

Equipment

Tools for additional sample and mask transfer

Transfer tools

Wobble Stick

- Up to 4 degrees of freedom
- Mechanical tilt $\pm 22^\circ$ (others on request)
- Flange size: DN 40 CF
- Magnetical linear movement and rotation
- Customized sample holder grip
- Linear stroke up to 300 mm
- Optional parking dock and lock

Grip for transfer rod | wobble stick

- To pick up flag style sample holder
- Built for use as *Bayonet* connection
- Prepared to be mounted in the axis of a transfer rod or a wobble stick



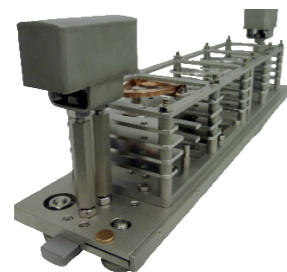
Transfer Rod

- Up to 3 degrees of freedom
- Magnetical linear movement
- Magnetical rotary movement
- Optional sample lift
- Optional flexible bellow for adjustment
- Customized sample holder grip
- Flange size: DN 40 CF | DN 63 CF
- Linear stroke up to 1400 mm
- Optional transfer rod support
- Optional automation and software control



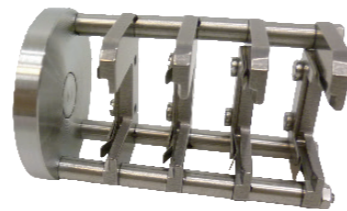
Trolley

Cretec offers a trolley which runs on rail inside a transfer chamber. In addition it is ideal for storing samples in the UHV environment during different processing steps.



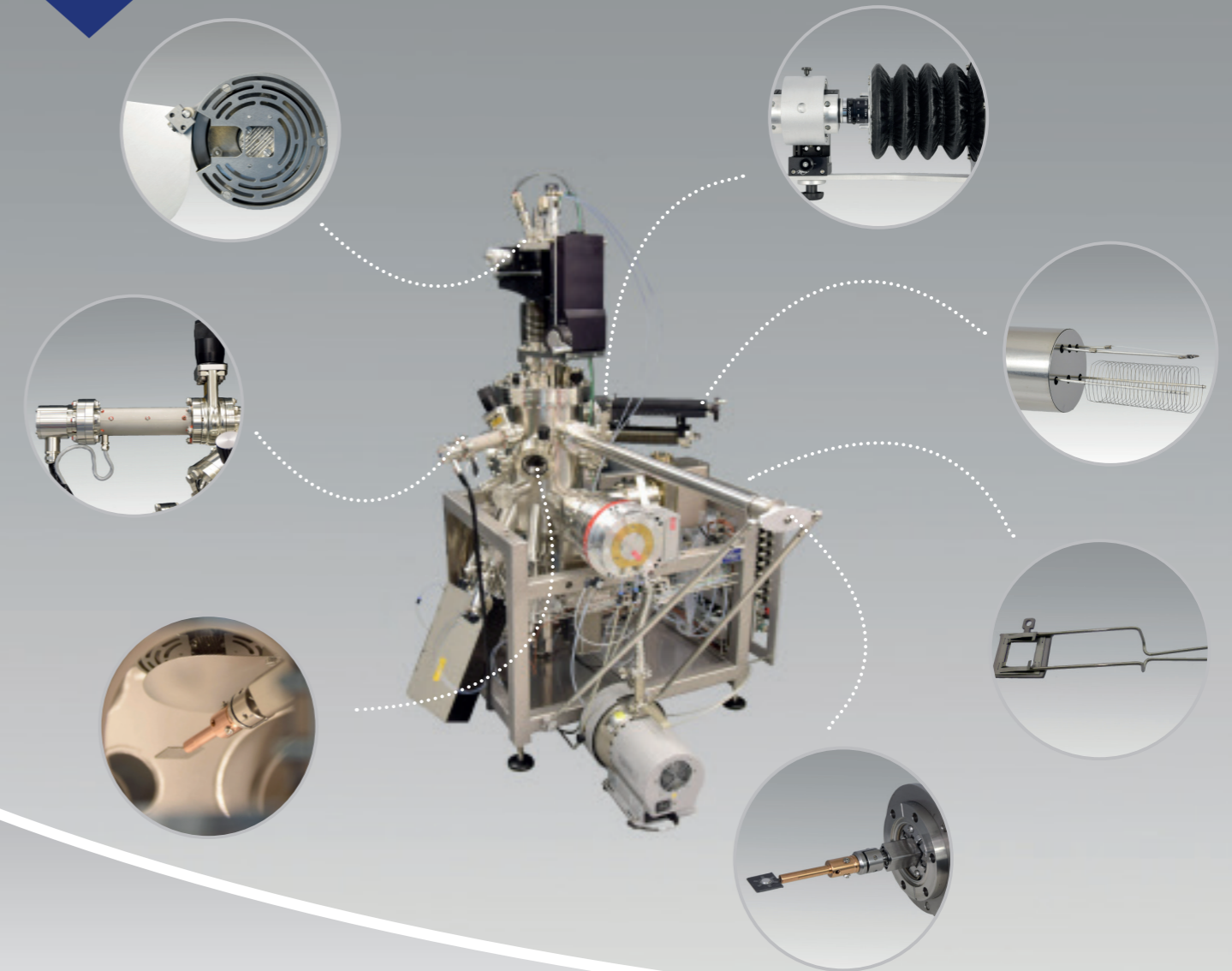
Sample Storage

The sample storage module allows the in-situ storage of several sample holders, STM-tips, etc. inside the UHV chamber. It can be upgraded with linear and rotary feedthroughs or integrated heating stages for sample preparation.



Equipment

Cretec offers a wide range of equipment for UHV Systems

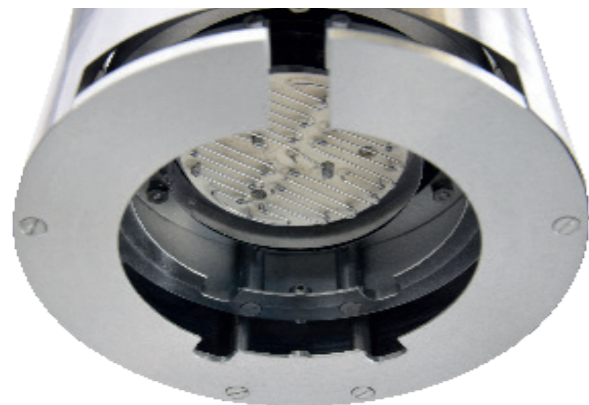


Equipment

Manipulators

CreaTec manufactures a large variety of manipulators according to customer specifications in a pressure range between ambient pressure and UHV. The manipulators are designed for different types of sample holders and various substrate sizes. Temperatures up to 1200 °C are standard. Special manipulators reaching higher temperatures (up to 1700 °C) are available on request, as well as cooling stages for liquid nitrogen and liquid helium.

| TYPE | MA |
|----------------------|--|
| SAMPLE HOLDER DESIGN | as specified |
| SAMPLE SIZE | as specified |
| HEATING SYSTEM | Radiation heating self supported wire filament e-beam heating lamp heating SiC heating |
| THERMOCOUPLE | Type K Type C |
| TEMPERATURE RANGE | up to 1200 °C (up to 1700 °C with e-beam) |
| BAKE-OUT TEMPERATURE | 200 °C |
| FLANGE SIZE | DN 63 CF 100 CF 160 CF 200 CF |
| AXIS | up to 6 axis x, y: up to ± 25 mm z: up to 600 mm azimuthal rotation: continuous polar rotation: ± 180° (0 - 360°) tilt: up to ± 85° |
| MOUNTING ORIENTATION | horizontal vertical |
| PRESSURE RANGE | to 10 ⁻¹¹ mbar |
| UHV LENGTH | as specified |



Heating Stages



CreaTec designs and manufactures highly customized heating systems for any kind of application. Temperatures up to 1200 °C are standard and temperatures up to 2000 °C are possible on small areas.

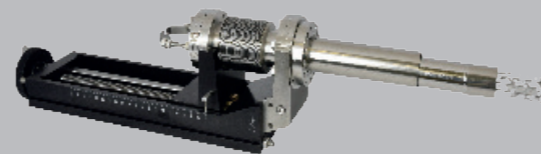
Quartz Rod Heater

The equipment is designed for rapid heating avoiding contamination by resistive heaters. Only the sample region is heated. It can be used with any gases (i.e. Oxygen) and in abrasive atmospheres.

Monitoring

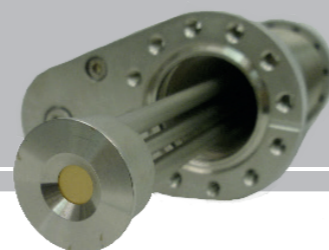
Beam Flux Monitor

CreaTec's Beam Flux Monitor is used for the precise measurement of the beam equivalent pressure (BEP) in MBE systems. High precision electronics guarantee a stable detection of the investigated molecular beam intensity. A computer system for control is optional. Filaments can be easily exchanged.



Quartz Crystal Monitor

CreaTec offers custom designed quartz crystal microbalance sensors to measure the flux density. The sensor head is water cooled and the gold plated quartz plates can be easily exchanged. Power supply with two inputs, control unit and oscillator with all necessary cables are included.



Sample Holders

CreaTec's Sample Holders are designed to mount whole wafers or wafer pieces of different size without using indium (non-bonded).

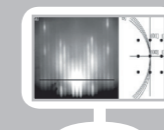


RHEED System

A Reflection High-Energy Electron Diffraction (RHEED) system can be used as an in-situ characterization tool in Molecular Beam Epitaxy (MBE). CreaTec utilizes the RHEED System manufactured by Dr. Gassler Electron Devices.

The RHEED software SAFIRE is a powerful and easy to use RHEED evaluation tool. It combines sophisticated evaluation algorithms with extensive options for data representation and documentation.

SAFIRE



RHEED Screen Set

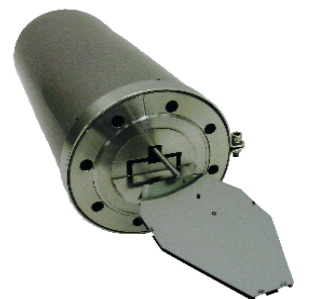
The RHEED Screen Set is an additional equipment for a complete RHEED analysis. It consists of a **viewport shutter**, a **viewport with RHEED screen**, a **camera holder** and a **digital camera**.



Linear Shutter Edge

Linear shutters are used for most demanding applications in MBE. The design is based on CreaTec's EDGE toolkit, allowing linear motion without gliding friction. The shutter does not contain PEEK, bronze or other UHV problematic materials or substances. It is made entirely from stainless steel. Endurance tests have shown failure free operation with practically no wear of the UHV mechanism after more than 10 million strokes at high speed. The shutter can be mounted in any orientation due to its rotatable mounting flange.

| TYPE | SH LIN | | |
|-------------------------|--------------|----------|----------|
| FLANGE | DN 40 CF | DN 63 CF | DN 63 CF |
| STROKE | 40 mm | 60 mm | 80 mm |
| HOUSING CROSS SECTION | 30 x 30 | 45 x 45 | 50 x 50 |
| LENGTH WITHOUT ACTUATOR | 161 mm | 202 mm | 246 mm |
| OPERATING TEMPERATURE | up to 200 °C | | |



Heatable Windows

The heatable UHV quartz window is designed for the usage in MBE or other deposition systems without any other protection. During the growth, the temperature of the window can be kept at room temperature in order to make in-situ optical measurements possible. A water cooling system around the heatable window protects the surrounding.

