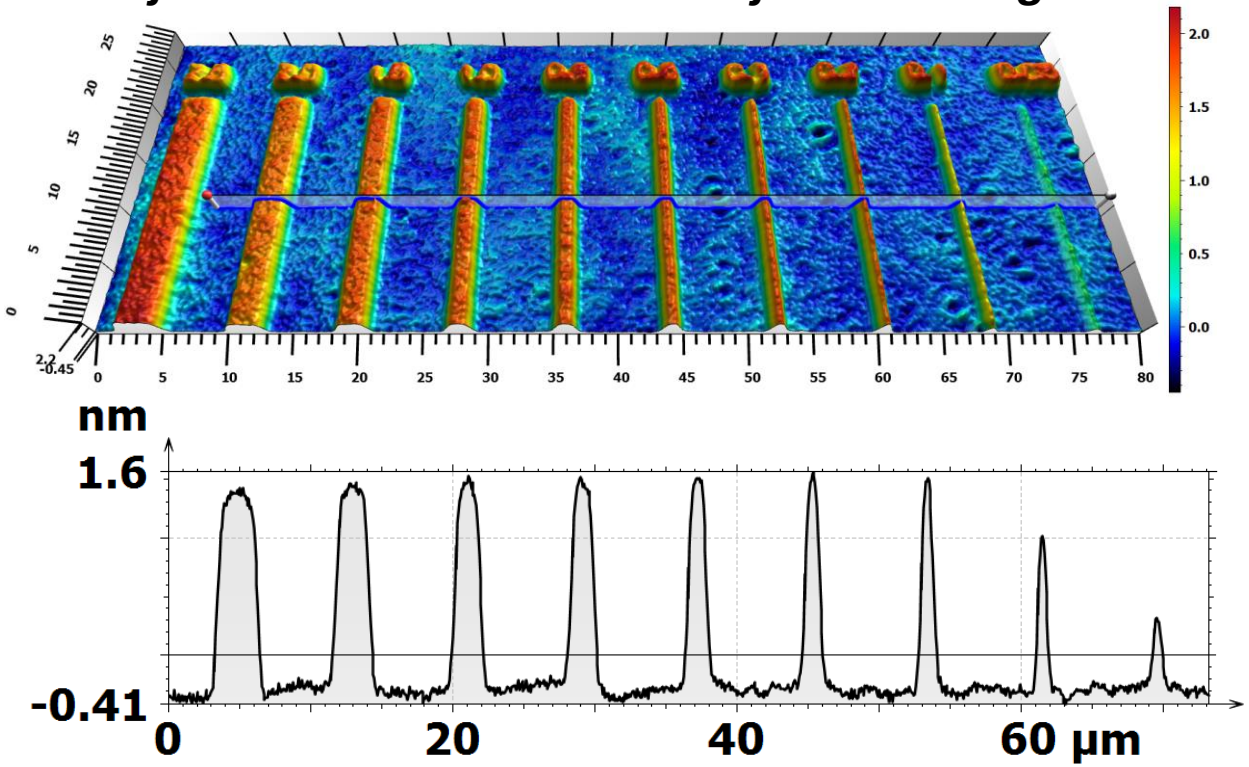
smartWLI extended

universal lab measuring system with up to 4 exchangeable objectives and automated objective recognition



micro geometries
roughness and micro structures
nano structures down to single atom layers

smart WLI

control unit

components
industrial 19” rack with 6 height units including housing
PC • Windows10 • measuring software smartVIS3D • evaluation software MountainsMap® • 3 height units
scanning device controller • Piezo positioning system (capacitive) • interferometric calibrated • closed loop control for positioning • 3 height units
LED light controller
XY positioning system controller (optional)

objective and camera specification

	5 MP high resolution camera
measuring points	2456 x 2054
scanning speed full resolution	77 Hz
scanning speed ROI	up to 2 kHz

objective / magnification	5x	10x	20x	50x	100x	115x*
working distance / mm	9.3	7.4	4.7	3.4	2	0.7
measuring field / mm²	3.4 x 2.8	1.7 x 1.4	0.85 x 0.71	0.34 x 0.28	0.17 x 0.14	0.15 x 0.12
point spacing / µm	1.4	0.69	0.35	0.14	0.07	0.06

	2.3 MP high speed camera
measuring points	1920 x 1200
scanning speed full resolution	169 Hz
scanning speed subsampling	533 Hz
scanning speed ROI	up to 3.2 kHz

objective / magnification	5x	10x	20x	50x	100x	115x*
working distance / mm	9.3	7.4	4.7	3.4	2	0.7
measuring field / mm²	3.7 x 2.3	1.8 x 1.2	0.91 x 0.58	0.37 x 0.23	0.18 x 0.12	0.16 x 0.1
point spacing / µm	1.9	0.96	0.48	0.19	0.1	0.08

*Olympus 100x WLI objective – the mentioned magnification is calculated in relation to the 100x Nikon objective

stand and XY positioning table specification

stand	
max. / coarse positioning range (manual Z positioning)	70 mm
fine positioning range (manual Z positioning)	1.9 mm
Tilting angle (levelling device)	± 3°

positioning tables					
positioning area	movement	load capacity	resolution	orthogonality	encoder
73 x 55 mm²	manual	1 kg	-	-	-
75 x 50 mm²	motorized	1 kg	0.01 µm	<10arcsec	optional
100 x 100 mm²	motorized	2 kg	0.01 µm	<10arcsec	optional
150 x 150 mm²	motorized	3 kg	0.01 µm	<10arcsec	optional
200 x 200 mm²	motorized	3 kg	0.01 µm	<10arcsec	optional
300 x 300 mm²	motorized	5 kg	0.01 µm	<5arcsec	optional

technical specification

smartWLI extended	
measurement technique	white-light interferometry
measurement software	smartVIS3D
evaluation software	MountainsMap® with optional GBS add-on modules
scanning device	Piezo positioning system
scan range	up to 400 µm
scanning speed / full resolution	5.2 µm/s (5 MP camera) / 11.4 µm/s (2.3 MP camera)
max. scanning speed	approx. 400 µm/s
digitalization	up to 0.01 pm
topography reproducibility	< 0.1 nm (5 MP camera) / < 0.15 nm (2.3 MP camera)
1-σ reproducibility 0.4 µm step height	< 1 nm
1-σ reproducibility 12 µm step height	< 3 nm
1-σ reproducibility 100 µm step height	< 20 nm
sensor weight	approx. 3 kg
relative humidity, non-condensing	up to 80%
operation temperature	10 °C to 35 °C
power supply	100 to 240 VAC, 50/60 Hz

*Sq/√2 – profile difference of 2 scans, EPSI, single scan, without profile averaging, laboratory conditions, 1 million points after 3x3 denoising filter