

## Substrate Manipulators & Heaters

- Field-proven equipment for vertical geometry
- Reliable and rugged design
- Continuous rotation up to 40 rpm typical
- Efficient shielding to prevent from material contamination
- Will fit custom applications



### Product introduction

Riber single & multi-wafers manipulators are one of the most important accessory for Molecular Beam Epitaxy.

The substrate manipulator allows for the positioning of a platen supporting one or more wafer(s). Depending on the PSCT model (adapted to the MBE system), it can accommodate platens with diameter from 50.8 mm to 500 mm.

All Riber manipulators are positioned on a vertical port and allows for continuous rotation up to 40 rpm (multi-wafers) or 60 rpm (single wafer for R&D equipment, smaller size). They perform uniform heating over the substrate up to 1000°C typically (WRe thermocouple). Other versions dedicated for specific applications and atmospheres may reach higher temperatures.

Pure, thoroughly degassed refractory materials are used at high temperatures to prevent particles generation.

Extensive testing and field use have

demonstrated that they can be used at high speed at growth temperature for very long time without maintenance.

Moreover, as the heater is in a stationary position, with the wafer rotating beneath it, there is no rotation of any connections and finally, the heater thermocouple has no direct contact with the rotating parts, unless intentional (special platen version for MCT applications).

Tantalum shielding completely covers the mechanical and electrical parts so that no damage due to material deposition can occur. All electrical connections are heavily shielded from flux deposition with an insulator to prevent short-circuiting.

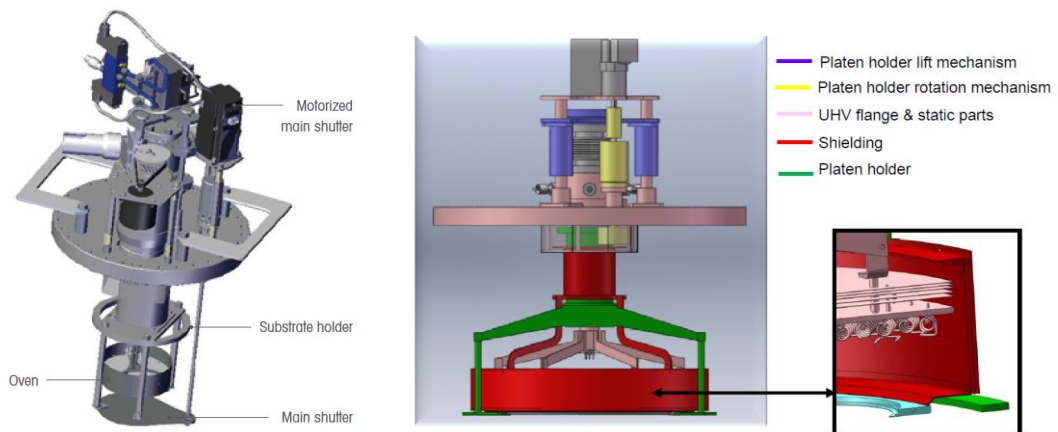
Rotation is performed by an electrically actuated stepper motor with a magnetic rotary drive. Slow seeking is available for RHEED diffraction, and it features a homing sensor to retrieve the exact

transfer position. In addition, optical sensor can be added to trig in situ measurement tools

Platen positioning (on/off) is carried out by a pneumatic Z linear drive, which lift the complete oven + shields assembly, in order to get a maximum clearance for platen transfer.

The PSCT can incorporate an independent main shutter on its flange, completely protecting the platen from the flux during material calibration.

## Layout



## Specifications

Characteristics	PSCT 3"	PSCT 4"	PSCT 6"	PSCT D350	PSCT D500
MBE system of choice	Compact 21 CLS	Compact 21 Series	MBE412	MBE49	MBE6000
Substrate heater size*	3 "	4"	6"	242/270 mm	400 mm
Double filament oven	No			Yes	
Platen size	3"	4"	126,2 mm	242/270mm	400 mm
Mounting flange	CF250	CF250	CF250	CF350	CF500
Typical rotation speed	0-40 RPM up to 60 RPM			0-40 RPM	
Max operation / outgassing temperature (heater dependent)*	800°C /1000°C				
Main shutter available	Yes				

\* Please consult substrate heater section for more details

For special configurations (temperature range, type of T/C, in contact or not, optical access,...), please consult Riber

## Component interfacing

For dual filament oven, manipulator interfacing is adapted accordingly

