000 mL/m (for purging purpose)
7. Heater and Sample Holder: Two independently controlled heaters with manually adjustable gap from 2 - 30 mm, 20 pcs Halogen lamps are used as heating element for rapid thermal processing. Heaters are made of stainless steel with water cold jacket to reduce heat radiation and allow for fast cooling. 5" dia. circular wafer holder is built into top heater for holding substrate. One set of high thermal-conductive AlN plates (5" Dia. X 0.5mm Thick) are included (place on the back of substrate to make it heat uniformly). A 16L/min recirculating water chiller is included for saving water source.
8. Temperature Controller Two precision digital temperature controllers with 30 segments programmable offer independent controlling of top and bottom heaters. Each controller has PID auto tune function to protect heaters from overshooting and alarm function to avoid overheating and thermal couple broken.
9. Working Temperature Max. temperature for each heaters: $\leq 800^{\circ}\text{C}$. Max. temperature difference between two heaters: $\leq 300^{\circ}\text{C}$. depends on spacing between two heaters: Spacing 30mm Max. temp difference: 315°C @ heating bottom only.
10. Heating & Cooling Rate Heating: $> 8^{\circ}\text{C/s}$ (heating single heater only). Cooling: $> 10^{\circ}\text{C/s}$ ($600 - 100^{\circ}\text{C}$) Max.
11. Thermal Couple: Two K-type thermal couples are installed on top and bottom heaters separately
12. Working Voltage 208 - 240VAC, single phase, 20A air breaker.
13. Power Requirement 2200W total (1100W for each heater)
14. Warranty One year limited with life time support
15. Dimensions 1085mm L x 680mm W x 1710mm H