

Technology offer

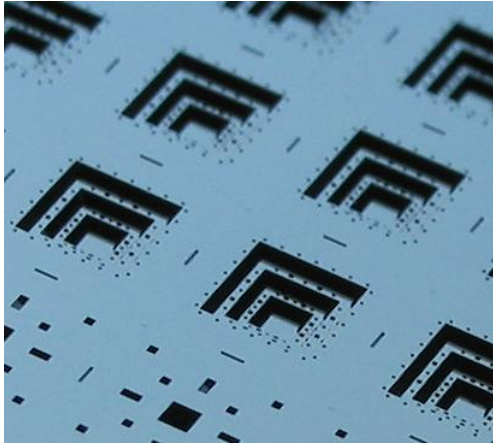


Image of the Geometry Standard

Advantages

- surface roughness of a few nanometer
- high precision of lithographical production at low costs
- batch-production possible

Contact:

Dr. Bernhard Smandek
Technology Transfer
Phone: +49 531 592-8303
Fax: +49 531 592-69-8303
e-Mail: bernhard.smandek@ptb.de

Dr. Sebastian Bütefisch
Scanning Probe Metrology
Phone: +49 531 592-5119
e-Mail: : sebastian.buetefisch@ptb.de

Physikalisch-Technische Bundesanstalt
Bundesallee 100
D-38116 Braunschweig

www.technologietransfer.ptb.de

High Precision Geometry Standard

Using the novel geometry standard of PTB will allow you to determine scaling factors and characteristics of guidance and positioning for metering microscopes or coordinate measuring machines (CMM) with unsurpassed accuracy.

The new developed process enables the production of geometry standards with a size in the millimeter range and a roughness of horizontal flats in the low nanometer range. In contrast, common geometry standards are produced by wire erosion and have a roughness of several hundred nanometers.

Technical description

The micro standards are produced on the base of monocrystalline silicium with high surface quality. Using lithography processing technology, structured wafers are produced, positioned to multilayers and finally bonded.

In this way high precision inverted pyramids, pin holes or specimen with an undercut are created, thus adapting the shape of the calibration standard as close as possible to the industrial device under test.

Application

Coordinate measuring equipment for the microsystem world is available from a variety of high-end suppliers. The size of the mechanical contact elements of these CMM are in the micrometer range. These elements enable measurements such as the surface quality of injection nozzles, gear wheels or free formed surfaces in the micro meter range.

Calibrating these coordinate measuring systems require high precision test specimen with low surface roughness. The patented PTB-technology is key to achieving this goal. Consequently measurement uncertainties are reduced significantly.

Thus, PTB's high precision geometry standard is closing the gap between the dramatically reduced size of industrial parts and the calibration needs of your measuring system.

Economic significance

Precision is the key to success on tomorrow's market. PTB provides with its high precision geometry standard a cost effective, modern calibration standard which easily can be adapted to specific user requirements.

Development status

Under DE 10 2008 024 808 B3 a patent has been granted for the process, the method and as well for the test specimen. First test specimen were manufactured and are available.