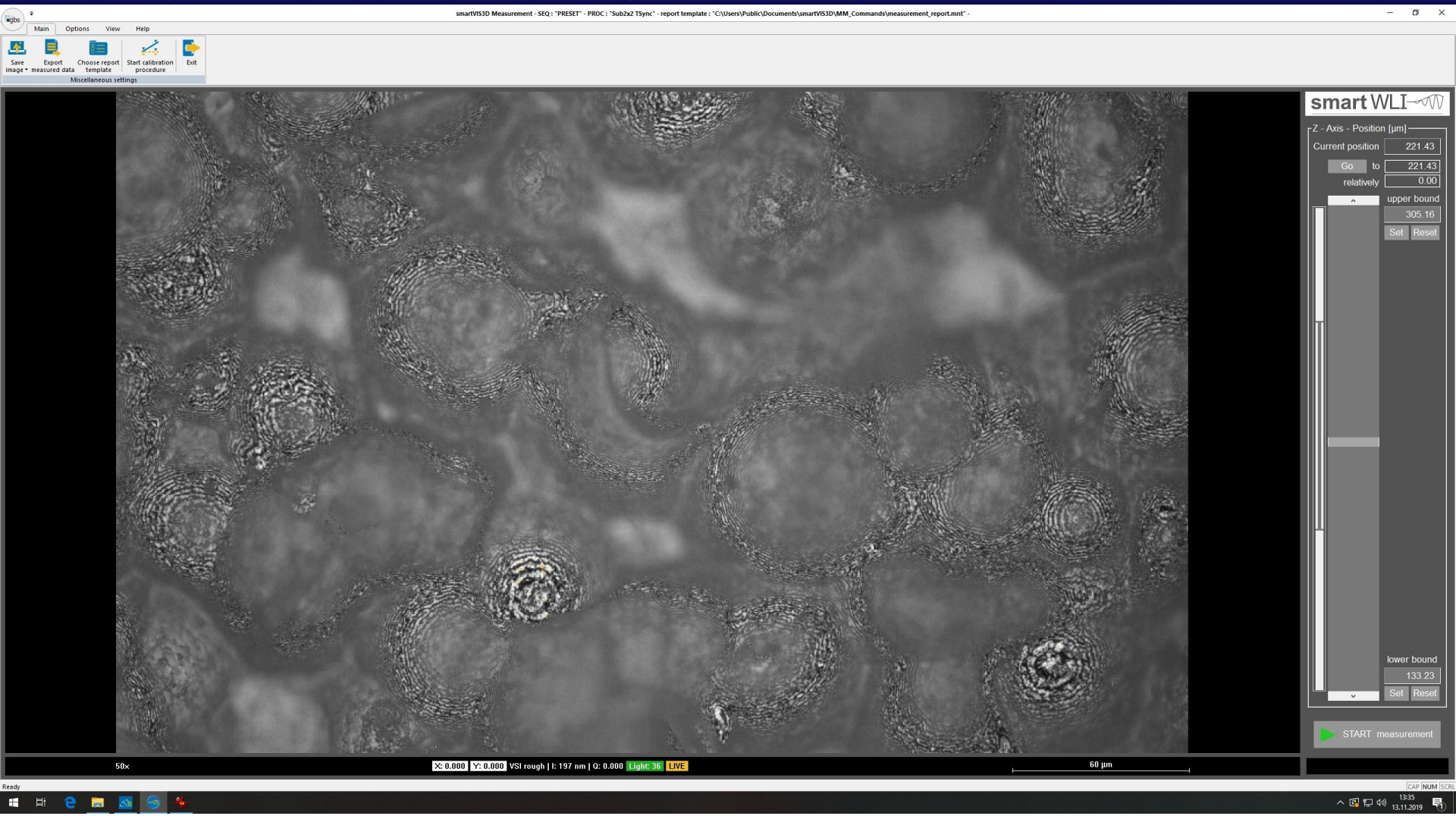
smartVIS3D - scanning software package



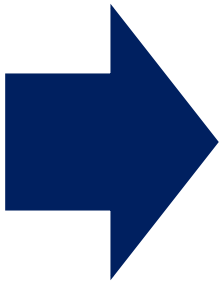
simplified handling for high performance measurements
high performance computing for faster results

smart WLI

push button scan and evaluation

smartVIS3D

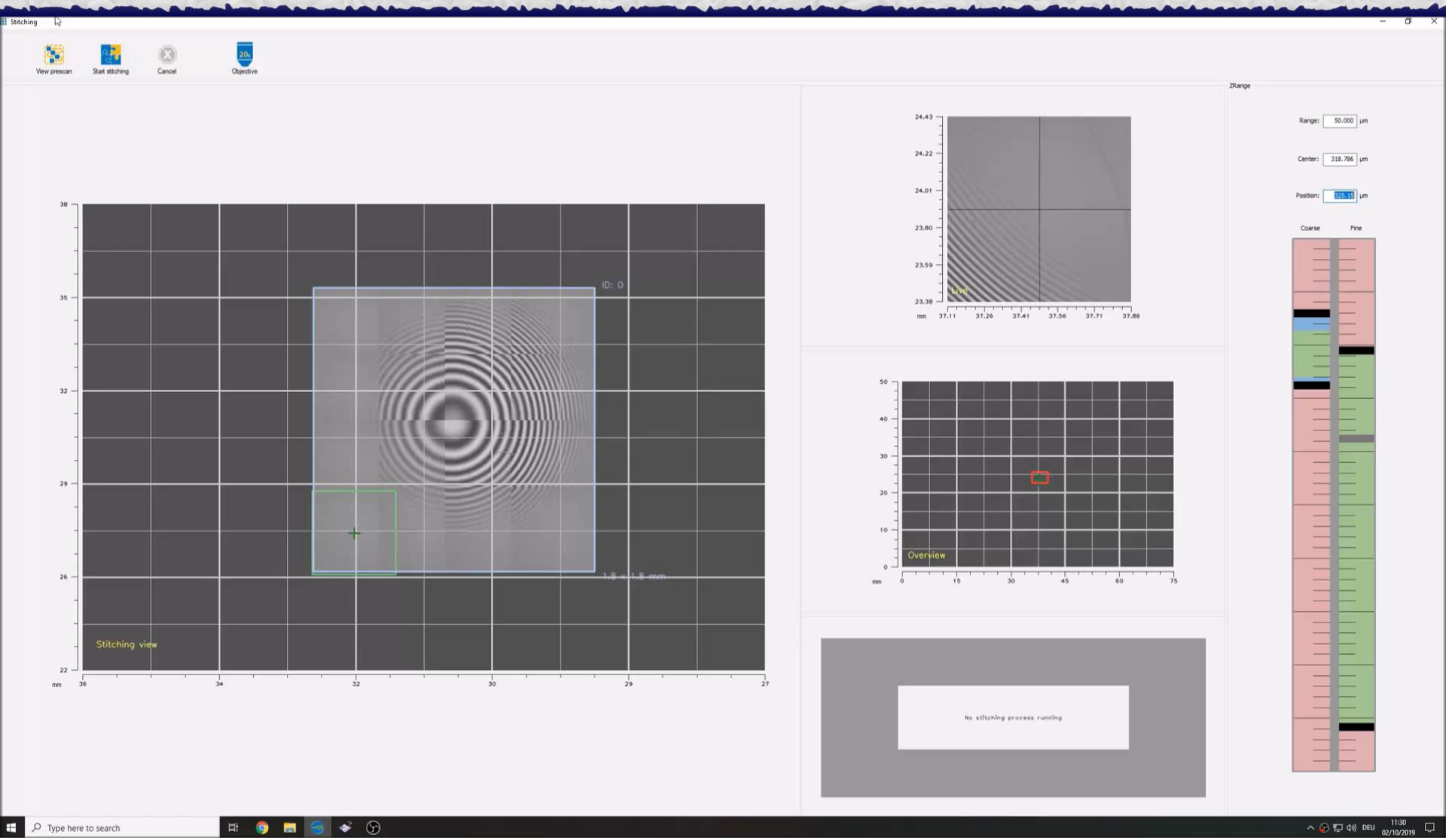
- selection of the scanning volume in xyz
- selection of the measuring parameters
  - objective
  - light settings
  - speed (step height, camera parameters)
  - EPSI / VSI
- selection of the evaluation macro / MountainsMap



MountainsMap

- graphical presentations
  - profiles
  - 3d plots
- evaluation
  - roughness parameters
  - contour measurements
  - structure classification
- tolerance check
- data export and data storage
  - protocols
  - measuring results

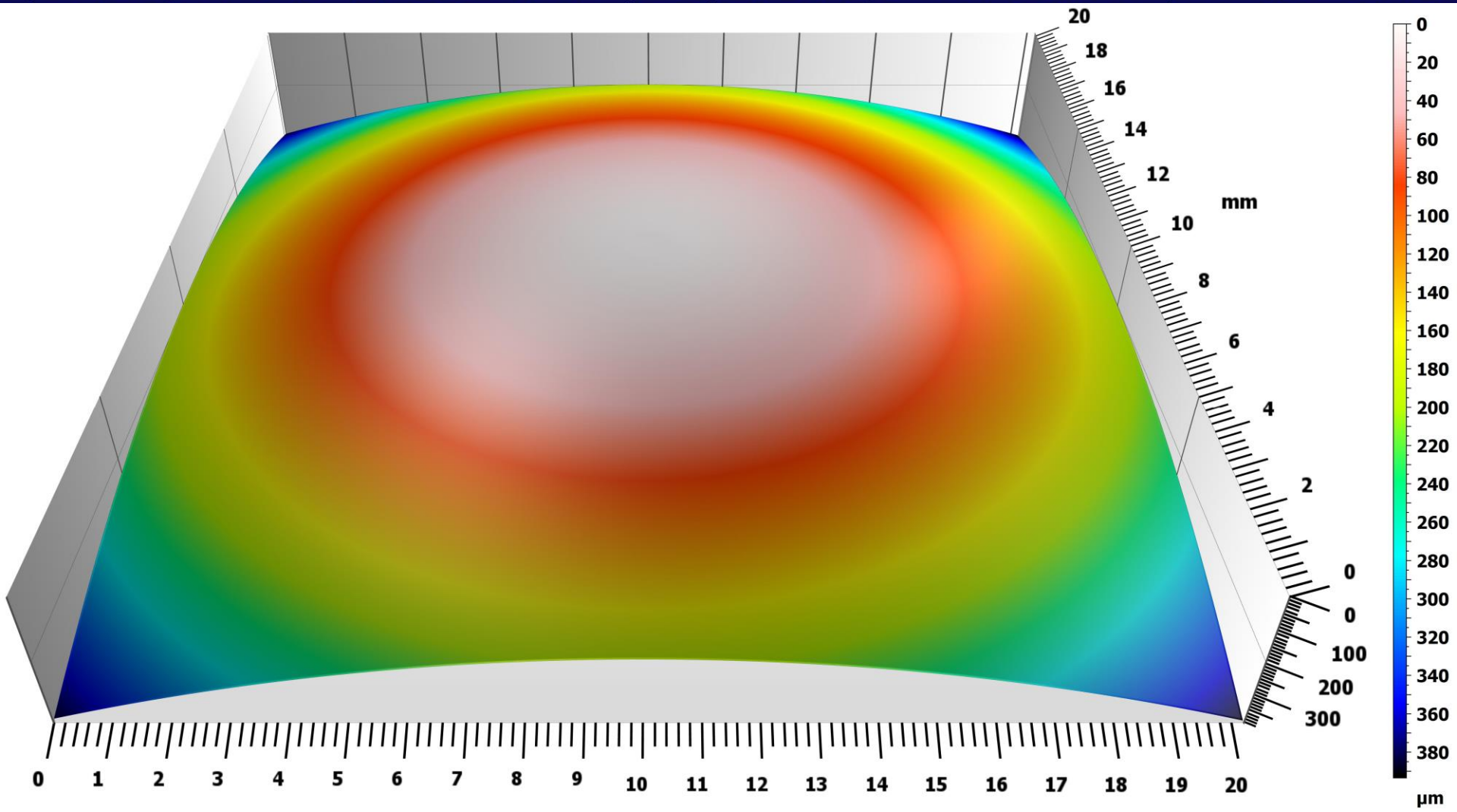
video: large area scanning / lens



easy and unlimited area scanning
inside the positioning area of the xy tables

smart WLI

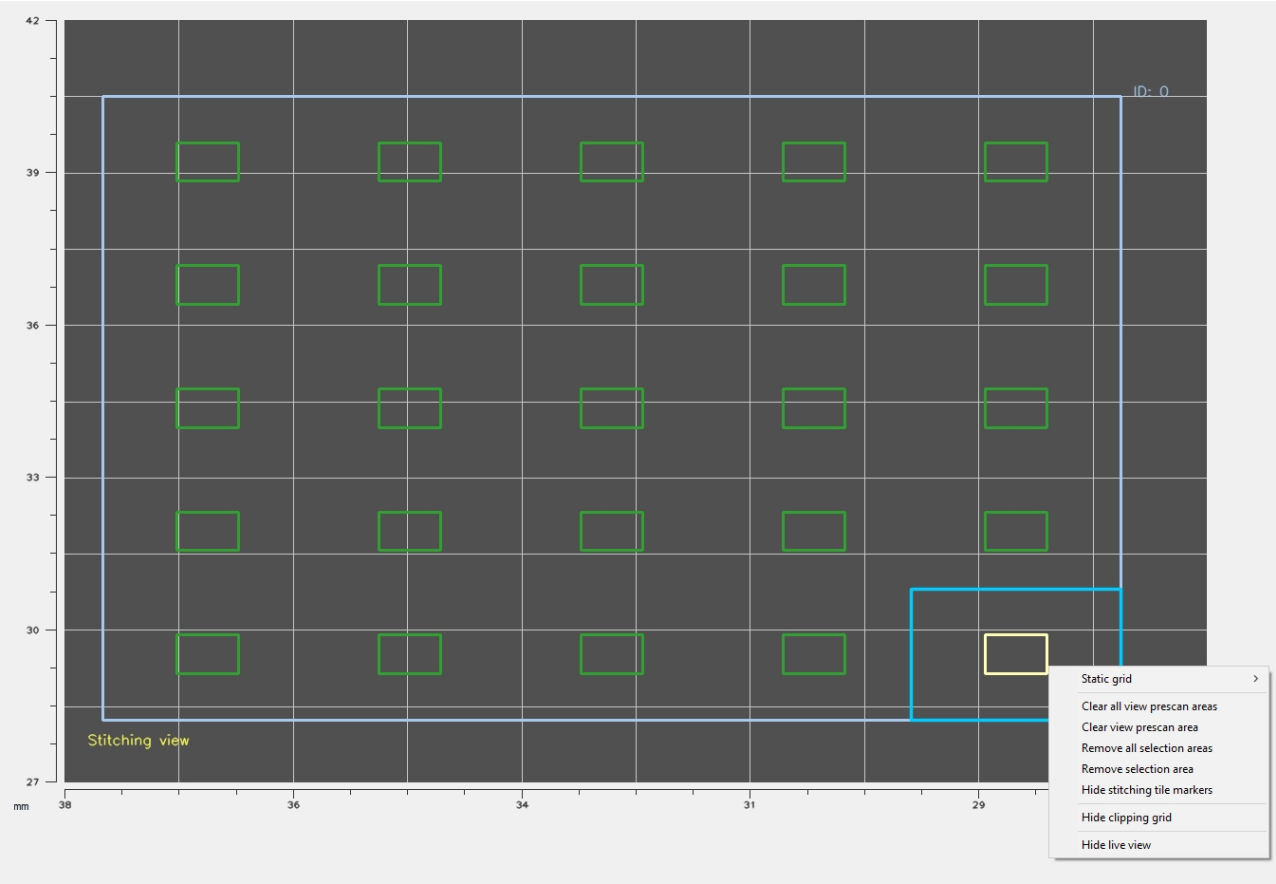
MountainsMap – 3D plot of a lens



MountainsMap evaluate the data automatically

smart WLI

area editing to speed up scanning processes

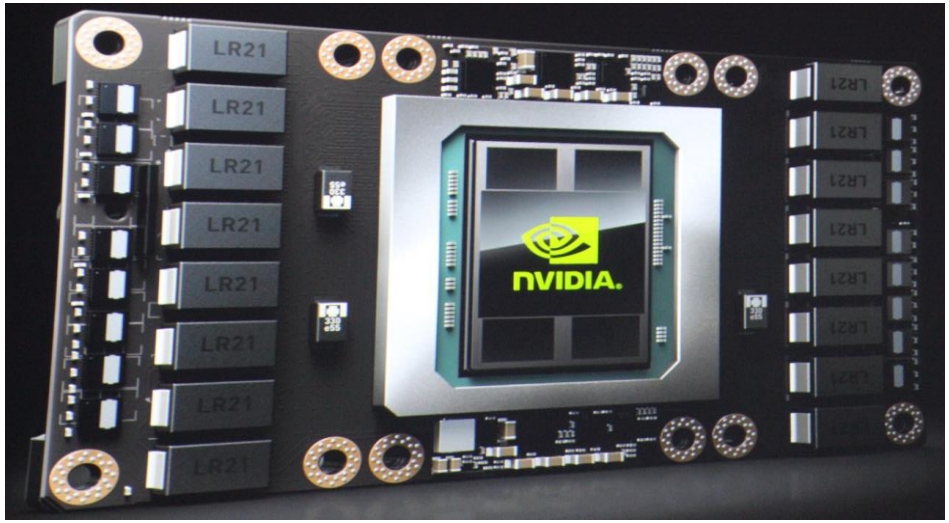


area editing

- ***elimination of single scans***
- ***modification of the scanning in z-axis***

massive parallel image processing

more than 3000 cores provide the calculation power of 10 TFLOPS!



acceleration of the measurement

improvement of the data quality

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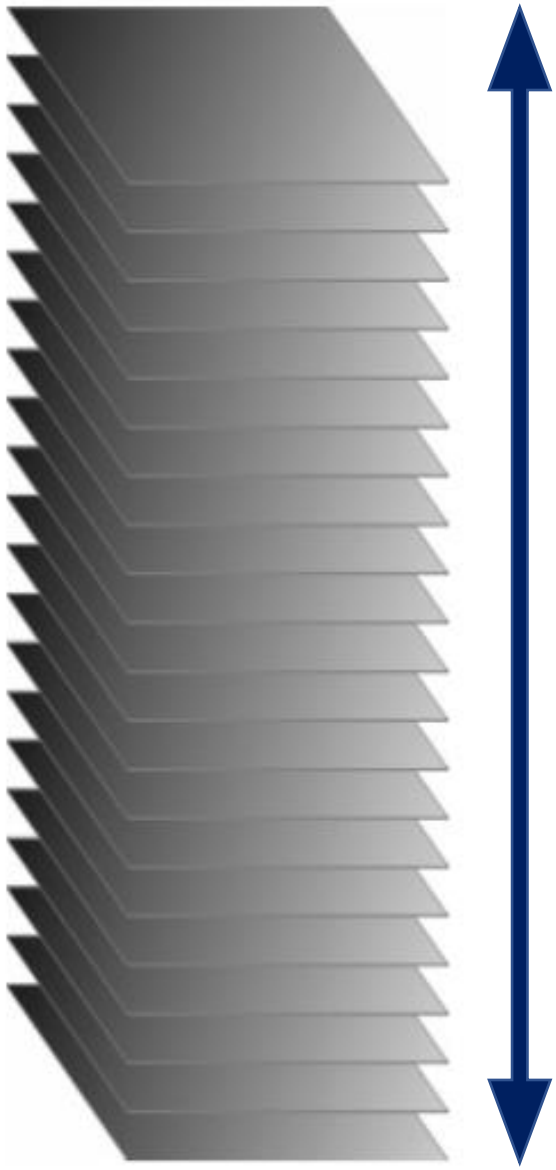
high speed vertical scanning



- ✓ up to 5 mm scanning range
- ✓ up to 5 MP / measuring points
- ✓ up to 3000 images per second
- ✓ adjustable z increments
- ✓ up to 400 µm/s scanning speed
- ✓ up to 75.000 images
- ✓ up to 450 GB image data

evaluated in real time on the graphic board

high resolution 3D data without delay!

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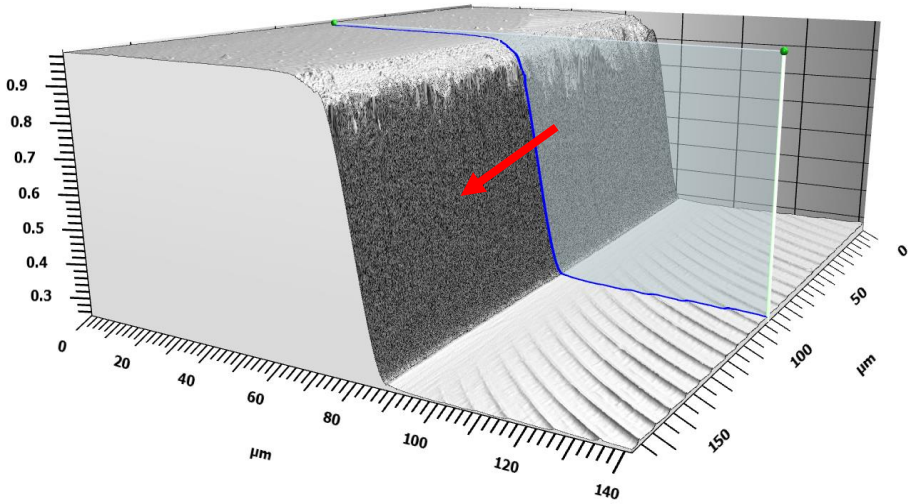
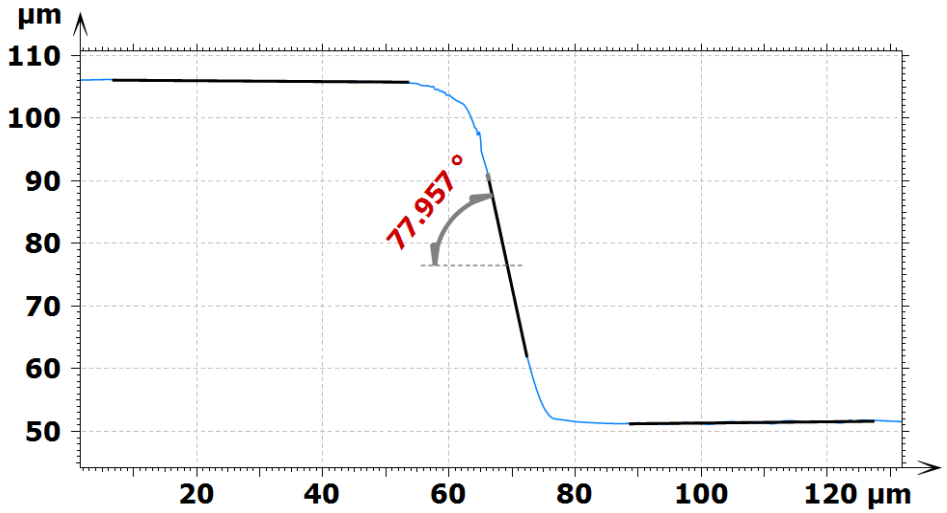
the data quality evaluation





smooth and transparent flank with overlapped data quality map:

- even on the high inclined flank are still app. 70% valid points
- smartVIS3D can eliminate outliers based on data quality information calculated out of the image stack for each pixel without any information from neighborhood points
- the quality indicates the agreement between registered signal and ideal correlogram
- the data quality layer takes app. 50% of the calculation power but is the reason to trust each single pixel and being able to analyze larger areas with lower magnification objectives as well as the measurement of real inclined surfaces

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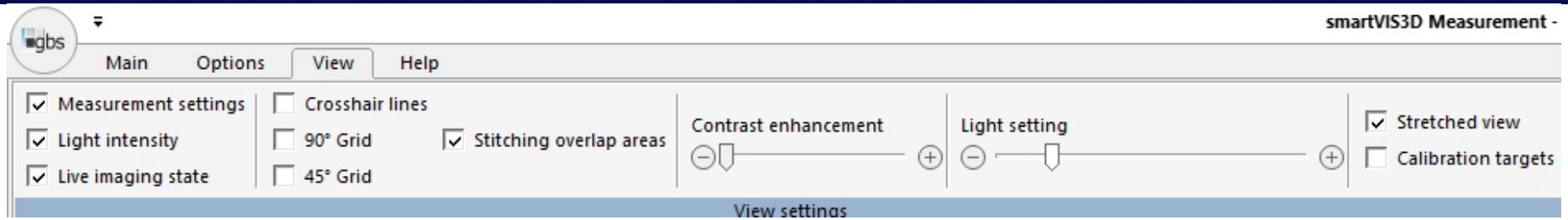
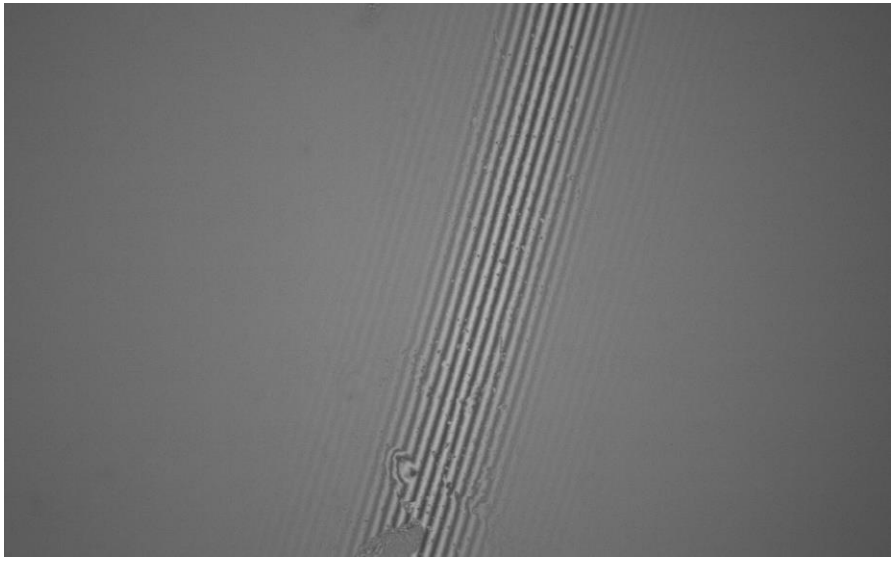
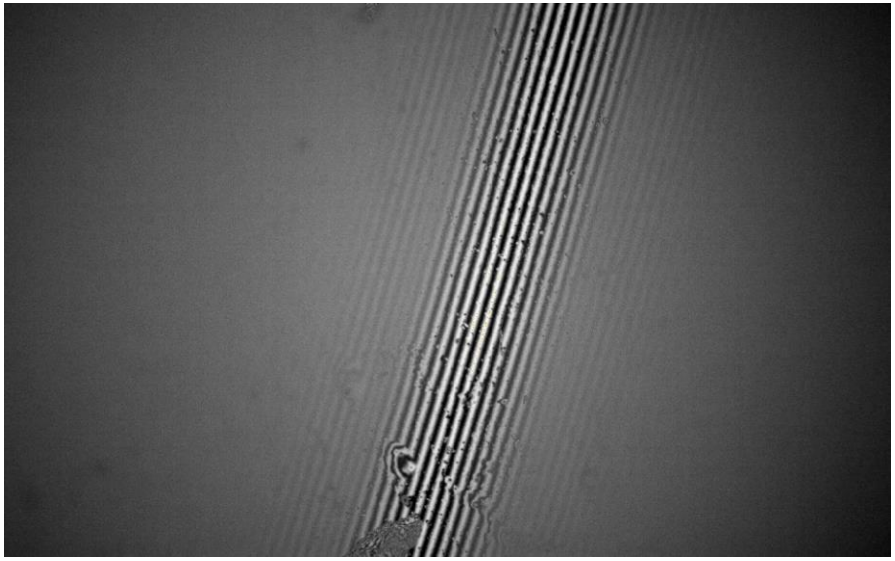
contrast enhancement







contrast enhancement and light control simplifies the sample positioning and measurement for sloped and transparent samples

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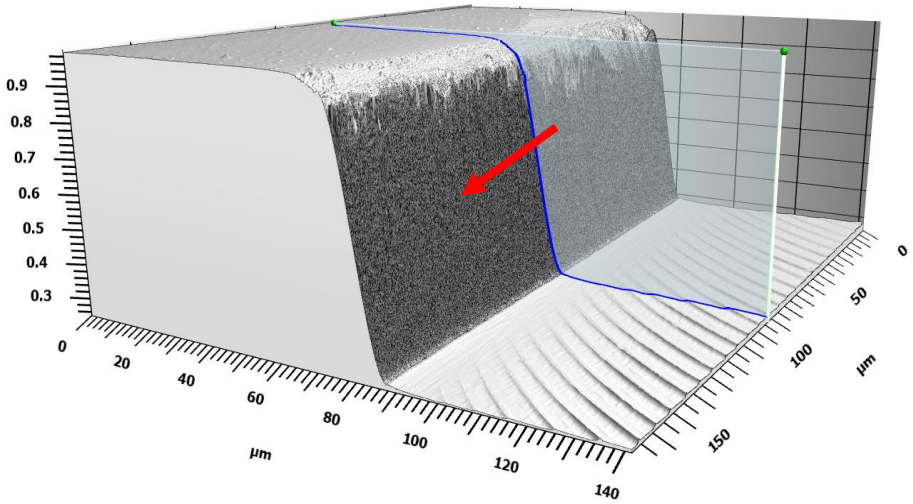
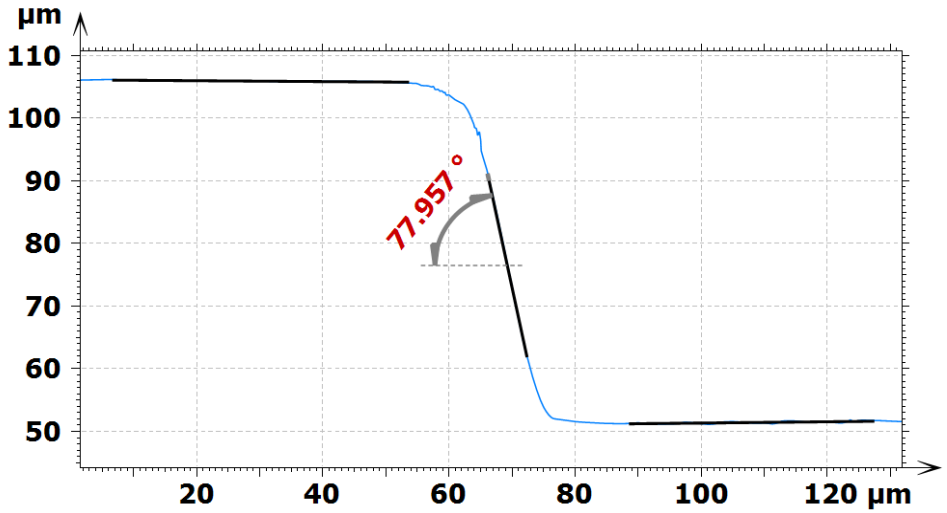
the data quality evaluation





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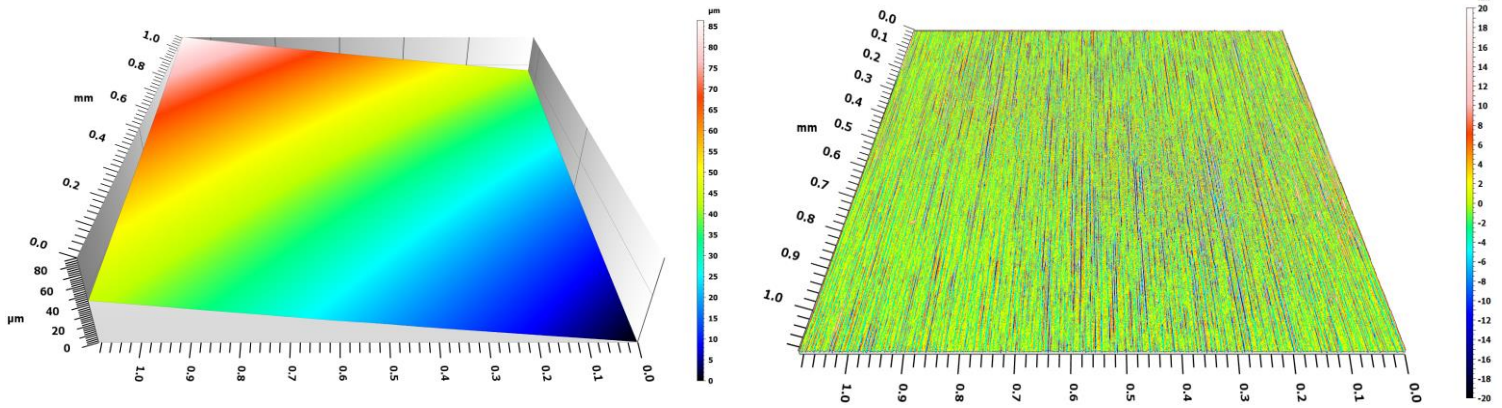
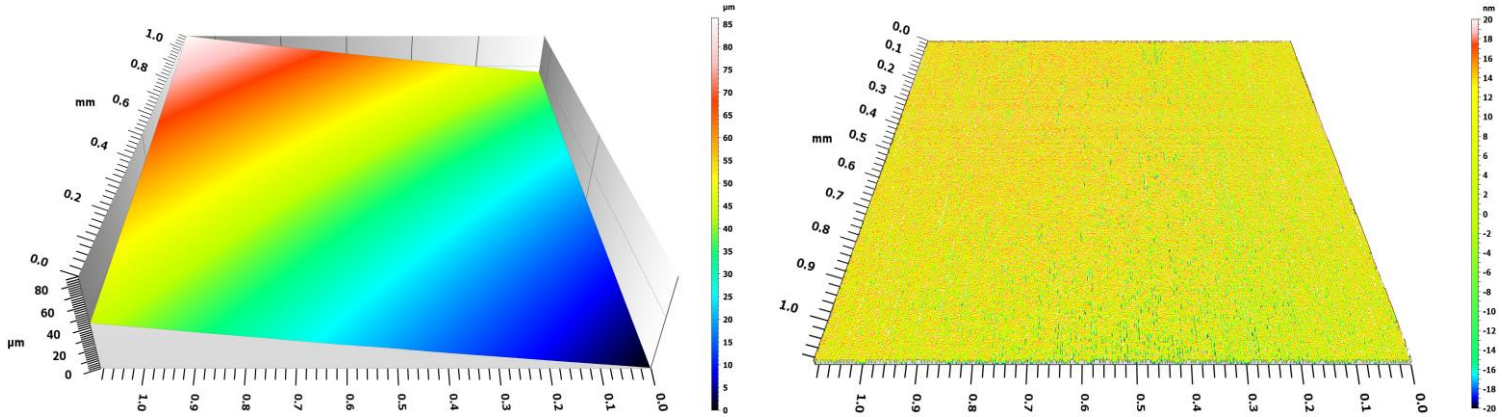
EPSI scanning of an grind glass surface

EPSI



VSI



EPSI (extended phase-shift interferometry) provide sub-nanometer z resolution on smooth surfaces. It can be used on inclined surfaces with height differences up to app. 50 ... 100 µm per scan.

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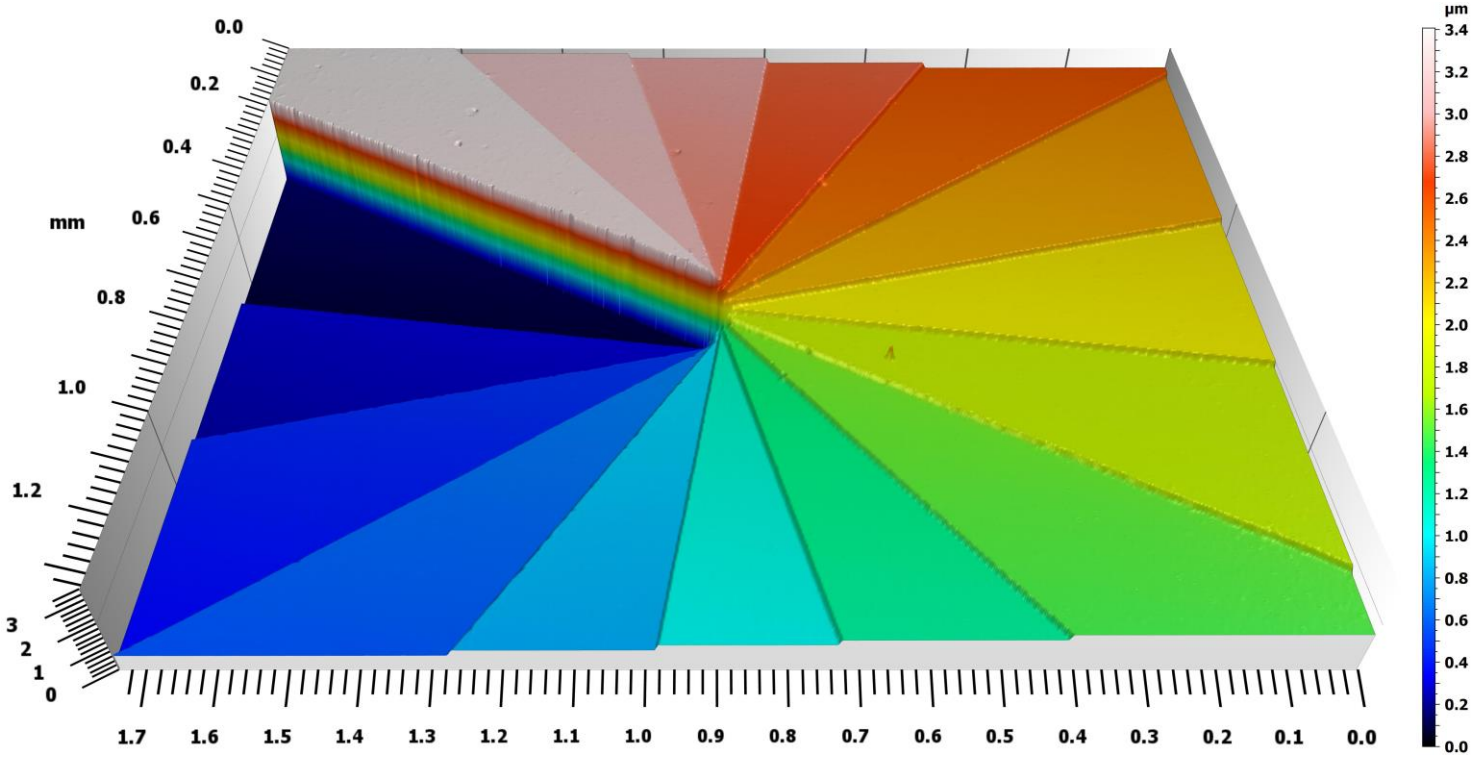
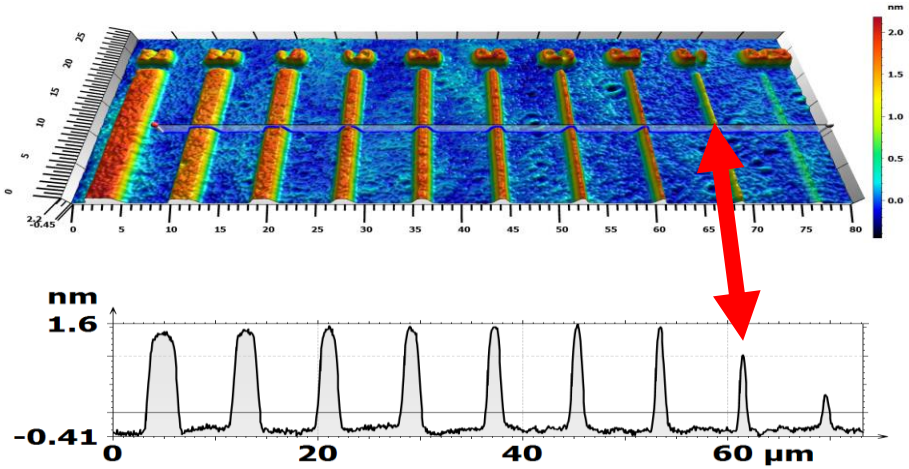
EPSI on smooth steps



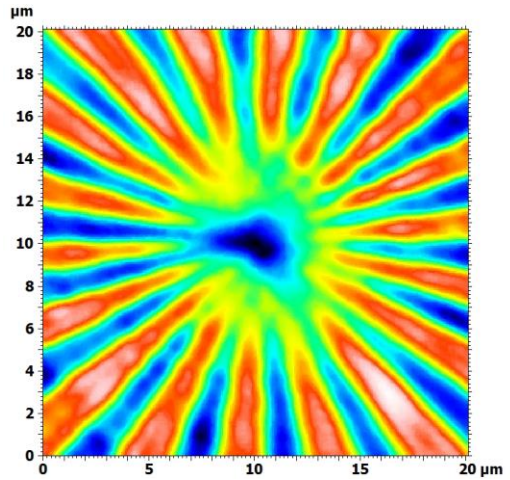
EPSI can be used on spiral staircase standards – surface which couldn't be measured with standard PSI (or PSI + unwrapping) algorithms.

smartVIS3D provide highest resolution in xyz

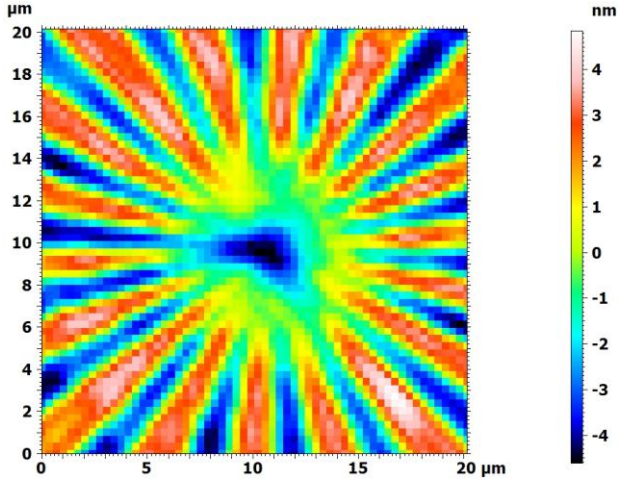


Standard with line structures:

- 100x objective
- partial area of a 170 x 140 µm ²FOV
- configuration with 5 MP camera
- measuring point distance 0.07 µm
- on an 0.1 µm wide line structure the measured height value got down to app. 2/3 of the nominal value



100x objective (partial area)



20x objective (partial area)

3D Siemens-Stern:
The result of the 20x objective proves the correct scan of the 3d structures compared to the 100x reference file down to the single points without influence of the direct neighborhood and similar height resolution.

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