

# MC100

## Low cost MOCVD reactor for Research and Development

### APPLICATIONS:

**Metal and alloys, oxides, transition metal nitrides**

- Semiconductor:  $\text{SiO}_2$ ,  $\text{HfO}_2$ ,  $\text{Ta}_2\text{O}_5$ , Cu, TiN, TaN...
- High k Dielectric:  $\text{SrTiO}_3$ ,  $\text{BaTiO}_3$ ,  $\text{Ba}_{(1-x)}\text{Sr}_x\text{TiO}_3$  (BST)
- Ferroelectric: SBT, SBTN, PLZT, PZT,...
- Superconductor: YBCO, Bi-2223, Bi-2212, TI-1223, ...
- Piezoelectric:  $(\text{Pb}, \text{Sr})(\text{Zr}, \text{Ti})\text{O}_3$ , Modified Lead Titanate
- Colossal Magneto Resistance
- Thermal coatings
- Buffer layers
- Mechanical coatings
- Optics
- Etc...

### SPECIFICATIONS

The Annealsys MC100 is a 4-inch cold wall CVD reactor especially developed to meet the requirements of research and development units for MOCVD and Spray CVD processes.

The MC100 allows doing heteroepitaxy of oxides on single crystals wafers (such as YBCO/LAO, STO/MgO,  $\text{MxOy/LAO}$ ...) by MOCVD using a wide range of solid and liquid organometallic volatile precursors.

The MC100 systems can be provided with various vaporization systems and vacuum equipment depending on the application. The direct injection vaporizer allows the widest range of utilization of precursor to develop new materials

### PERFORMANCE CHARACTERISTICS

- Temperature range: RT to 850°C
- Gas mixing capability with mass flow controllers
- Vacuum range: Atmosphere to  $10^{-3}$  Torr



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**Spray CVD  
MOCVD**

# MC100

## General features

|                            |  |
|----------------------------|--|
| Maximum substrate diameter | 4-inch   |
| Process chamber            | Stainless steel<br>Shower head<br>Sample rotation  |
| Heating                    | Resistor heating   |
| Temperature control        | Thermocouple temperature control<br>Digital PID temperature controllers  |
| Vacuum, gas and liquid     | Purge gas line with needle valve<br>Up to 6 process gas lines with mass flow controllers<br>Up to 4 vaporizer units selected function of liquid precursors<br>Custom liquid panel depending on the application<br>Vacuum valve and vacuum gauge<br>Optional vacuum rotary of dry pump<br>Optional pressure control with throttle valve |
| Control                    | Full PC control  |
| Facilities                 | Electricity: 3x400V+N+Gr or 3x220V+Gr, 50/60 Hz<br>Power: 10 kW<br>Water: 2 to 6 bars, pressure drop 1 bar, 10 l/mn<br>Compressed air: 6 bars (valve actuation)<br>Process gas fittings: VCR ¼ or Swagelok ¼   |
| Dimensions and weight      | Width: 1100 mm<br>Depth: 1450 mm<br>Height: 2000 mm<br>Weight: 800 kg  |

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