Technical specification for Pulsed Laser Deposition Chamber

Sl. No.	Description
1	**Pulsed Laser Deposition Chamber**
	a) Minimum 12" dia or more. Made of SS 304 materials and it should be electro-polished. The size of the chamber should be such that it can accommodate necessary view ports and all of the other essential modules mentioned the specification
	b) The chamber should have the following ports. i) Multi-target carousel (CF 150) ii) Substrate stage (CF 150) iii) Vacuum gauges (CF 40 and CF 16) iv) Vacuum pump (CF 100) v) Viewing port (nos. 2) with toughened glass windows and covers (CF 35) vi) Process gas inlet (CF 16) vii) Extra ports for any future upgrades with standard CF flanges. (CF 35)
	c. The ports should have copper gaskets for leak proof chamber operation at high temperature.
2	**Multi-target carousel (Mounted on CF 150 flange)**
	a) Target stage capable of mounting 6 targets of 2.5 cm diameter each.
	b) Stepper motor & DC motor controlled, for selection of Target, Target rotation & rastering using independent controller.
	c) Necessary software should be provided if the target carrousel need to be operated using computer.
	d) Contamination shield should be provided for exposing only one target at a time.
	e) The target stage should have spring loaded target holder.
3	**Substrate Holder and heater:**
	a. It should hold substrate of varying sizes from 1×1 cm^2 to 2.5×2.5 cm^2.
	b. Substrate heater capable of heating the substrate up to 830 ^{o}C and more.
	c. The substrate heater with temperature monitor and programmable controller.
	d. Capable of depositing the film in oxygen or Argon gas atmosphere
	e. Magnetically coupled shutter should be provided for the heater.

	f. XYZ movement of heater after opening the chamber.
4	**Gas handling:**
	Digital mass flow controllers (200 SCCM max. flow) to control the gas inflow. 0.6% of reading accuracy on most flow instruments. 4 ms response time. No warm up. Four process variables. Built in display.
5	**Vacuum System:**
	Pumping System: i) Turbo Molecular Pump with a capacity of 300 liter/s or more ii) Air cooled iii) Dry pump for backing the Turbo pump. iv) Vacuum chamber ports will be compatible with pump, fore pump and all other accessories.
	Pressure Gauges: i) Penning gauge or better gauge along with the display capable of measuring 1×10^{-6} mbar base pressure inside the chamber ii) 2 Pirani gauge along with the display to measure the pressure up to 1 $\times10^{-3}$ mbar during the deposition.
5	Gate Valve:
	SS gate valve with bellow sealed shaft movement (CF100 Flange)
	CF100 cylindrical adopter with 2 numbers of CF25 port connecting Gate valve and the Turbo pump.
6	Beam Delivery:
	a. Lens holder attachment with XYZ movement of lens for focusing the laser beam on Target. 2” dia, UV grade fused silica lens and S1UV grade fused silica laser entry window.
	b. 2” diameter, UV grade fused silica lens.
	c. Quartz or S1UV grade fused silica laser entry window.
5	**Other requirements:**
	a. Installation and Commissioning: After receipt of the item to IIT Madras, the complete system shall be integrated installed and commissioned at the designated place by vendor’s representative. The vendor’s representative should also provide complete hands-on training to the purchaser after installation and commissioning
	b. Warranty**:** The Warranty on the complete system should be for 2 years.
	c. Company should have minimum 5 nos. of supply reference of the similar system installed in India in last 3 year. The detail Indian User reference list should be provided with contact details etc. The Company should provide 5 satisfactory certificates from the users in India.
	d. The company must have a Local Trained Service engineer to provide after-sales support.