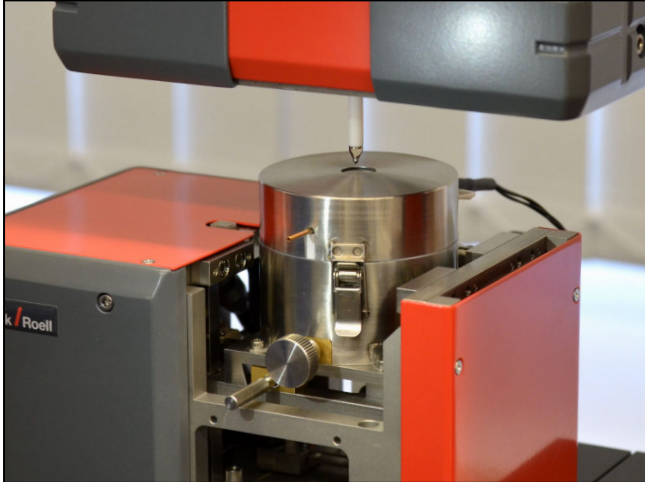


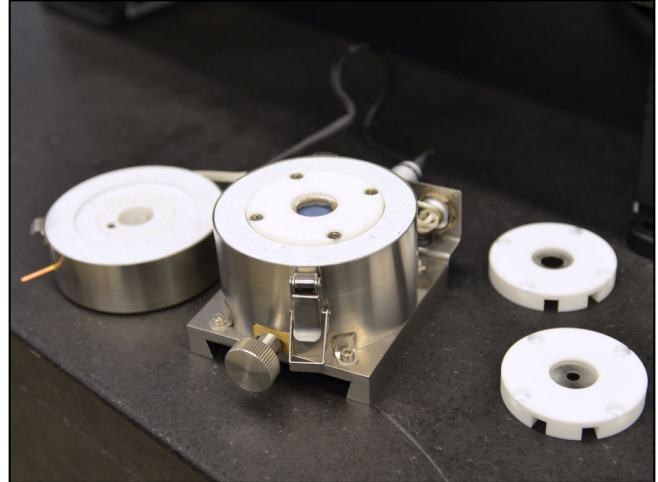
Product Information

Sample heater up to 400 °C for High Temperature Nanoindentation

CTA: 160891 160892

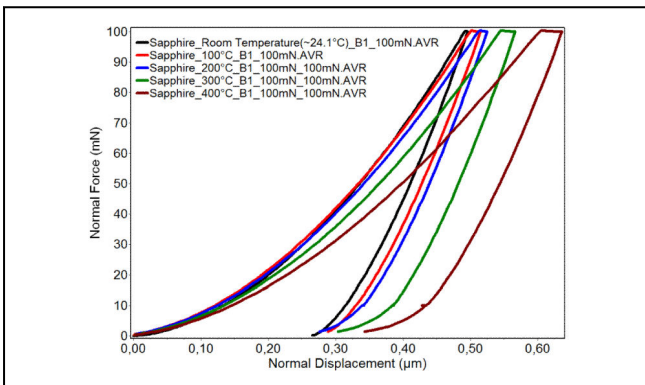


Specimen heater mounted in a ZHN

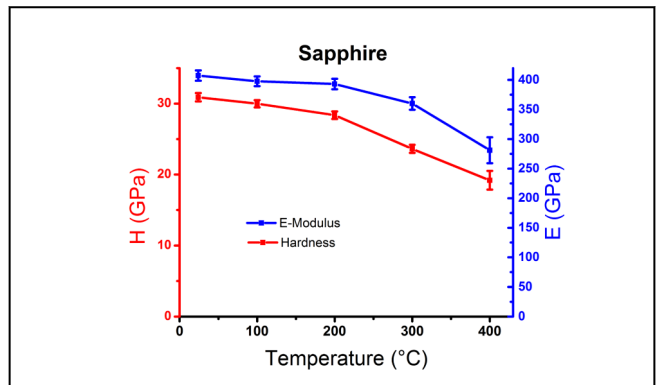


Specimen heater, open, with additional inserts

CTA: 96965 98967



Comparison of load displacement curves from sapphire measured between room temperature and 400 °C during fast hardness measurements with ZHN & sample heater



Effect of the temperature on indentation hardness and modulus of sapphire: The thermal drift rate error is less than 0.1 nm/s at 400 °C.

Advantages and features

- The sample heater is designed as a plug-in, like sample holders for the ZHN. Instead of the entire test system, only the sample itself is heated - temperature-induced measurement errors are avoided.
- It employs passive cooling and does not require a water supply, enabling lateral force measurement and scratch tests with no lateral force contribution.
- A gas feed connection is also incorporated to enable heated tests in an inert gas atmosphere. The test diamond is thus more stable and the sample surface oxidizes less.

Operating principle

The specimen heater is installed in the ZHN in place of the standard specimen holder. Two heating circuits are

used. A heating plate is positioned under the specimen and a heating cylinder is located in a cover above the specimen. An extended Macor rod with indenter tip at the end extends into the cover and is heated together with the volume of compressed air above the specimen. PT100 temperature sensors are integrated into the heating elements.

The top cover can be removed after the test. A visual inspection of the specimen surface can then be performed using a long-distance lens so that positioning accuracy is not lost. Specimen and heating plate are pressed against a stop from below. No adhesive is needed to fix the specimen in place.

PI 903 0718

Product Information

Sample heater up to 400 °C for High Temperature Nanoindentation

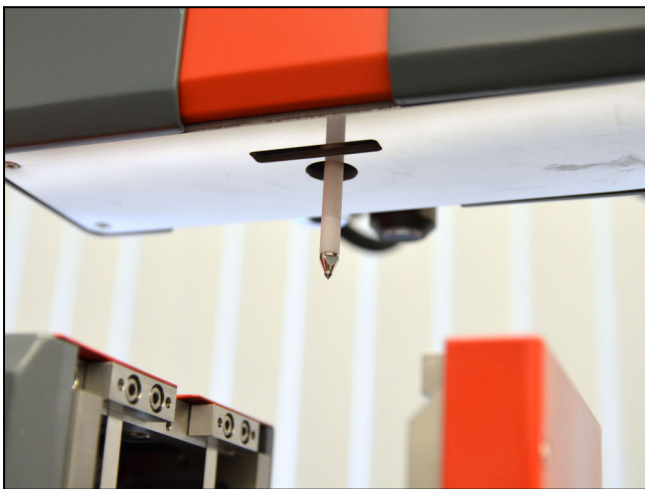
Technical data

Item no.	1045659	
Temperature, max.	400	°C
Heating rate, max.	100	K/min
Temperature stability	≤ 1	K
Specimen dimensions, max.	15 x 15 x 5	mm
Specimen dimensions, min.	5 x 5 x 2	mm
Measurement range, max.	4 x 4	mm

Required accessories

Description	Item number
Shaft extension	1045660
Spacer	1016450
Long-distance lens 50x for tandem microscope for ZHN <ul style="list-style-type: none">• for the optimum use of the specimen heater (focussing of the specimen surface)• Large working distance of 10.6 mm (otherwise 0.38 mm)• Additional charge, replaces the standard lens 50x	1016479

CTA: 160893



Shaft extension