The DHS 1100 from Anton Paar is a heating attachment for two- and four-circle X-ray diffractometers, enabling stress, texture and thin film XRD applications at high temperatures, up to 1100 °C.

# Non-ambient attachment for XRD

DHS 1100 – domed hot stage

Benefits

- **Unique high-temperature device allowing tilt and rotation of the sample with respect to the X-ray beam**

- **High temperature uniformity across the sample**

- **Easy sample mounting**

- **Enables a wide range of XRD applications on thin films, bulk samples and powders**

- **Choice between PEEK and graphite domes depending on the application**

- **Due to the compact design and flexibility it can be easily mounted on the MRD cradle and the three-axes cradle of the Empyrean diffractometer.**

- **Wide field of view when using 2D detectors**

Application example

The detoriation of the AlInN layer caused by heating to 600 °C was monitored *in situ*.
The AlInN peak intensity decreases with time until the intensity of the layer can not be discriminated from the background, indicating detoriation of the layer.
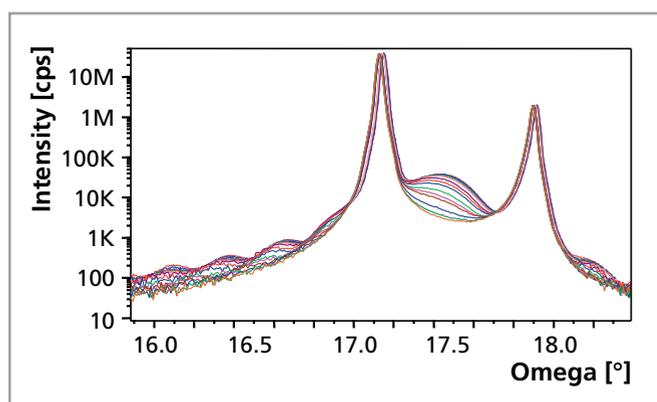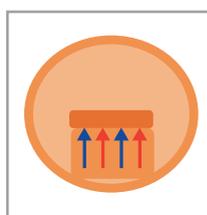

Evolution of AlInN (00.2) peak intensity at 600 °C vs. annealing time

Ref.: Application note 'Studying the thermal stability of gallium nitride based high electron mobility transistor structure' available on www.panalytical.com.
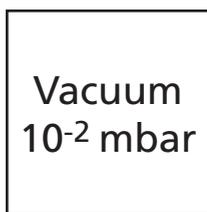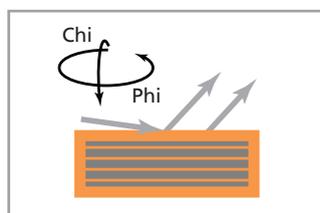
DHS 1100
heating attachment

Features

Direct heater/cooler (plate)

From room temperature to +1100°C
(air, nitrogen, vacuum)
From room temperature to +1050 °C
(helium)
Max. heating rate: 500 °C/min

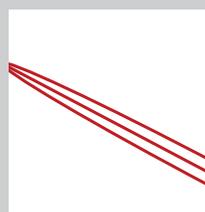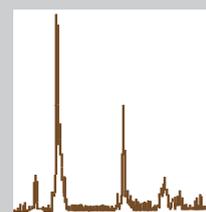| Air	Vacuum 10^{-2} mbar	Inert gases

Atmospheres

Flat plate reflection geometry with chi and phi rotation possibility, enabling full pole figure recording while in operation. Aluminium nitride sample table.
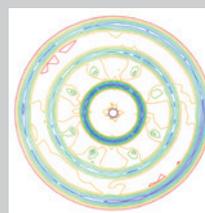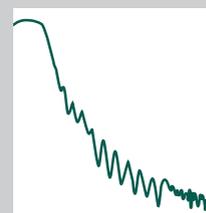
Applications

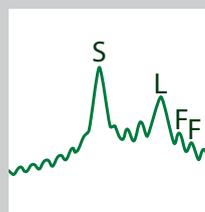

Stress

Grazing incidence XRD
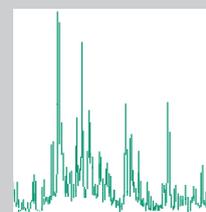

Texture

Reflectivity

High-resolution XRD

Basic powder XRD

Conclusion

The DHS 1100 heating attachment is an ideal choice for *in situ* XRD applications requiring precise sample alignment and change of sample orientation during measurements.