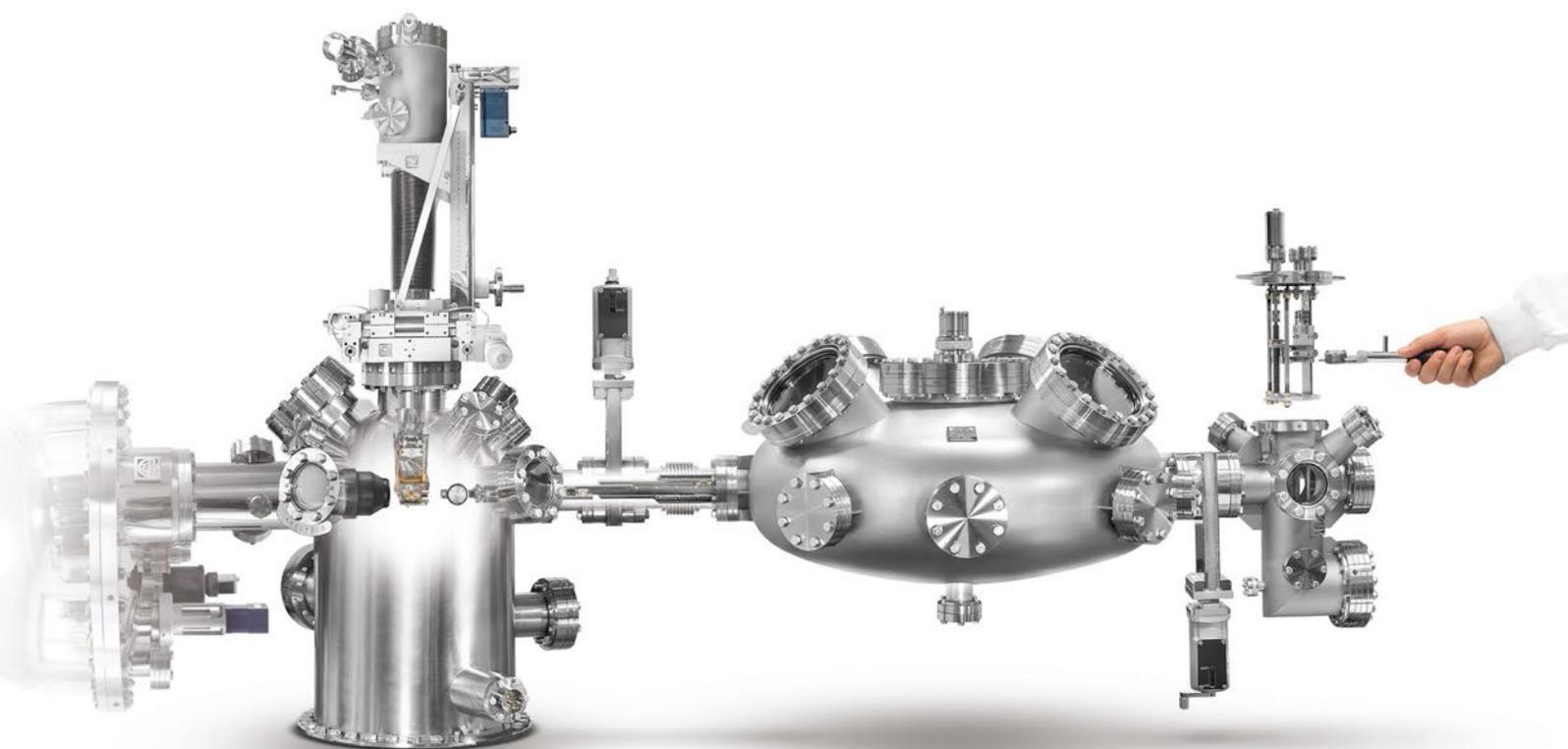


Precision and Vacuum Technology



## TRANSFERRING SYSTEMS

Solutions for precise sample transferring and positioning in UHV

# SAMPLE HOLDER

## PTS sample holders

- Various types of the PTS sample holders up to 8 inch
- Heating by direct, resistive or EB methods up to **2000°C**
- Cooling down to 90 K with LN<sub>2</sub>
- 6 electrical contacts (heating, temperature measurement, bias)
- Detachable contact for heating and cooling
- Holders dedicated for e.g. quartz balance, Faraday cup, high pressure reactor, powder material, SPM application, IR spectrometer, sample cleaving and many others
- Adapters for flag style sample holders
- Special designed holders with random options are available (e.g. for wire samples, with masks, angular device, additional contacts or Pelier module)

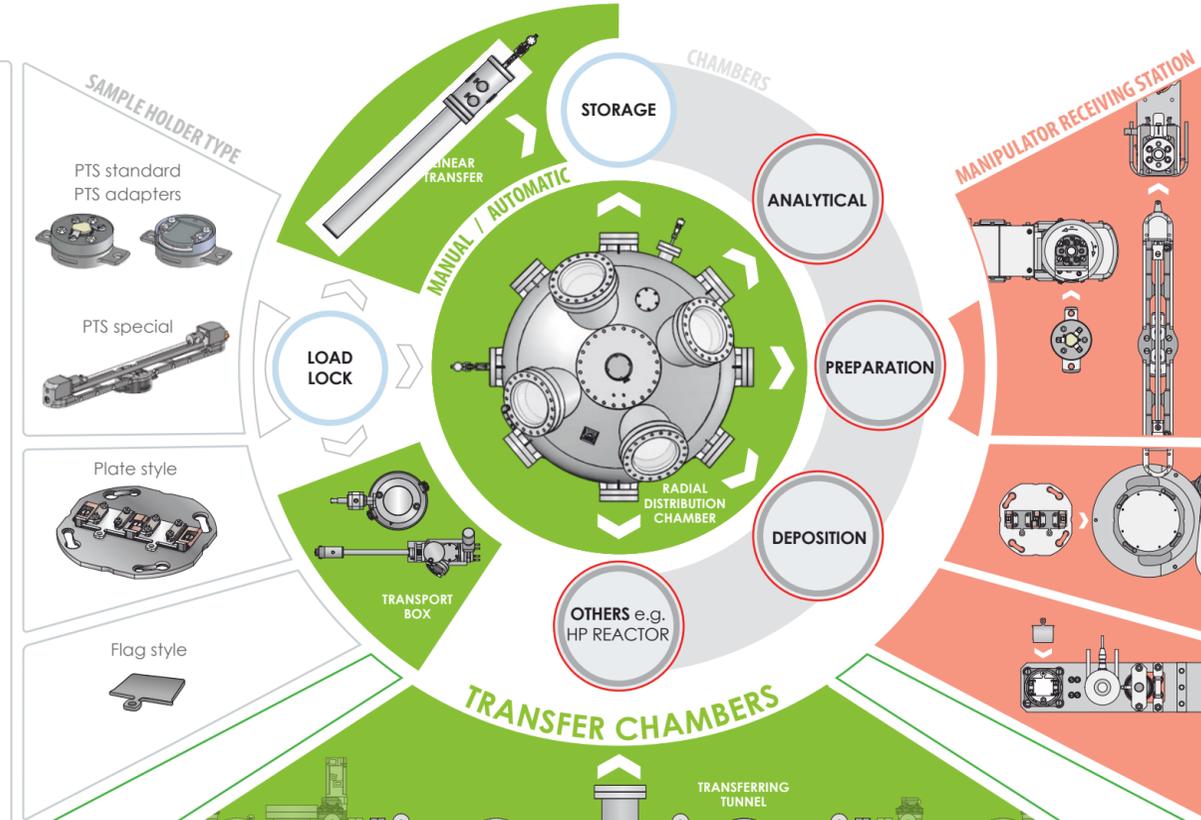
## PLATE STYLE substrate holders

- Various types of the deposition substrate holders up to 8 inch (e.g. wafer plates, 4-holes plates or 3-pins plate)
- For direct wafer mounting or for sample mounting
- Wide range of adaptation possibilities (e.g. adapter for 1, 2 or 3 flag sample holders)

## FLAG STYLE sample holders

- Very high cooling efficiency: down to **4 K** with LHe cooling
- Different types of flag style holders available, e.g. with: EB heating (up to **1400°C**), resistive heating (up to **1100°C**), direct heating (with **10A**)
- Holders dedicated for e.g. laser heating (with thermocouples) or high pressure reactor

Approximately 200 individual designs of sample holders have been manufactured to date



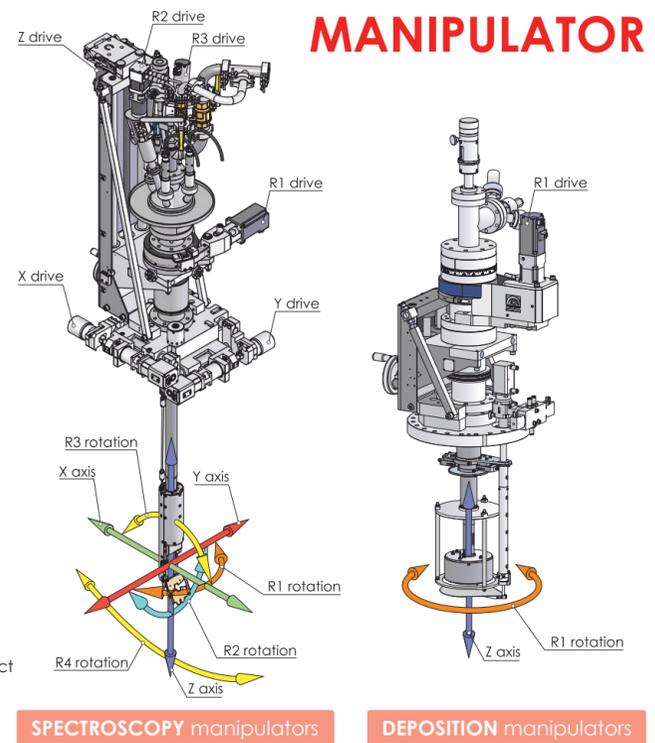
- High precision manipulation in all directions
- Wide range of sample/substrate/target holders
- Fully motorised/manual, fully software controlled

## SPECTROSCOPY manipulators

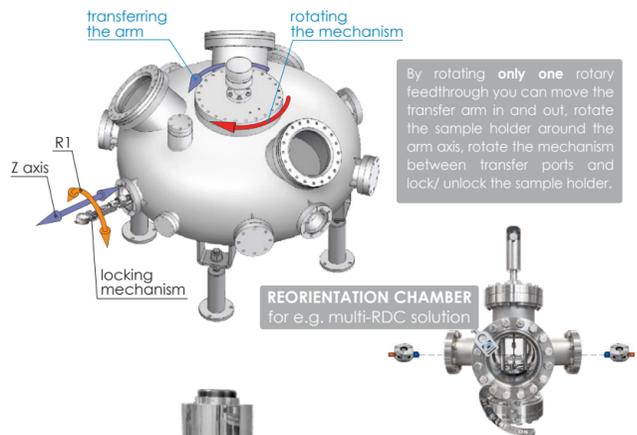
- Universal with LN<sub>2</sub> cooling | up to 5-axes
- Heating methods: direct (with 12A), resistive (up to 1000 °C), EB (up to **2000 °C**)
- Cooling down to **100 K**
- Multi-holder receiving station option
- with LHe cooling (open cycle) | up to 6-axes
- Heating methods: direct (with 10A), resistive (up to 1100 °C), EB (up to **1400 °C**)
- Cooling down to: **7 K** (6-axes), **4.8 K** (5-axes), **4 K** (4-axes)
- with LHe cooling (closed cycle) | up to 6-axes
- Heating methods: direct (with 10A), resistive, EB (up to **1000 °C**)
- Cooling below **10 K** (5-axes)
- Low vibration cryostat

## DEPOSITION manipulators

- for MBE applications | up to 2-axes
- Heating methods: resistive (up to 1200 °C), EB (up to **1400 °C**)
- Cooling with LN<sub>2</sub> or H<sub>2</sub>O
- Oxidation resistant heater option
- for SPUTTERING applications | up to 4-axes
- Heating methods: resistive (up to **1000 °C**), direct
- Cooling with H<sub>2</sub>O
- for PLD applications | up to 4-axes
- 6-position mechanism for targets



- Standard or telescopic transferring arm
- Chamber body diameters from 550 to 1200 mm
- Max. transfer length: 395 - 904 mm, depends on chamber diameter, transferring arm and sample holder type (other on request)
- Configured with TSP and transfer mechanism with rack-and-pinion rotary motion feedthrough
- Time to transfer between two chambers < 45 seconds (manual mode) - fast transfer time allows cold samples to stay cold (temperature rise also depends on initial temperature and heat capacity)
- Fast and reliable drop-proof transfer of both hot and cold samples
- Up to 8 transfer positions to other UHV chambers with automatic sample positioning
- Guaranteed base pressure: 10<sup>-11</sup> mbar range after 48h of bakeout. **10<sup>-10</sup> mbar during transferring**
- Numerous viewports
- Equipped with UHV connecting flanges and additional ports for future versatility



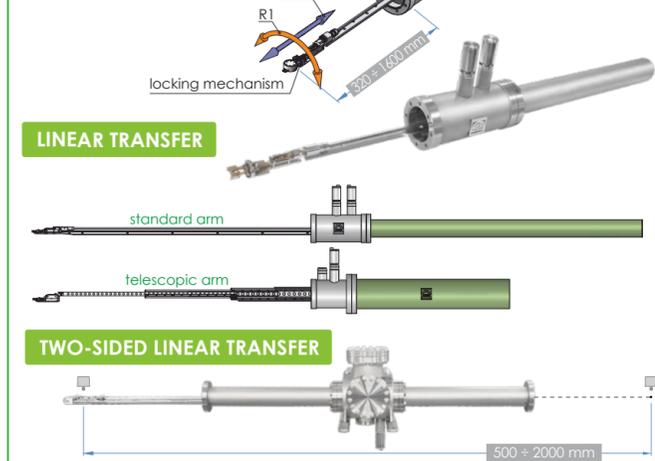
# RADIAL DISTRIBUTION CHAMBER

- Unlimited number of sections
- Wide range of sample holders (e.g. PTS, flag style, plate style)
- Base pressure: 10<sup>-11</sup> mbar range
- Fully motorised or manual versions
- Easy operation



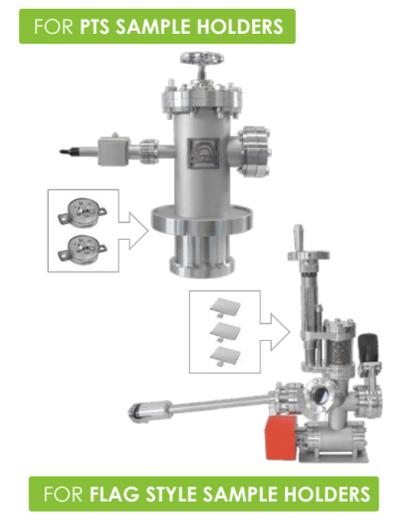
# TRANSFERRING TUNNEL

- Standard or telescopic transferring arm
- Max. transfer length: 320 - 1600 mm, depends on chamber length and sample holder type (other on request)
- Smooth and fast translation movement
- Rotation
- Ball pen principle locking mechanism for PTS & Flag sample holders
- Easy operation



# LINEAR TRANSFER

- For up to 2 pcs PTS / 3 pcs flag style sample holders
- Pressure range down to 1x10<sup>-10</sup> mbar
- Mounting flange (transferring port): PTS dedicated load lock connection port or DN 40CF
- Pumping options: NEG getter pump, ion pump

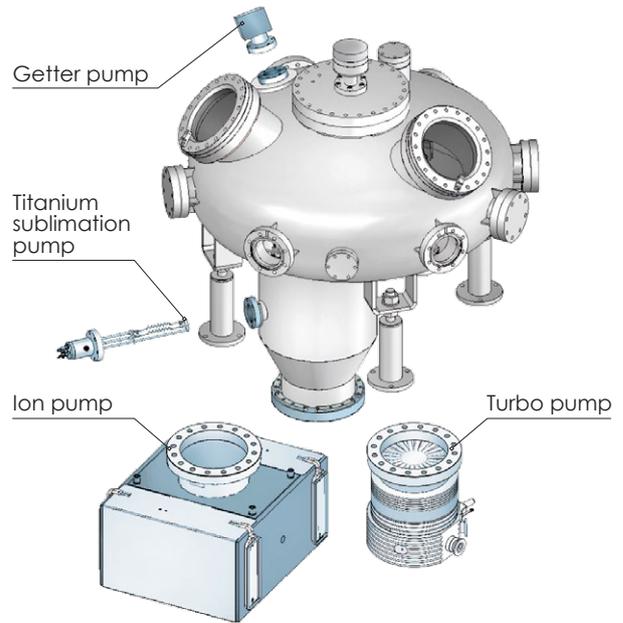


# TRANSPORT BOX

## RADIAL DISTRIBUTION CHAMBER

### BASE PRESSURE

Base pressure:  $10^{-11}$  mbar range (depend on pumping system). Radial distribution chamber can be equipped with application matched vacuum pumps to achieve the best pressure range.



### MODES OF OPERATION

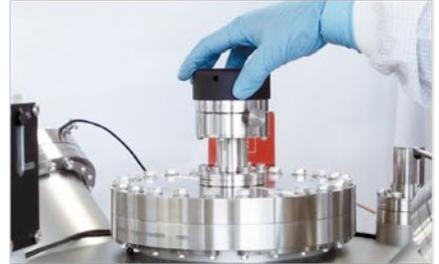
• Fully motorised



• Semi motorised



• Manual



## SOFTWARE APPLICATIONS FOR AUTOMATION AND CONTROLLING

Manipulation and transferring systems can be **fully software controlled and automated** using PREVAC's electronics and dedicated software which have been developed in-house based on the latest innovation solutions combined with our unique vacuum experience.



Synthesium is an innovative software optimized for easy and complete control over the entire deposition process and all components in the system. Based on Tango technology



Spectrum is a control and data acquisition software dedicated to EA15 class analysers. It is a progressive and optimized software tool in regard of handling and a very intuitive graphical interface.



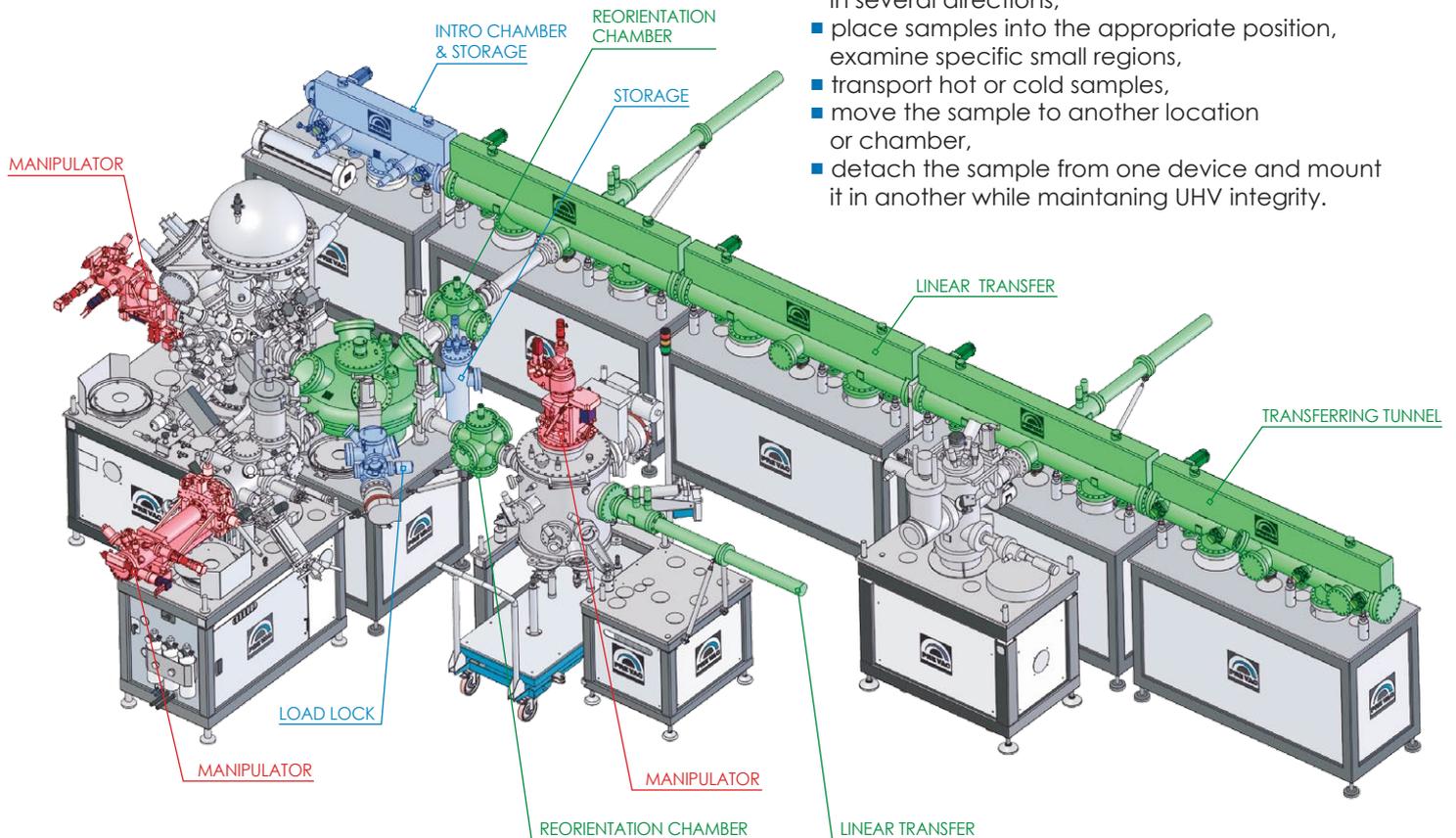
Mobile applications for full device control



# PREVAC TRANSFERRING SOLUTIONS

Many areas of research and innovation techniques require us to:

- provide smooth and precise motion in several directions,
- place samples into the appropriate position, examine specific small regions,
- transport hot or cold samples,
- move the sample to another location or chamber,
- detach the sample from one device and mount it in another while maintaining UHV integrity.



## ■ LINEAR TRANSFER

The linear transfers are designed to transport sample holders/samples between chambers. They are commonly used to transfer samples from load lock chambers to system main chambers. The entire movement range of the transfer mechanism is via a rotary motion feedthrough. The standard range of the transfer movement is from 320 to 1600mm. The mechanism can be fully motorised and software controlled.

## ■ RADIAL DISTRIBUTION CHAMBER

Radial distribution chamber is designed to transfer samples between multistage cluster preparation and analytical systems. Transfer mechanism with rack-and-pinion motion feedthrough provides fast and reliable transfer for both hot and cold samples. Time of the transfer (manual) between the chambers is less than 45 seconds – minimising any effect upon sample temperature. The mechanism can be fully motorised and software controlled. Transfer length options on request.

## ■ TRANSFERRING TUNNEL

Transferring tunnel is used to transfer samples between UHV chambers, in a stable and easy-to-operate way. Up to 15 sample holders (PTS, FLAG) can be loaded and transferred via the dedicated sample holder trolley. The chamber is made of stainless steel and includes flanges for pump, viewports, gauges and valves. Guaranteed base pressure range  $10^{-11}$  mbar (after bakeout at 150 °C).

## ■ MULTI-AXES MANIPULATOR

The multi-axes manipulator provides a precision motion in each XYZ axis and three motorised rotary drives. Manipulators are designed to be modular for convenience and to achieve total flexibility. The individual modules, such as the Z slide, XY stage, rotary feedthroughs and motorisation modules are compatible to allow complex applications to be built up from a range of simple units.

PREVAC is a world leading manufacturer of **deposition** and **analysis systems** based on vacuum technology dedicated for the investigation of chemical and physical properties of solid state surfaces, thin films and nanomaterials. We are proud of our transfer system which combine innovative solution with UHV technology, introducing unique possibilities in materials science investigation.



If you need any further information, please do not hesitate to contact our sales department

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