

Enquiry No. IITGOA/2018-19/110

Date: 28/02/2019

**Corrigendum to the Tender for supply of Electron Beam (E-Beam) PVD System vide Enquiry No. IITGOA/2018-19/110 dtd. 14/02/2019.**

For the tender for supply of Electron Beam (E-Beam) PVD System at IIT Goa, the following clauses / paragraphs have been modified:

- I) Period of work/Delivery period should be read as **120 days** instead of 60 days.
- II) For Technical Clarification, you can contact Dr. Santosh Kumar, Asst Professor, Contact No.: 9534711220
- III) In Specifications, the following points are amended:

**# Point no. 1.3 should be read as:**

1.3 List of thin-film/evaporating materials that must be evaporated using the system: Au, Au-Ge, Al, Ag, Cr, Ni-Cr, Ni, Fe, Co, Cu, Si, Ti, Pd, Pt, W, Mo, Ir, Ru, SiO<sub>2</sub>, TiO<sub>2</sub>, HfO<sub>2</sub>, MgF<sub>2</sub>, Si<sub>3</sub>N<sub>4</sub>, Al<sub>2</sub>O<sub>3</sub>, Ta<sub>2</sub>O<sub>5</sub>, and commonly used rare earth oxides, etc.

**# Point no. 1.5 should be read as:**

The system includes deposition chamber, dry vacuum pumps, valves and gauges, electron gun, power supplies, substrate holder with heating & rotating mechanism, shutters, instrumentation and all necessary control units, and an additional gas line that opens in the main chamber for assisting in good quality oxides and nitrides deposition.

**# Point no. 1.7 should be read as:**

A satisfactory optical-quality parameter (such as real and imaginary refractive indices) of thin films must be demonstrated. Using IIT Goa Ellipsometer facility, the measured values of real refractive index of  $1.40 \pm 0.05$  for SiO<sub>2</sub>, and  $2.4 \pm 0.1$  for TiO<sub>2</sub> must be demonstrated. An expert at IIT Goa will help with the deposition parameters & measurement of the optical parameters. To achieve an optimum quality of oxide dielectrics the flow of oxygen gas in the main chamber is needed (see point 1.5, and also point 2.1.10).

**# Point no. 2.1.2 should be read as:**

The main chamber should have a minimum height of 500 mm so that a sufficient distance between the substrate and the crucible could be established to match the thickness uniformity over a 100 mm substrate. The dimensions of the main chamber must match the future upgradability needs.

**# Point no. 2.1.6 should be read as:**

At least 3Nos of spare view ports should be provided for future expansion.

**# Point no. 2.1.10 is added and should be read as:**

The system must have an additional gas line with all necessary fittings for allowing the flow of controlled amount of gases such as Oxygen, Nitrogen and Argon in the chamber. The line may open in the chamber or next to the substrate holder. The system should have a proper control knob/parameter for allowing the process gas in the chamber up to 2E-4 mbar pressure. The controlled flow of these gases is needed to deposit a good optical quality thin-film of oxide / nitride / dielectrics.

**# In point no. 2.3, bullet point 1 should be read as:**

One Electron Beam Gun (Make Telemark / Temescal/ Ferrotec) having cross-contamination proof 4cc multi-pocket (minimum, 4 pockets) rotatable hearth.

**# Point no. 2.16 should be read as:**

Pre-Dispatch Inspection/Tests: If the system is manufactured/assembled in India then a pre-dispatch inspection will be carried out at the manufacturer site. Two experts from IIT Goa will visit the manufacturer site for Factory Acceptance Test (FAT) at manufacturer and may request to produce test samples/ test results to ensure performance checks for its acceptance. For imported system, the manufacturer must perform all necessary tests at the factory site. The test reports must be sent to IIT Goa for a pre-dispatch approval. The tests such as pump down duration, chamber base pressure, test evaporation with and without gas, and thickness uniformity could be performed at the factory site

**# Point no. 2.17 should be read as:**

Installation, re-installation and commissioning: The supplier should do installation and commissioning of the equipment at IIT Goa in its temporary campus. However, the supplier must have to agree to re-install the system at its permanent campus, a written proof of this will be needed. The price bid must include the extra charges for re-installation. The infrastructure/ utilities required from IIT Goa during installation and commissioning should be mentioned with the offer.

**All other terms will remain same.**

Sd/-  
Assistant Registrar