R&D CLUSTER TOOL SAF

CLUSTER TOOL SAF

Research and development works, feasibility studies and general academic work in the field of thin film technologies

Sample manufacturing aimed at product prototyping for market evaluation of out-of-box technologies

CLUSTER TOOL SAF

SIMPLE

Easy and simple tool control and maintenance

ADJUSTABLE

Customized configuration and setup

FLEXIBLE

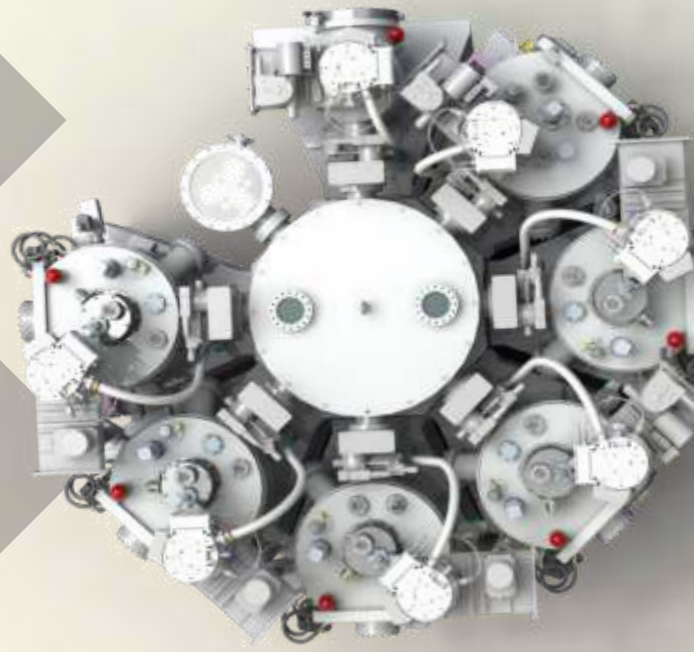
Wide spectrum of possible technological processes

TARGET CUSTOMERS

Laboratories engaged or with the intentions of working to carry out research for thin film technologies

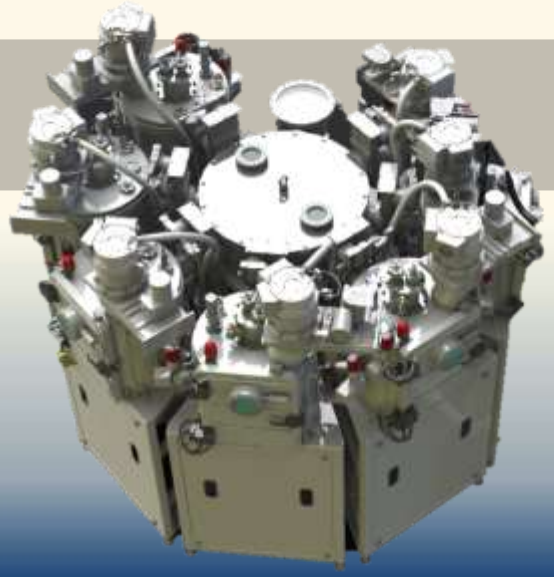
Companies already working and possibly with production facilities with a desire or need to develop further the technology and to try to differentiate themselves from others

Universities working or intending to work in the thin film area



DESIGN ADVANTAGES

- The cluster tool is a modular, expandable and flexible system
- Each chamber can operate independently due to individual pumping station, control and utility flange
- Deposition chambers and deposition sources are interchangeable due to identical design of the chambers and utility flanges
- All chambers can operate simultaneously



SAF CONFIGURATION

THE CENTRAL CHAMBER IS EQUIPPED WITH 8 FLANGES FOR CHAMBERS OF YOUR CHOICE:

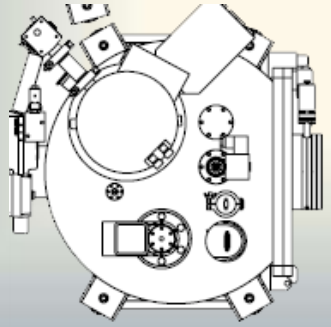
- **Substrate loading/unloading and pre-treatment**
- **Substrate storage**
- **Deposition process chambers:**
  - **Electron beam evaporation**
  - **Thermal evaporation**
  - **Thermal sublimation**
  - **Magnetron sputtering**
  - **Other deposition processes**

OPTIONS

- **Residual Gas Analysis/Mass Spectrometry**
- **Plasma Emission Monitoring**
- **Glove box**

DELIVERY OPTIONS

- Any solo process chamber
- Cluster with the necessary process chambers
- Customized arrangement and instrumentation
- Additional chambers



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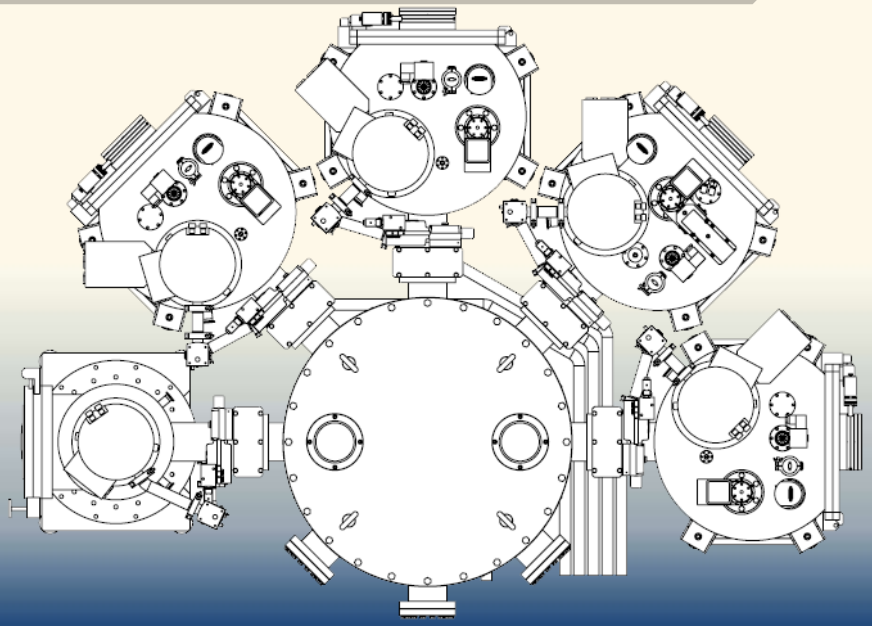


TECHNOLOGICAL KEY FEATURES

- Various substrates (metal, glass, plastic, ceramic), standard size 50x50x5 mm
- Substrate ion pretreatment
- Contact and contactless substrate heating/cooling
- Deposition of multi-layer coating stacks without tool venting
- Uniform coating due to rotatable substrate holder
- Debris-free coating due to upward deposition
- Base pressure – 10^{-7} Torr
- Process control
- Blanked-off flanges on the process chambers allow attaching customized instrumentation and technological accessories

CENTRAL TRANSFER CHAMBER

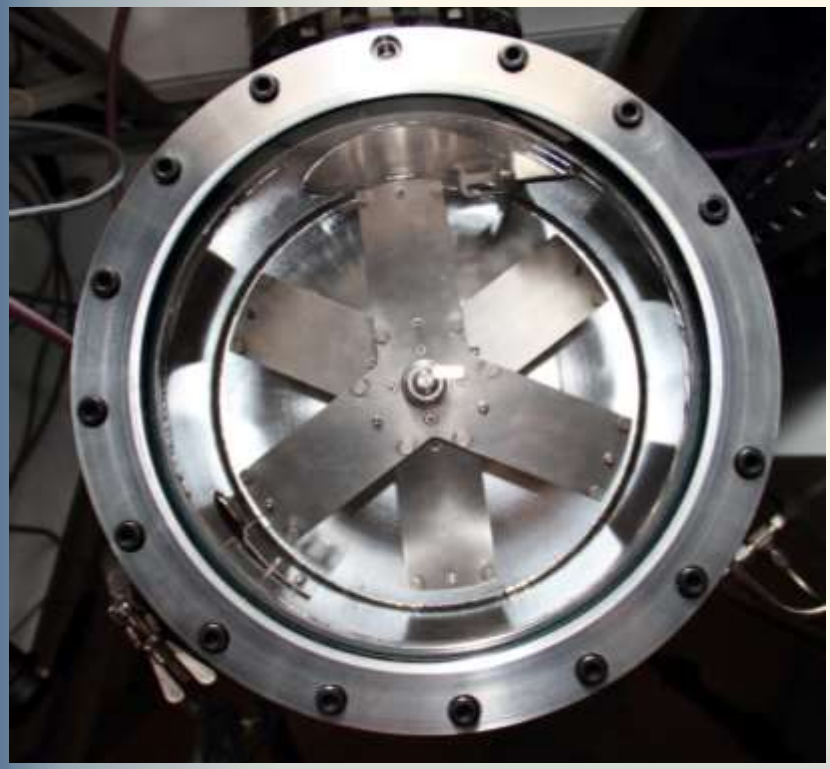
TRANSPORTATION OF THE SUBSTRATE

- Substrate storage chamber - up to 6 samples
- Telescopic robotic arm
- 8 sealed mount flanges
- Detachable top lid
- 2 view ports
- Interior lighting
- Pumping system
- Vacuum gauges

PREVENTS PROCESS CROSS-CONTAMINATION AND ENSURES SUBSTRATE TRANSFER WITHOUT VENTING OF THE CHAMBERS

CENTRAL TRANSFER CHAMBER

SAMPLE STORAGE IN VACUUM OR INERT GAS ATMOSPHERE

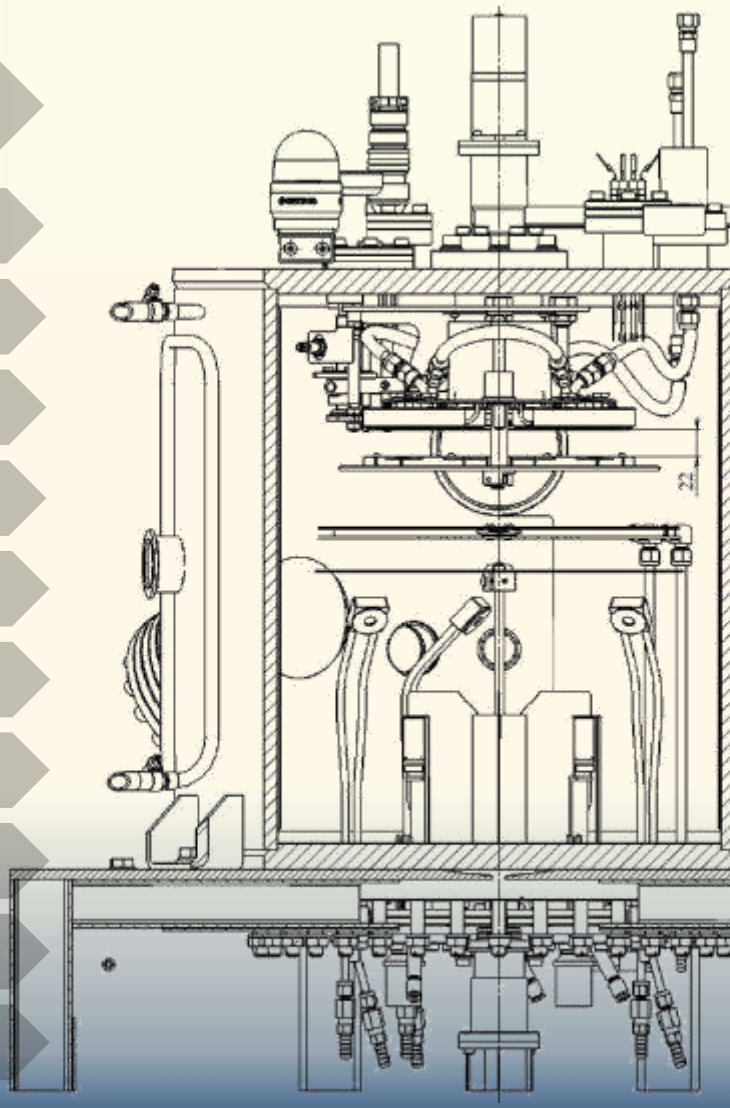


- Two-level sample holder
- The amount of samples – 6pcs
- Optical sensor of sample presence

CAN BE REPLACED BY ANY PROCESS CHAMBER

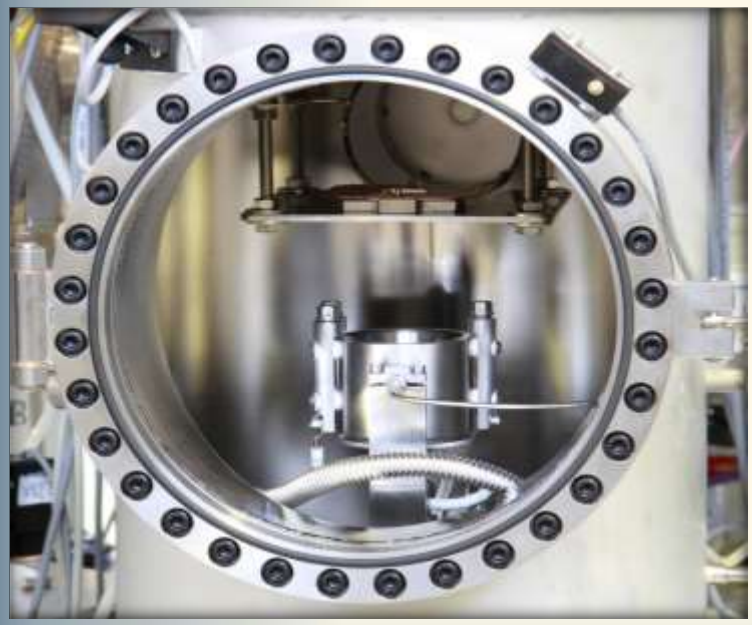
STANDARD UNITS FOR EACH DEPOSITION CHAMBER

- Quartz resonators (except for the magnetron sputtering chamber)
- Rotatable substrate holder
- Gas feeding system
- Substrate shutter
- View port
- Interior lighting
- Pumping system
- Vacuum gauges
- Cooling/ heating water system
- Electrical and control system
- Hinged door



INPUT/OUTPUT CHAMBER, ION PRETREATMENT

SUBSTRATE LOADING/ UNLOADING



- Circular source with cold cathode
- 2 filaments
- Process gasses Ar, O_2
- Stationary substrate holder
- Sensor of substrate presence
- Standard chamber equipment

SUBSTRATE PRETREATMENT TO ENHANCE COATING ADHESION AND ENSURE STABILITY OF COATING PROPERTIES

THERMAL EVAPORATION CHAMBER

THERMAL EVAPORATION WITH RESISTIVE ELEMENTS

- Crucibles and boats (up to 4 pcs.)
- Substrate IR heating device (up to 200^{o} C)
- Substrate temperature measurement
- Purge gas N_2
- Substrate masking
- Standard chamber equipment

METAL AND ALLOY COATINGS

THERMAL EVAPORATION CHAMBER

METAL AND ALLOY COATINGS

- Semiconductor wafers
- Solar cells
- Metallized foil
- Architectural glass etc.

THERMAL SUBLIMATION CHAMBER

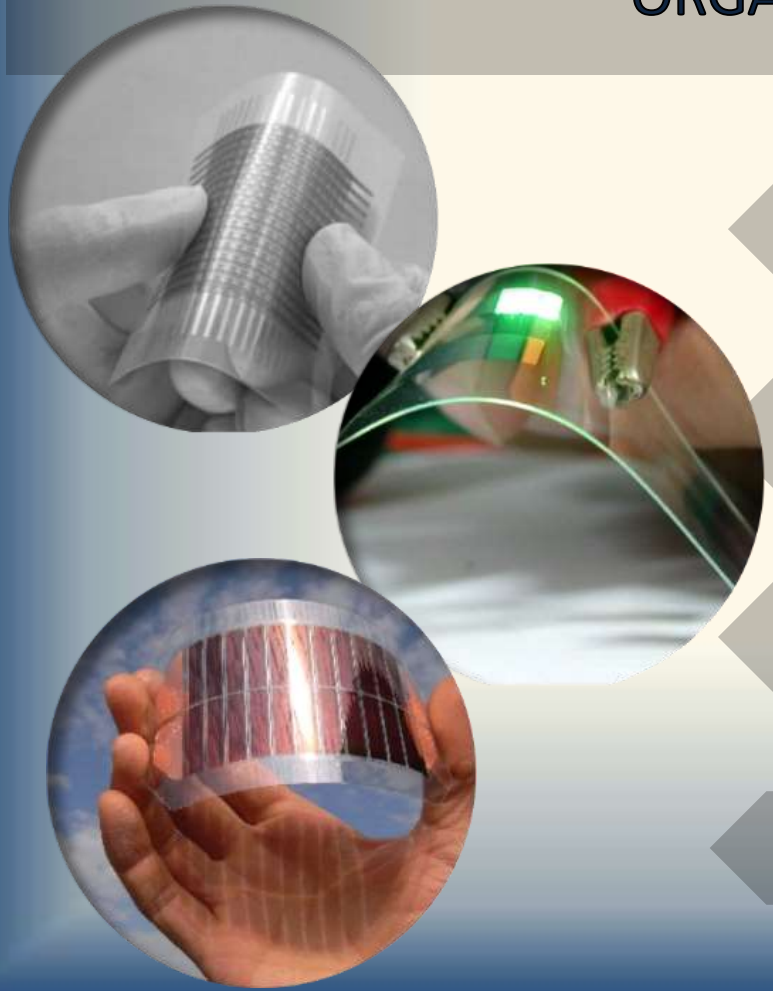
THERMAL SUBLIMATION OF ORGANIC SUBSTANCES

- 3 thermal sublimation cells
- Substrate contact heating/ cooling (-40..+60°C)
- Substrate and cells temperature measurement
- Purge gas N_2
- Substrate masking
- Standard chamber equipment

OLEDs, ORGANIC PHOTOVOLTAICS, HIGH-PURITY MATERIALS FOR ORGANIC ELECTRONICS

THERMAL SUBLIMATION CHAMBER

ORGANIC THIN FILMS



- OLEDs
- OFETs
- Organic solar cells
- Other organic electronics

MAGNETRON SPUTTERING CHAMBER

MAGNETRON SPUTTERING IN METAL, QUASI-REACTIVE AND REACTIVE MODE

- Substrate IR heating up to 400^{o} C
- Substrate temperature measurement
- 3 circular, planar magnetrons
- Available DC, pulsed DC, MF and RF power supply
- Twin, dual or single combination of magnetrons

METAL, ALLOY, OXIDE, TCO, NITRIDE, CARBIDE, POLYMER, SEMI-CONDUCTOR AND P-I-N COATINGS

MAGNETRON SPUTTERING CHAMBER

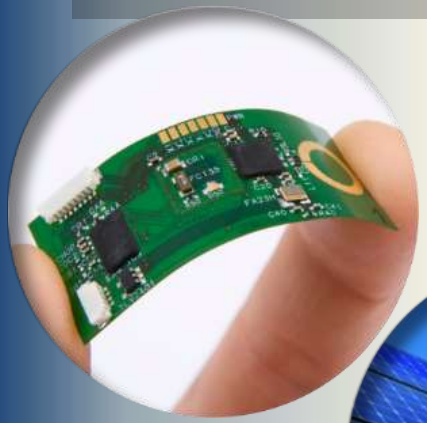
MAGNETRON SPUTTERING IN METAL, QUASI-REACTIVE AND REACTIVE MODE

- Individual shutter for each magnetron
- Process gasses: Ar, H_2, N_2, O_2
- Changeable distance substrate to magnetron sources
- Changeable magnetron tilt according to the substrate
- Standard chamber equipment

METAL, ALLOY, OXIDE, TCO, NITRIDE, CARBIDE, POLYMER, SEMI-CONDUCTOR AND P-I-N COATINGS

MAGNETRON SPUTTERING CHAMBER

METAL, ALLOY, OXIDE, TCO, NITRIDE, CARBIDE, POLYMER, SEMI-CONDUCTOR AND P-I-N COATINGS



- Solar cells
- Flexible circuit boards, electronics
- Decorative and protective coatings
- Antibacterial coatings
- And many other applications

TECHNICAL OUTLINE

Dimensions (LxWxH) – 3 x 3 x 2 m

Weight – 2.8 t

Installed power 50 kW

Cooling water consumption 2.7 m^3/h

THE FULLY CUSTOMIZABLE CLUSTER TOOL

THE BEST APPROACH TO NEW MATERIALS FOR DIFFERENT INDUSTRIES

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