



Korvus Technology

# HEX

**VERSATILE COATING SYSTEM FOR  
THIN FILM RESEARCH AND DEVELOPMENT**



SPUTTERING

ORGANICS DEPOSITION

E-BEAM EVAPORATION

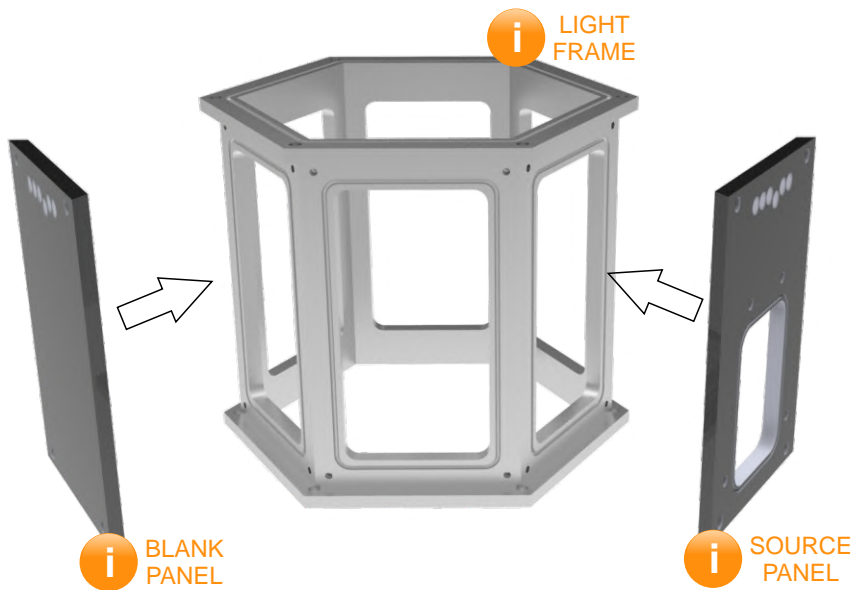
THERMAL EVAPORATION

EDUCATION AND TRAINING

GLOVEBOX COMPATIBLE

The **HEX** benchtop deposition system is a **compact and highly flexible** deposition system

## ADAPTABLE CHAMBER DESIGN



The vacuum chamber consists of a six faceted frame, machined from a single piece of aluminium, which makes the system lightweight and weld free, whilst providing a rigid structure.

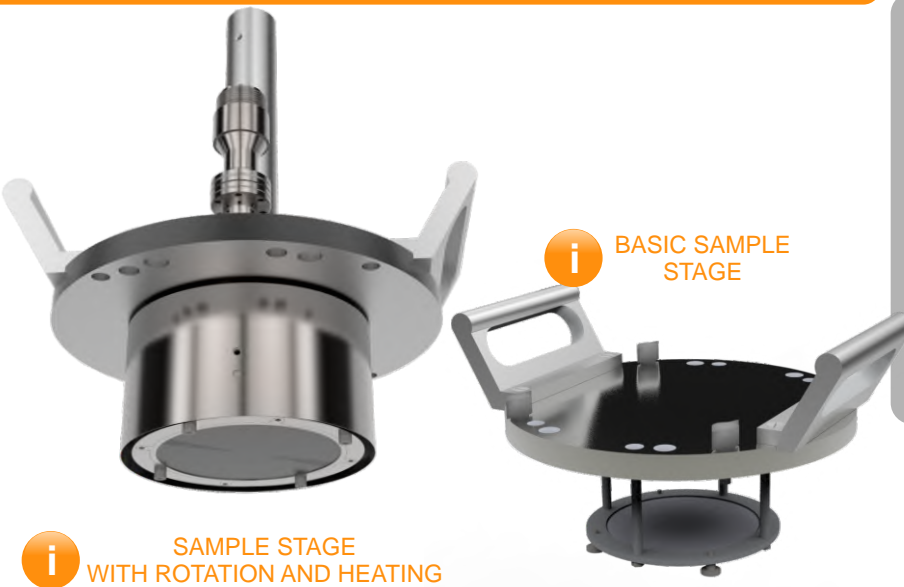
The frame supports 6 interchangeable panels, which can be easily swapped around to achieve the desired system configuration.

Depending on the type of the panel, it may serve as:

- chamber wall (blank panel)
- viewport (viewport panel)
- deposition source (source panel)
- QCM (QCM panel)

The panels can be mounted onto the frame in a matter of minutes, which saves a considerable amount of time whilst performing maintenance procedures or reconfiguring the system.

## EASY ACCESS SUBSTRATE STAGE



The HEX sample stage is designed to be reliable in operation and simple to use. It is typically placed at the top of the chamber with the sample facing downwards. The stage is suitable for a single 4" substrate or multiple smaller substrates.

In addition to a basic fixed sample stage, we manufacture stages with added functionality such as rotation (2-20rpm), heating (300°C) and DC bias. These features ensure excellent film uniformity of the deposited films. We also offer a fixed water-cooled sample stage.

The sample stage is fitted with two ergonomic handles for easy sample transfer to and from the chamber.

In order to change the sample, the stage may be lifted from the chamber, turned over and conveniently placed on the top lid. This arrangement provides a stable platform for rapid sample loading as well as inspection of the deposited coating.

The HEX system may be supplied in a sputter-up or sputter-down configuration. The sputter-down configuration is achieved by mounting the sample stage at the bottom of the chamber facing upwards, whilst placing the turbo pump at the top of the chamber.



# RELIABLE DEPOSITION SOURCES

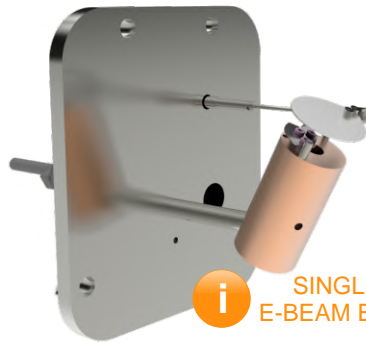
The source panels may be fitted with a range of deposition instruments. Source options include: a magnetron sputter source, a mini e-beam evaporator, thermal boat source and organics source. In addition, a QCM may be installed on a separate source panel to monitor the deposition rate. The HEX chamber may accommodate up to 3 source panels and 3 analysis panels.



**2" MAGNETRON SPUTTER SOURCE**

Designed for 2" diameter targets, the sputter sources are equipped with SmCo magnets and accept targets with thickness ranging from 1 to 6mm for non-magnetic materials and up to 1mm for magnetic materials. The typical target usage is around 43% for non-magnetic materials.

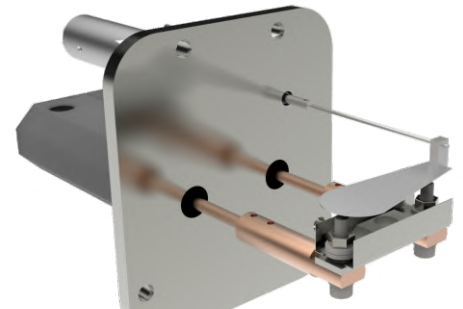
The N-Type connectors allow operation with a DC or RF power supply.



**SINGLE POCKET E-BEAM EVAPORATOR**

This high accuracy (sub-monolayer) mini e-beam evaporator is ideal for ultra-thin film deposition with reliable process control.

The source incorporates an in-situ flux monitor for monitoring the evaporation rate. The material can be deposited from either rod or crucible. Crucibles in 210mm<sup>3</sup>, 390mm<sup>3</sup> and 1000mm<sup>3</sup> sizes are available.



**SINGLE BOAT THERMAL EVAPORATOR**

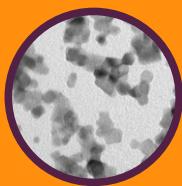
The single thermal boat source allows for the integration of a range of thermal boats for the deposition of both metals and organics/polymers.



**Organic Material Deposition Source**

Our new ORCA source is specifically designed for highly-controlled deposition at low temperatures.

The unique design and flexibility makes it a powerful platform for a range of exciting applications:



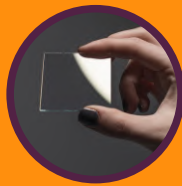
**SAMPLE PREPARATION FOR SURFACE ANALYSIS, SEM, TEM, AFM/SPM AND ELECTRON SPECTROSCOPY**

**RESEARCH AND DEVELOPMENT OF NEW COATINGS**



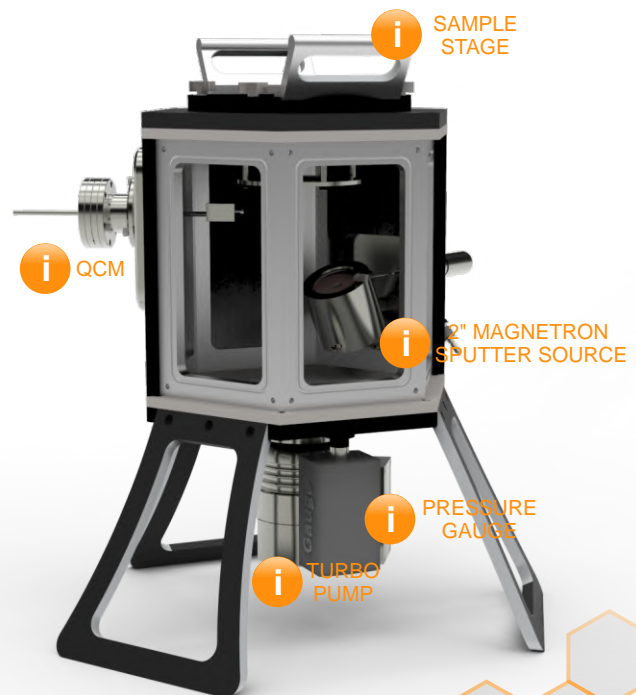
**ELECTRICAL CONTACTS FOR SOLAR CELLS AND SEMICONDUCTOR APPLICATIONS**

**ITO COATINGS**



**SPUTTER DEPOSITION**

**TEACHING AND TRAINING**



# RAPID PUMP DOWN

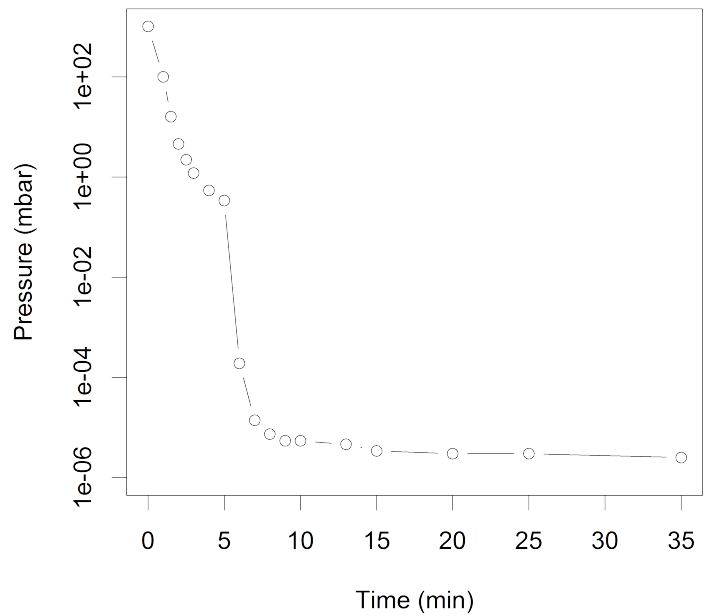
The HEX's pumping arrangement consists of a 80ls<sup>-1</sup> (optional 300ls<sup>-1</sup>) turbo pump at the bottom of the vacuum chamber and a backing pump near the system. The pressure in the chamber is measured by an integrated vacuum gauge located near the turbo pump.

The operation of the HEX system can be automated, allowing the user to create automatic pump down and venting procedures.

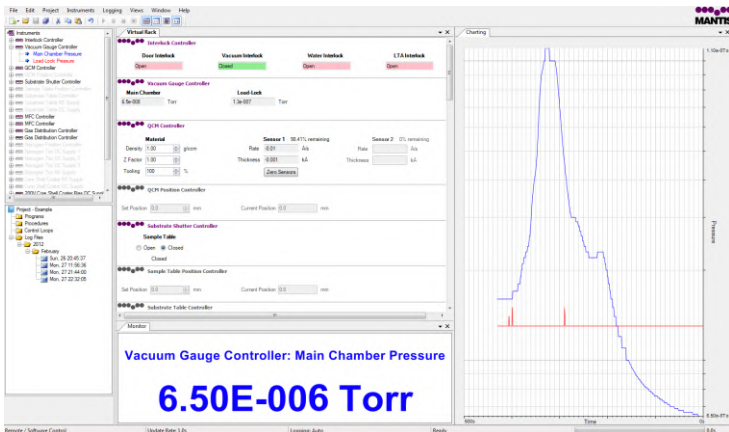
When pumping the system down with a 300ls<sup>-1</sup> turbo pump, the base pressure reaches a guaranteed value of  $5.0 \times 10^{-6}$  mbar in just 20 min.

The HEX's ultimate base vacuum pressure is  $4 \times 10^{-7}$  mbar.

## HEX pump down curve with 300ls-1 turbo pump



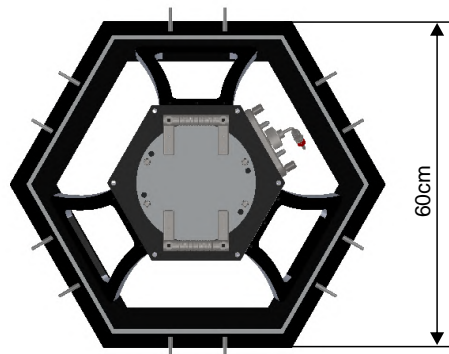
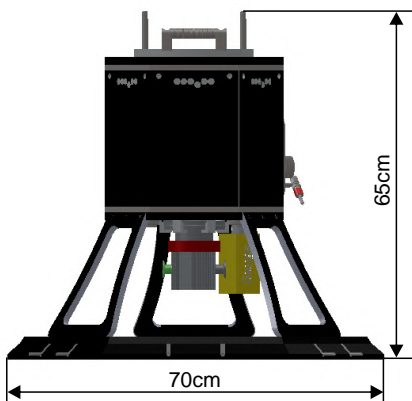
# AUTOMATED SYSTEM



As an option, the operation of the HEX could be automated using our dedicated software suite NIOLUM, installed on a laptop. It's conceptual model organizes the workflow to meet operator needs at every stage of the deposition process. The software features an intuitive user interface and simple meaningful visual displays. Designed for a Microsoft Windows environment, it is a versatile platform for thin film process innovation.

The core of the software interface is a simple visual window that resembles the actual electronics rack with convenient toolbars that define instrument settings and seamlessly integrate into programmed deposition sequences. It is very easy to display various parameters graphically and log data into files for further processing.

# COMPACT FOOTPRINT



The HEX deposition system will fit perfectly on the lab bench, which makes it ideal for small scale teaching laboratories or clean rooms where the available space is limited. All of the electronics are housed in a separate 16U electronics rack.

Weight: 50kg



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