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मौलिक विज्ञान प्रकर्ष केन्द्र

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TENDER NO. CBS/CA019 – 041/PUB **December 10, 2019**

Notice Inviting Tender (One Part Tender) for the following item:

Sr. No.	Item Description	Qty
1	E-beam cum thermal evaporation system based thin film coating system. (Details as per attached specifications)	01 Set

Published on	11/12/2019
Type of Tender	One Part Limited Tender
Estimated Cost	Rs.55/-Lakh (approx.)
Last date for Submission of Bid	13/01/2020 on or before 13.00 hours
Date of Opening Bids	13/01/2020 at 14.00 hours
Tender Fees	Rs.500/- by DD favoring **UM-DAE CBS**

Tender should be submitted in One sealed envelope duly superscribed with the Tender No., Due Date in Bold Letters, addressed to Register, CEBS. A DD of Rs. 500/- favoring **UM-DAE CBS** may be enclosed in the "Technical Bid".

Please refer to "Terms and Conditions"

(REGISTRAR)

SPECIFICATIONS OF ELECTRON BEAM AND THERMAL EVAPORATION BASED THIN FILM COATING SYSTEM

- **High Vacuum Chamber:** Appropriate sized stainless steel (304) vacuum chamber with a tight leak rate better than 1 x 10^{-10} Torr litre/sec and ultimate vacuum better than 1x10^{-7} mbar with following ports/feedthroughs:
  - Turbo-molecular vacuum pump
  - E-beam assembly and its accessories
  - Thermal evaporator assembly and its accessories
  - Two ports for vacuum gauges
  - Two air inlet ports
  - Two viewing ports
  - Port for high temperature sample holder
  - Port for thickness monitor
  - Port for venting
  - Two or more spare ports
  - Vacuum chamber should be compatible for baking at 150^{0}C or better.
- **Substrate Holder with Heater with following features / specifications:**
  - Facility for heating substrate to at least 800 °C
  - Heater and sample holder should have hot area of at least 2" diameter
  - Temperature sensor with indicator and programmable PID temperature controller for monitoring and maintaining temperature stability of about ±5°C over 2 x 2 inch^2 area.
  - Manual shutter with UHV compatible rotary feedthrough for the sample holder
  - Substrate rotation: manual/motorized
- **Thickness monitor and its accessories of Inficon make or equivalent product with following features / specifications:**
  - UHV compatible quartz crystal sensor head and monitor / controller for in-situ thickness monitoring
  - Thickness resolution of 0.1 nm
  - Electronics module for thickness monitoring and display with software capable of storing multiple values of density and acoustic impedance for repeated use
  - Crystal pack of 20 numbers
- **Electron-beam assembly and its accessories (Telemark, MDC or Equivalent Product) with following features / specifications:**
  - Electron beam gun with four pockets (volume: 4 cc)
  - Power supply: 8 kW or better, using 3-Phase electrical supply
  - Water chiller with flow switch interlock (1.5 kW, 10 lit/min, 40 PSI)
  - Compatible high voltage octal feedthrough
  - Crucibles for 4 pockets liner

- Molybdenum liner for 4 pockets.

- **Thermal evaporation system with following features / specifications:**
  - Evaporator heater electrode assembly should have water cooled electrodes for 150-200 amps for 2 boats / filaments
  - Graphite and other suitable crucibles with outer Molybdenum outer lining
- **Vacuum system of Edwards/Pfeiffer/Varian make with following features / specifications:**
  - For UHV: Turbo molecular pump having speed of 500 lit/sec or above
  - For rough vacuum backing pump: Dry vacuum pump having capacity of at least 10 m^3/hr
  - Vacuum gauges: Full range gauge to measure the pressure from atmosphere to $1x10^{-8}$ mbar or better
  - Vent valve for releasing vacuum using dry gas.
  - Isolation valve between vacuum pumps.
  - Suitable isolation valve to connect the backing pump with turbo molecular pump.
  - All the vacuum components should be compatible with ultimate vacuum (~ $1 x10^{-8}$ mbar)
- Electronic units should preferably be of Rack / Frame mounting system
- **Optional Items:**
  - Thermal evaporation materials: Silver (100 gm), Gold (10 gm), Palladium (100 gm), Chromium (100 gm)
  - Evaporator electrode assembly for two materials
    - Compatible variac, transformer and cables for evaporation of two materials simultaneously
    - Spare boats = 20 Nos and filaments = 20 Nos

Terms and conditions:

- Schematic drawing should also be attached with quotation in tendering process.
- The detailed CAD drawing to be submitted before manufacturing once PO is released.
- Manuals, CDs, etc is to be provided.