Confocal Displacement Sensor

Measuring examples

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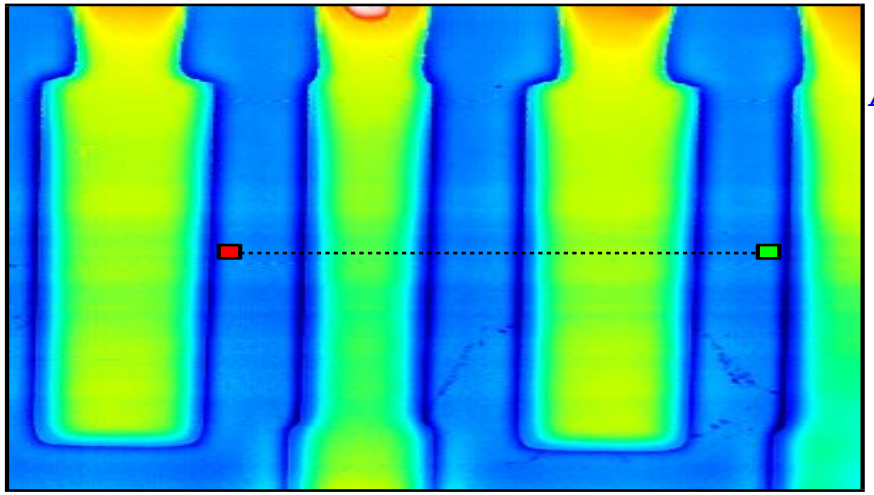
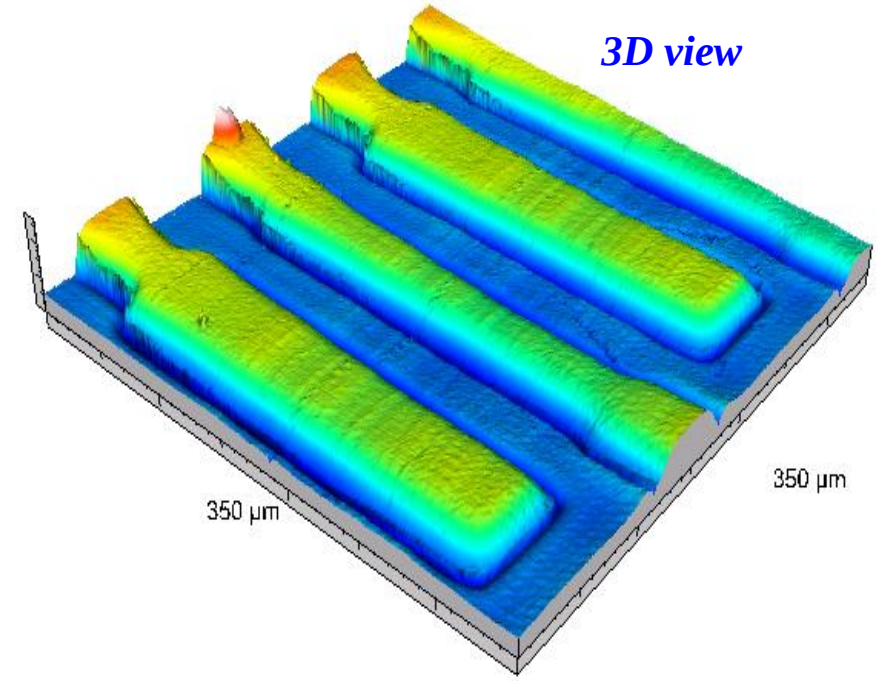
Gold contact pads of an Infra-red sensor

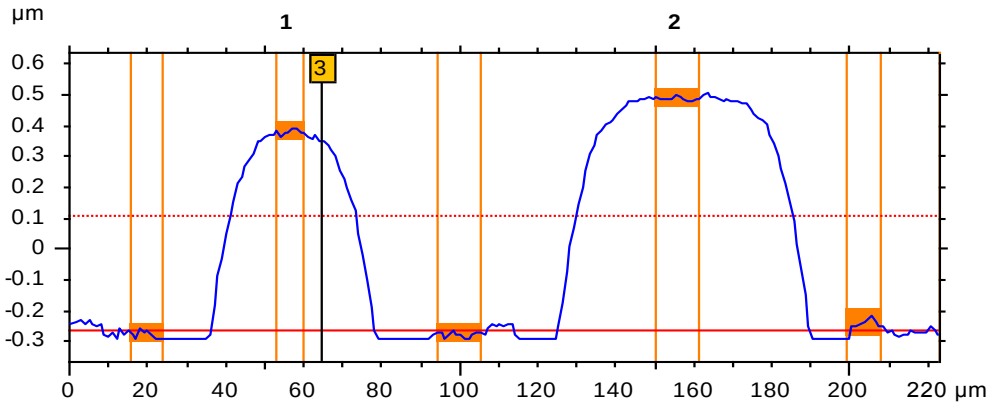


Altitude measurement



3D view

Extracted profile



	1	2
Maximum height	0.656 µm	0.767 µm
Mean height	0.645 µm	0.753 µm

Extracted profile from the surface

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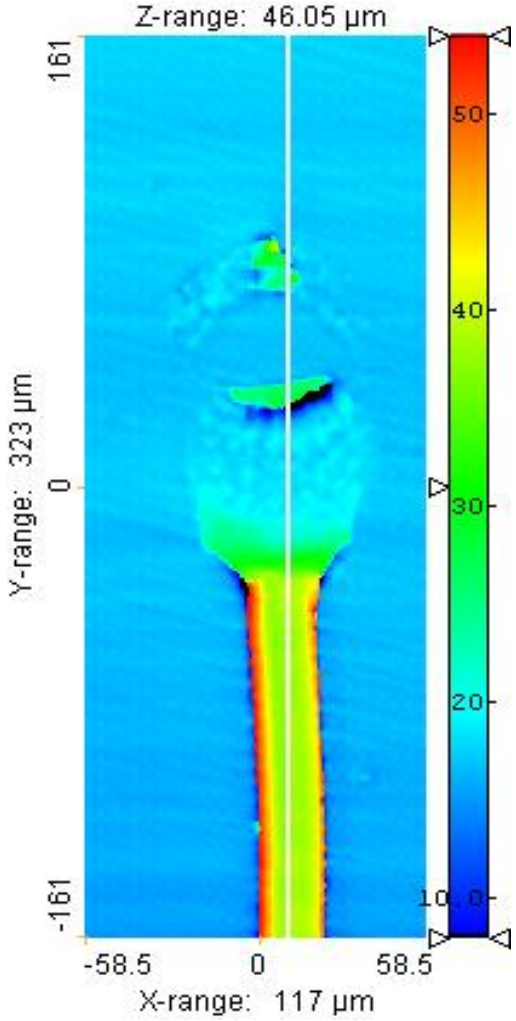
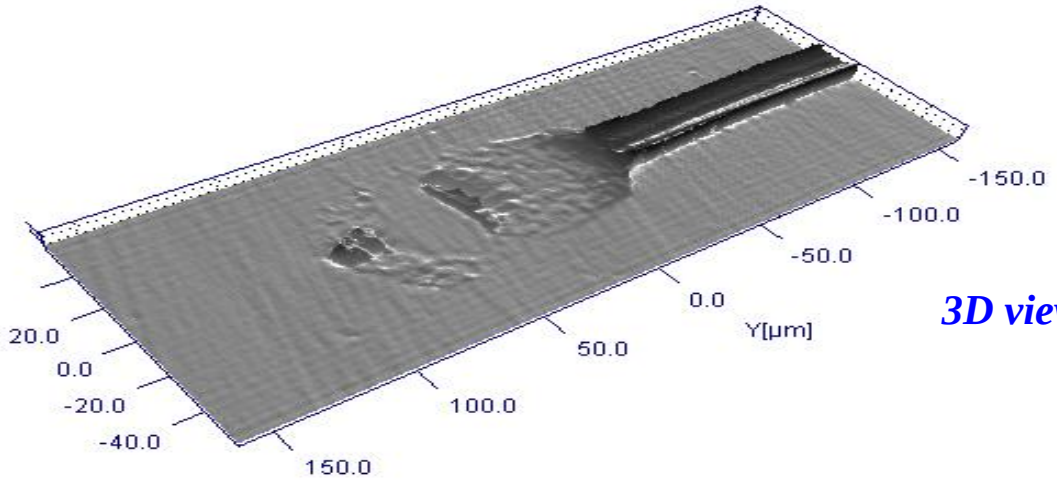
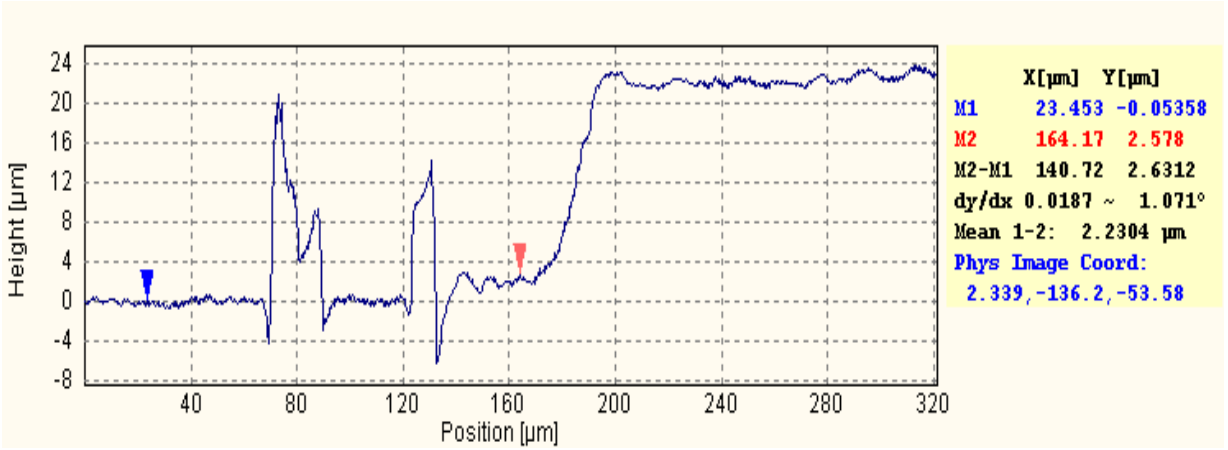
Topography of bonding wire in microelectronics



Altitude measurement



3D view



Extracted profile from the surface

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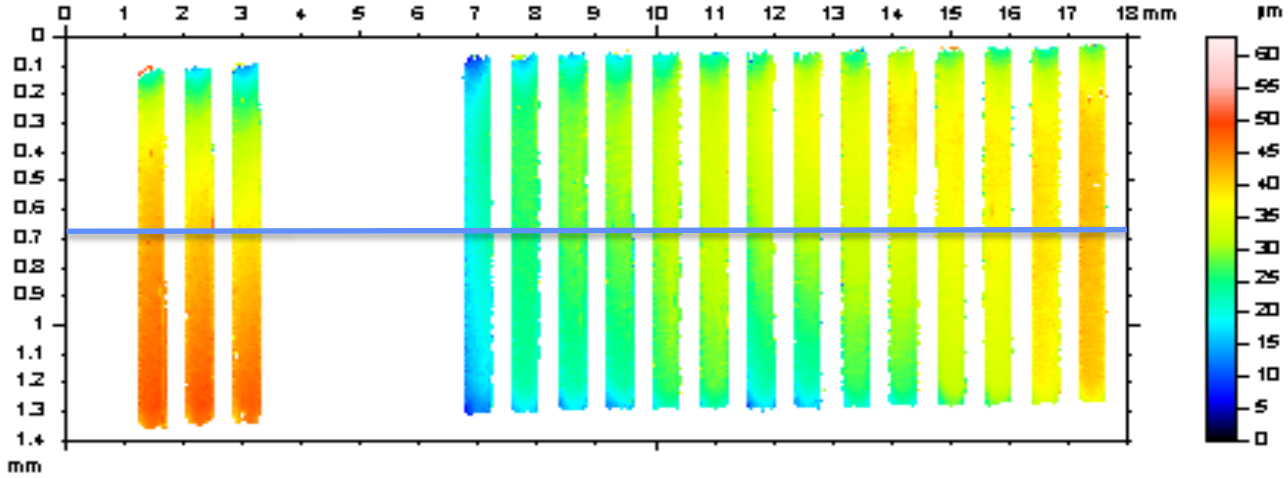
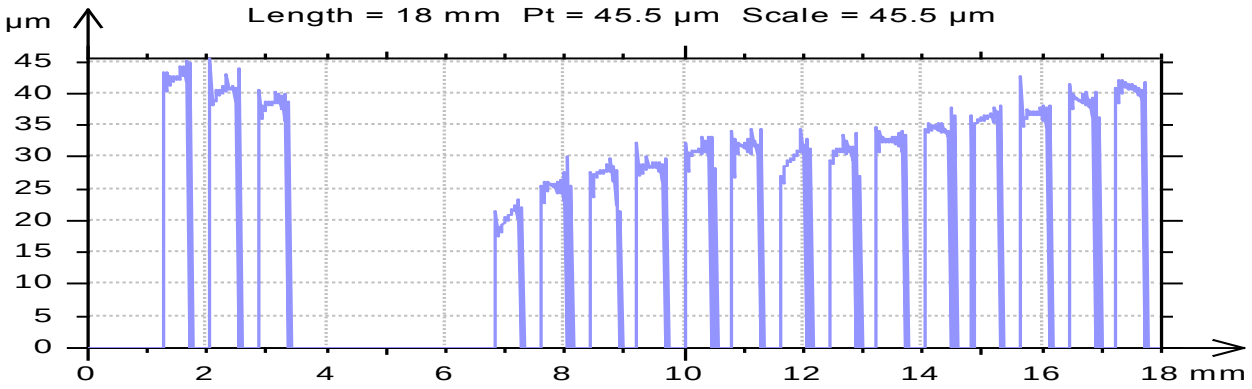
Mobile phone electrical connectors
Flatness and roughness analysis



Altitude measurement



Extracted profile from the surface

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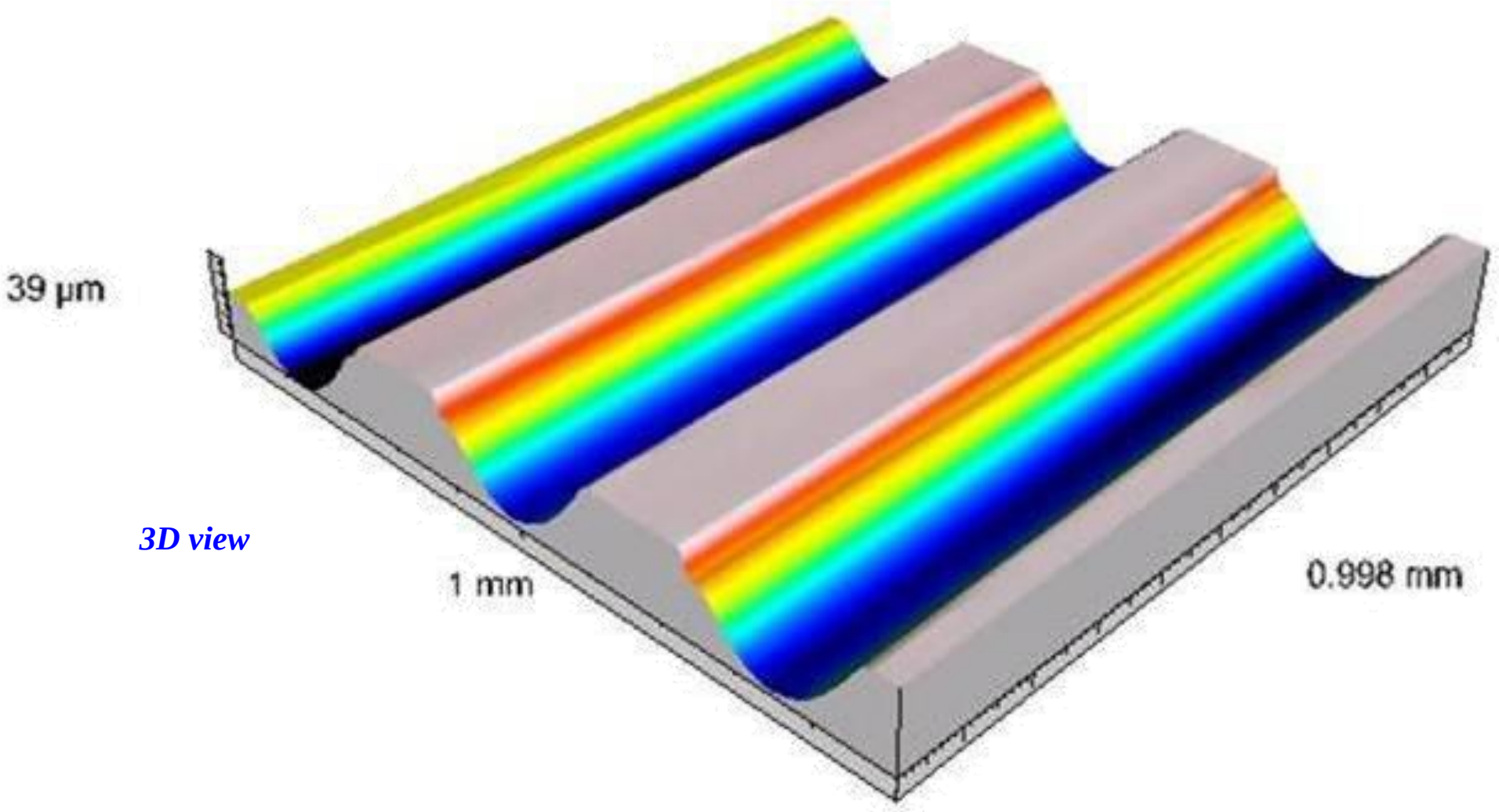
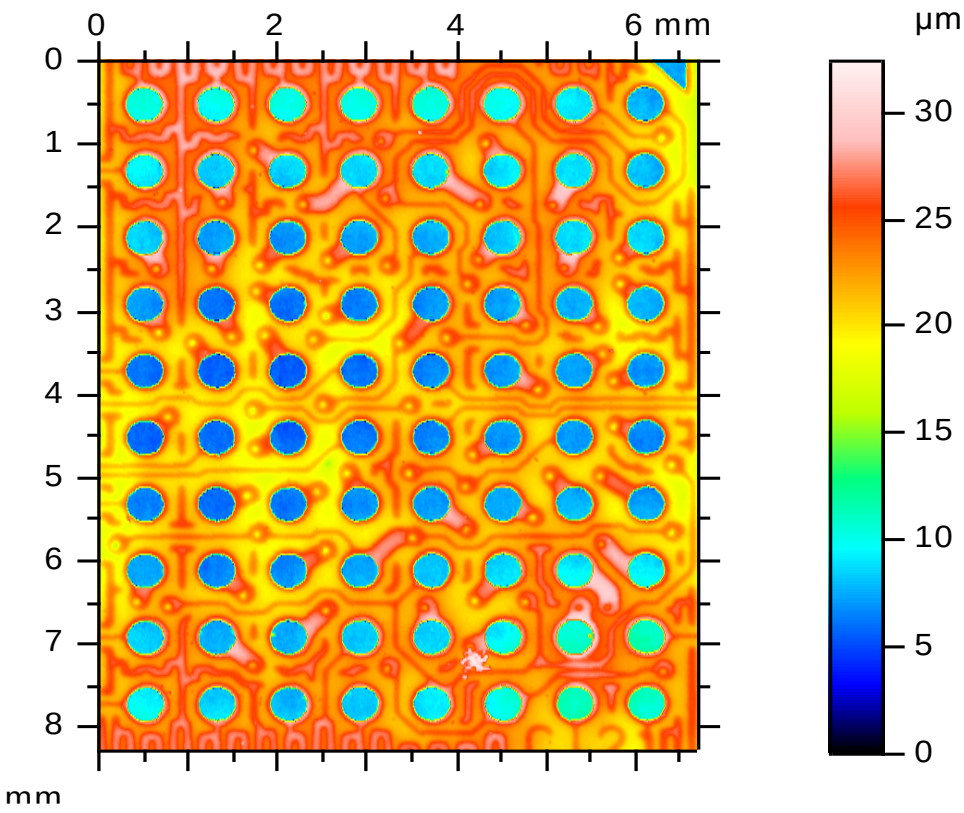
Micro-channels: cooling fluid in silica channels

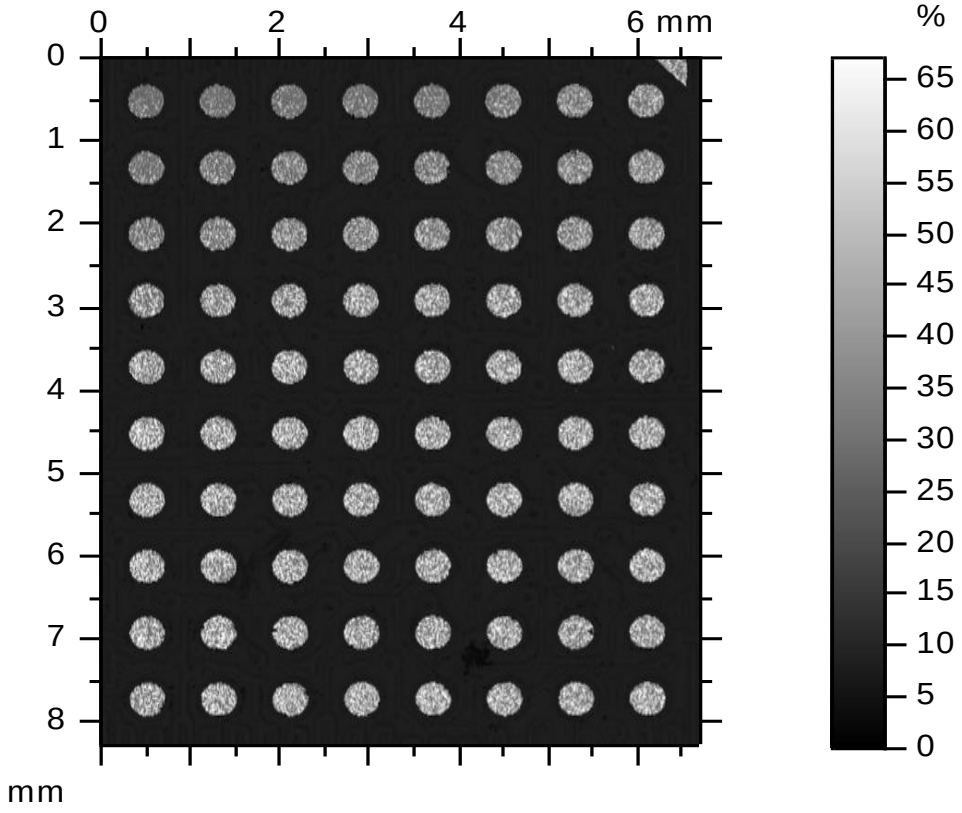


3D view

Gold contacts in epoxy PCB board



Altitude measurement



Intensity measurement

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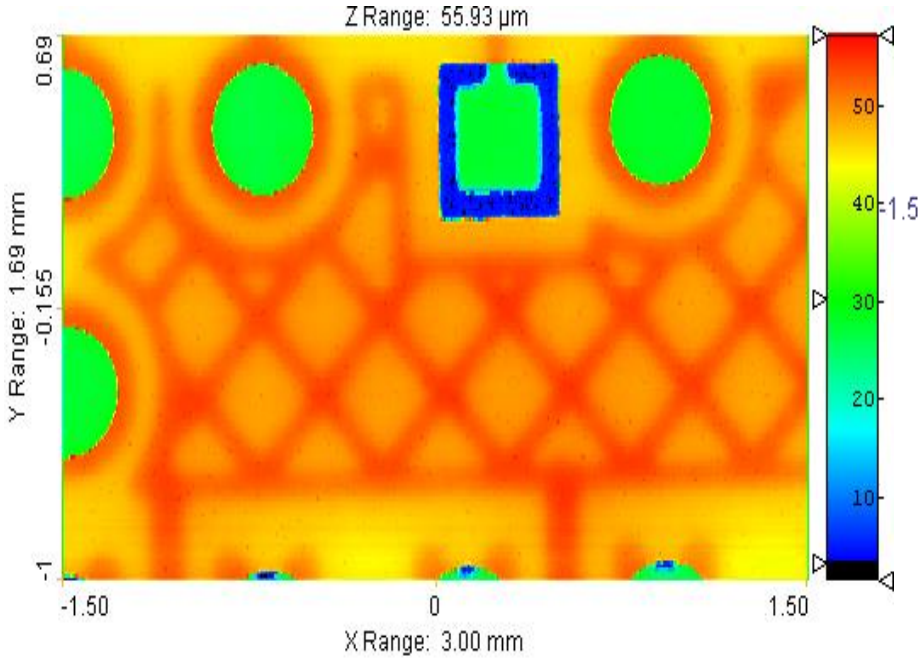
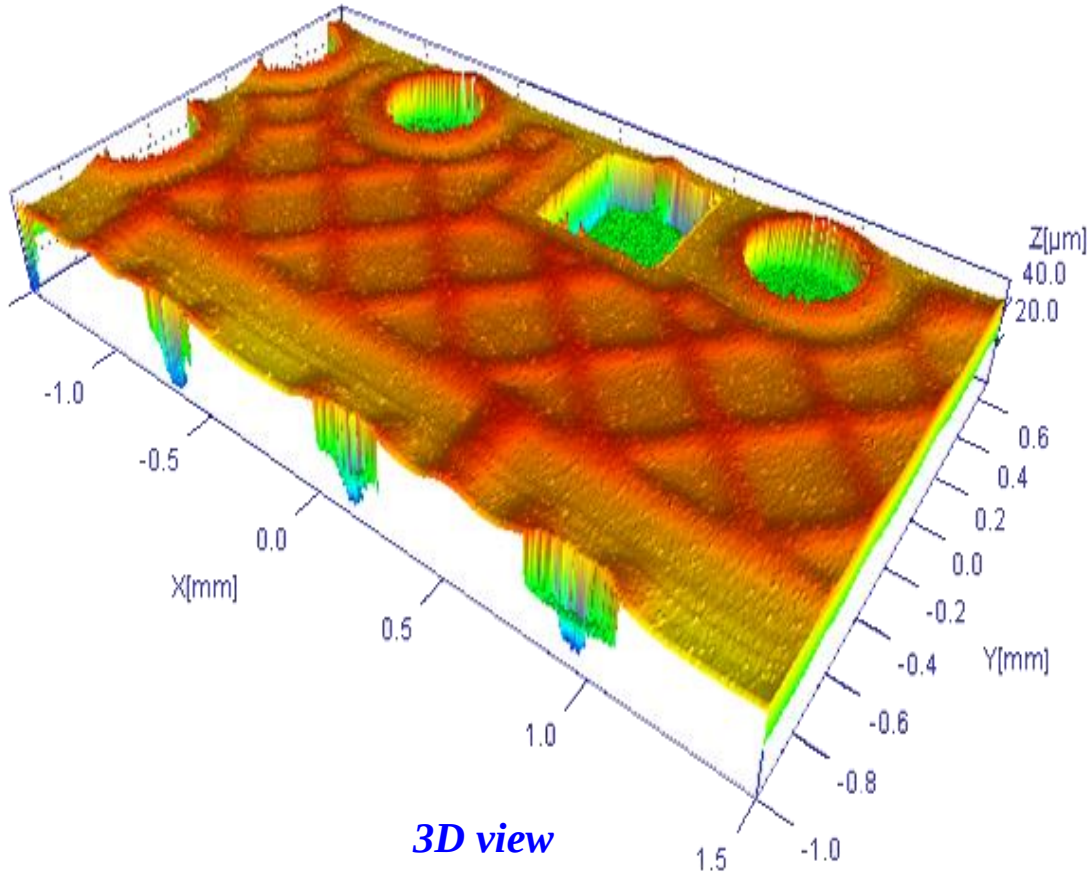
Topography of printed circuit board with coating



Altitude measurement



3D view

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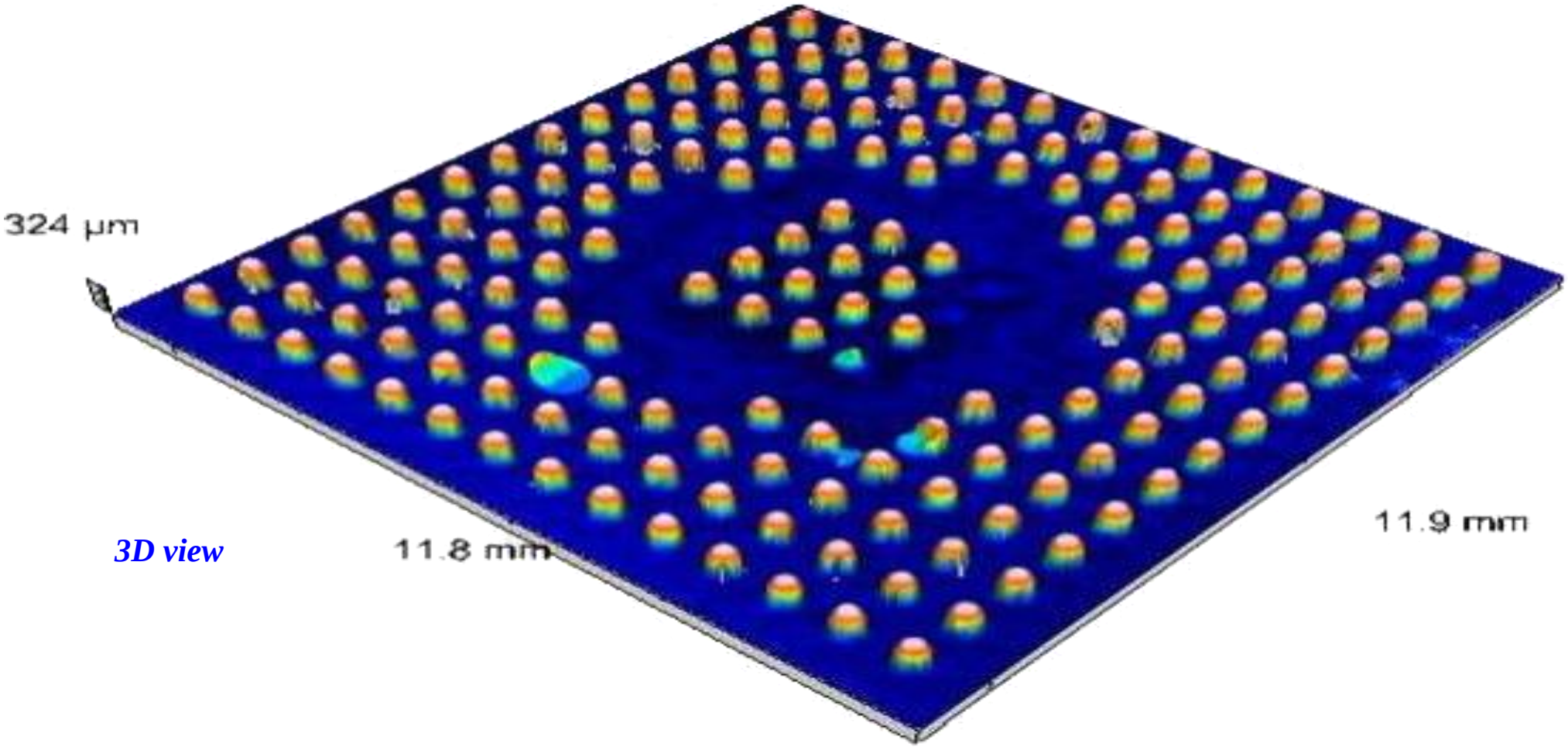
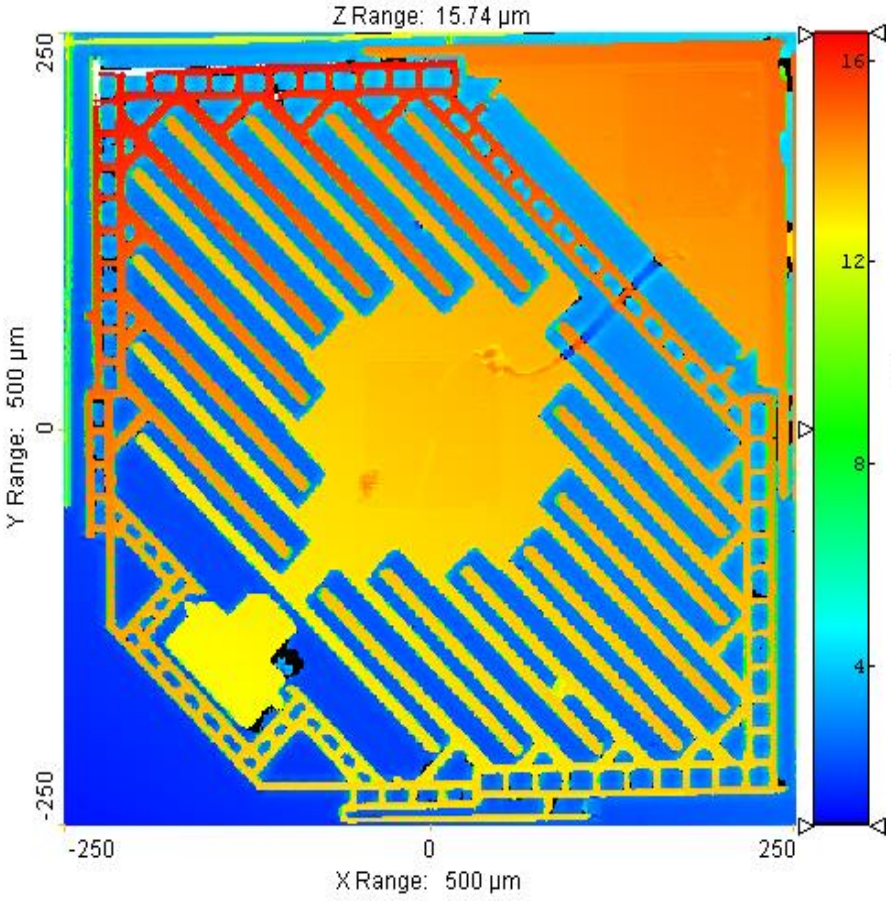
Ball grid array (BGA)

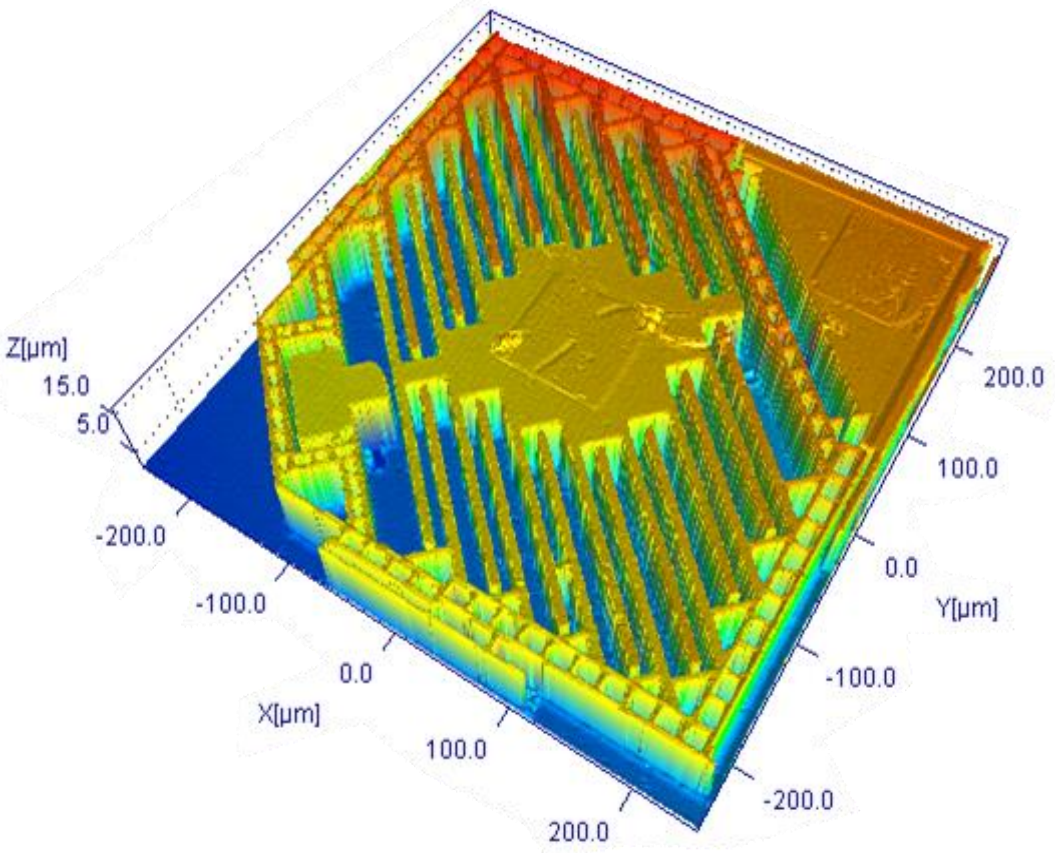


3D view

MEMS



Altitude measurement



3D view

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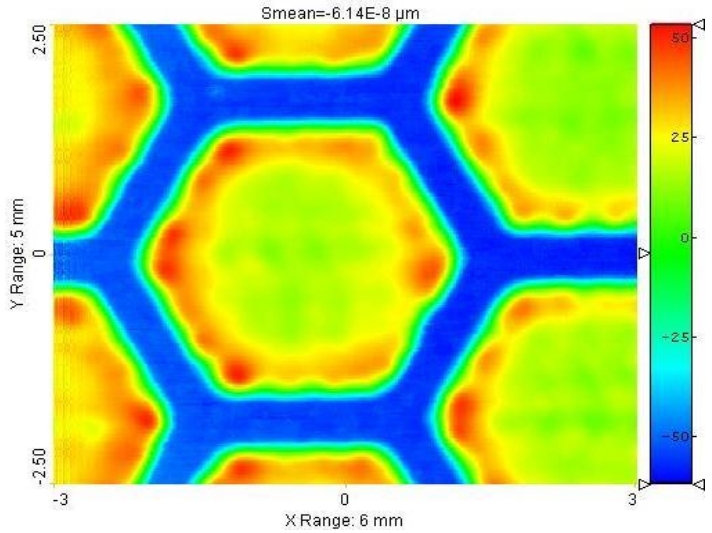
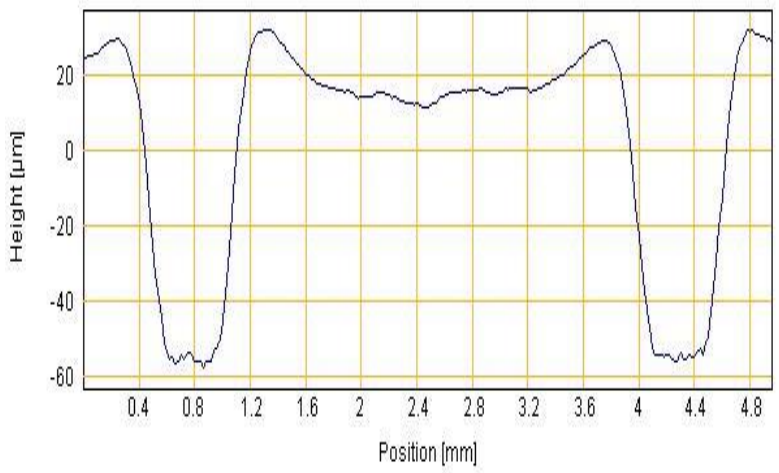
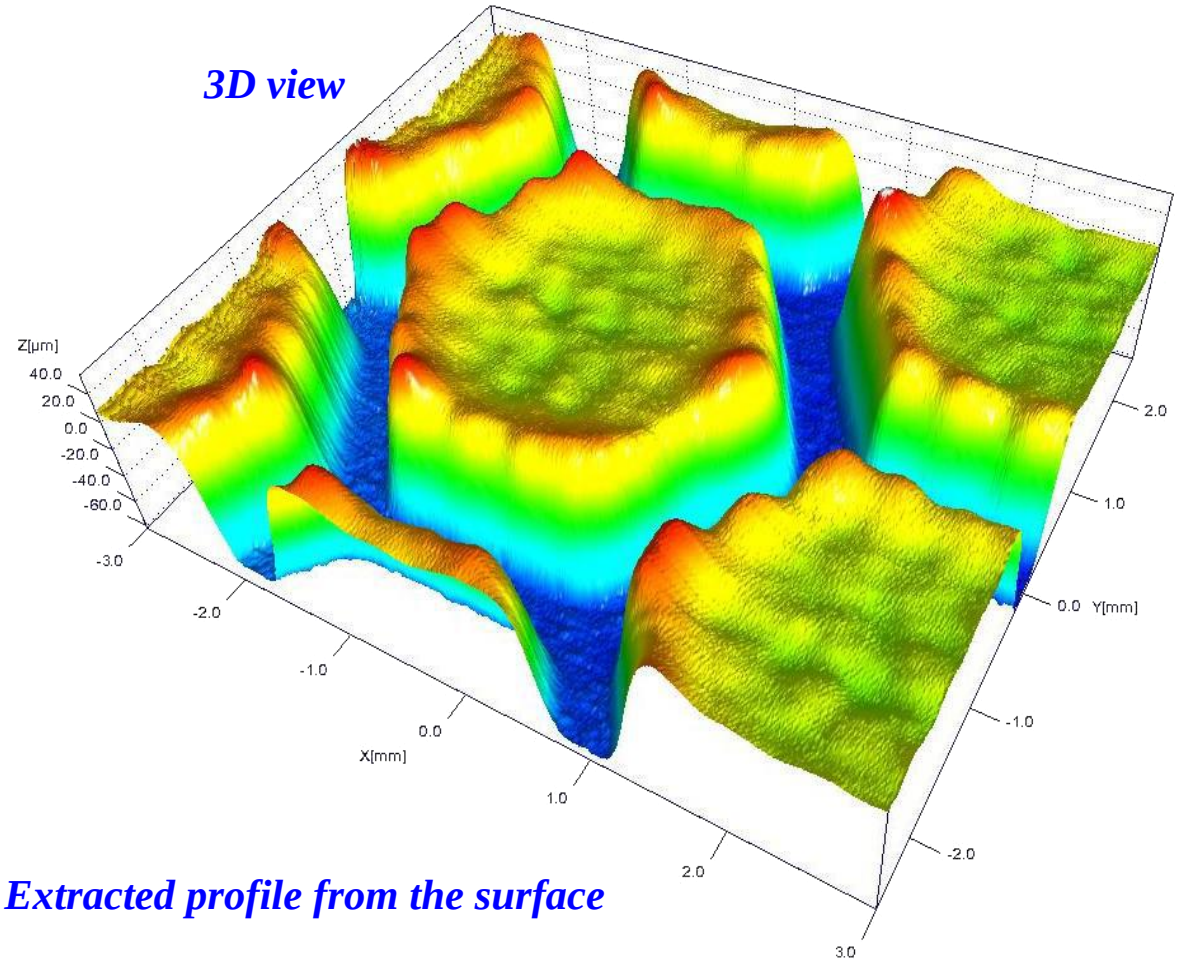
Solder paste



Altitude measurement



3D view



Extracted profile from the surface

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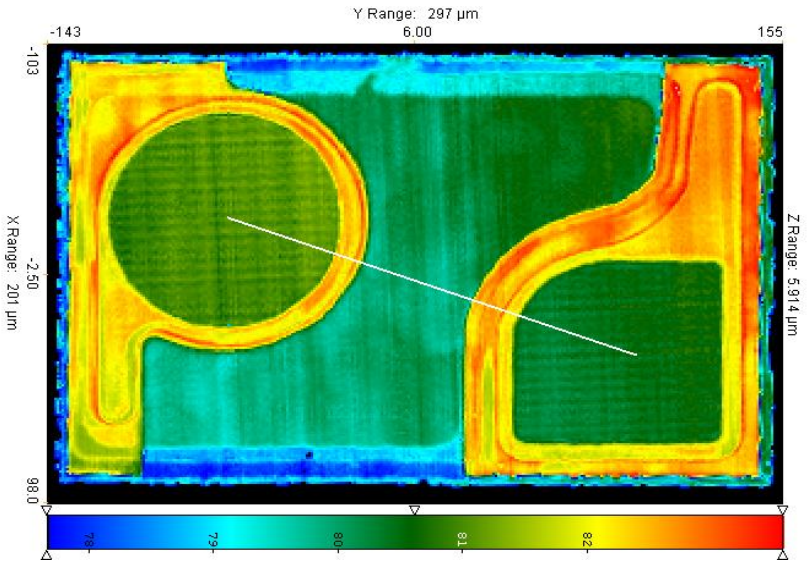
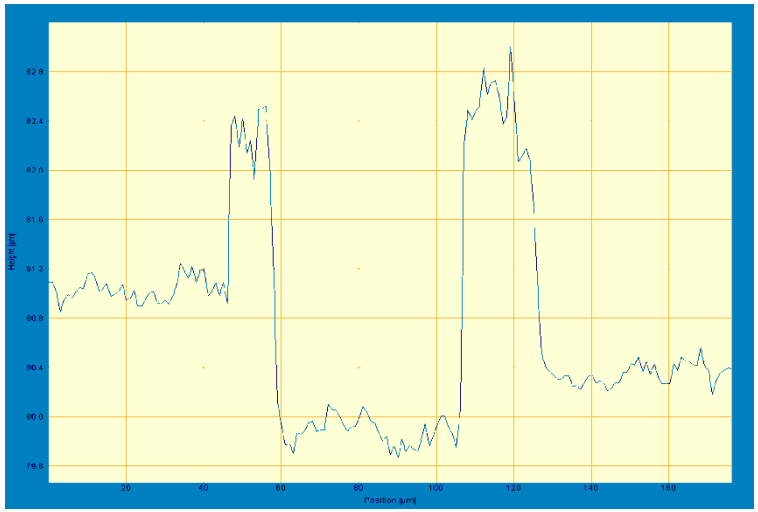
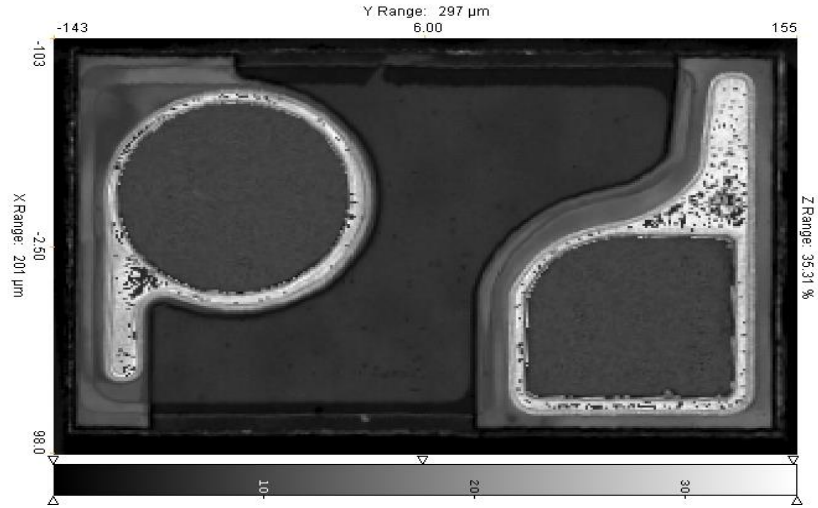
LED chip 3D microtopography



Altitude measurement



Extracted profile from the surface



Intensity measurement

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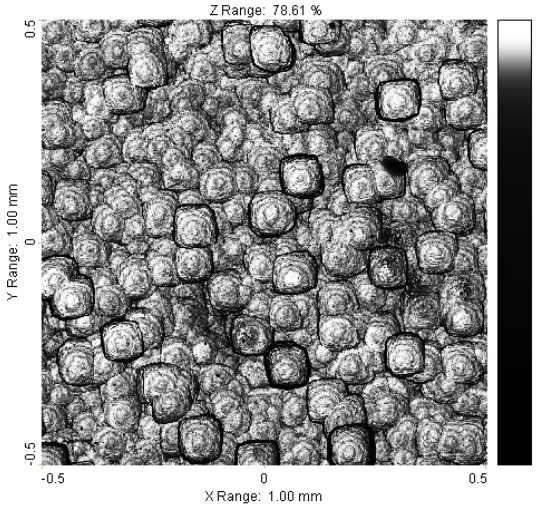
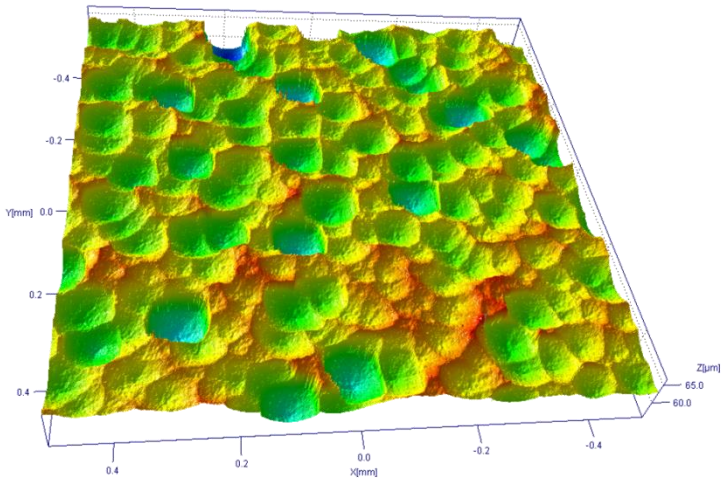
Photo Volta ïc wafer surface topography

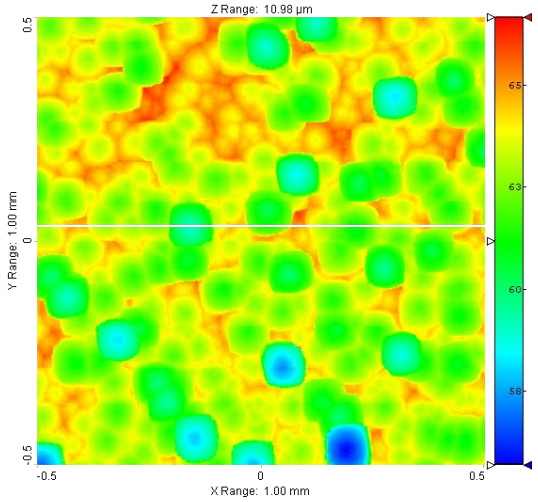


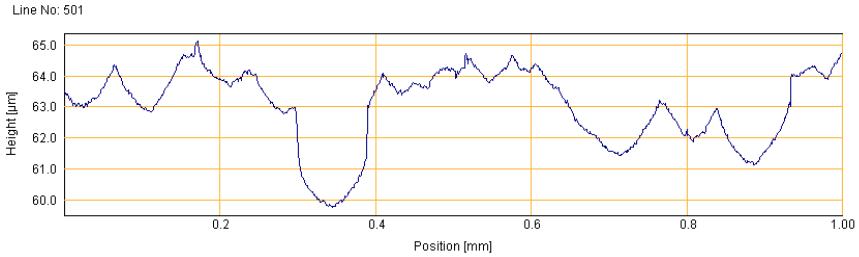
Intensity image

Microtopography perspective view



Microtopography





Extracted profile

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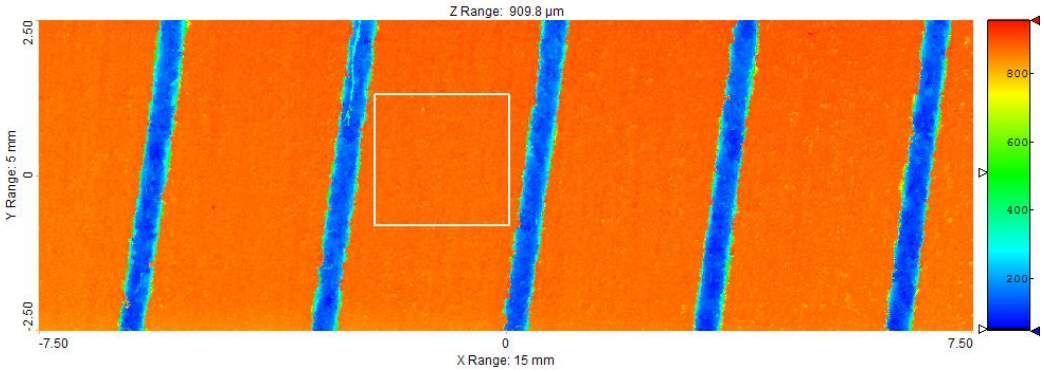
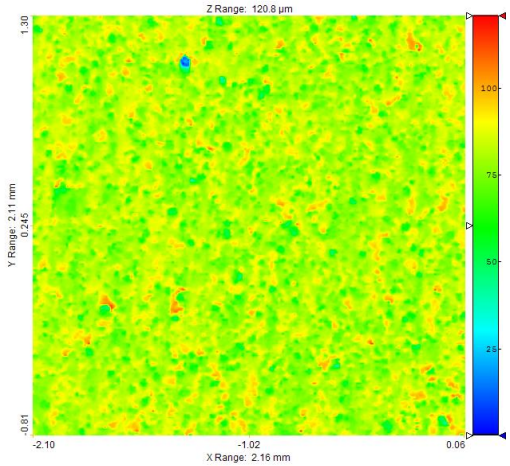
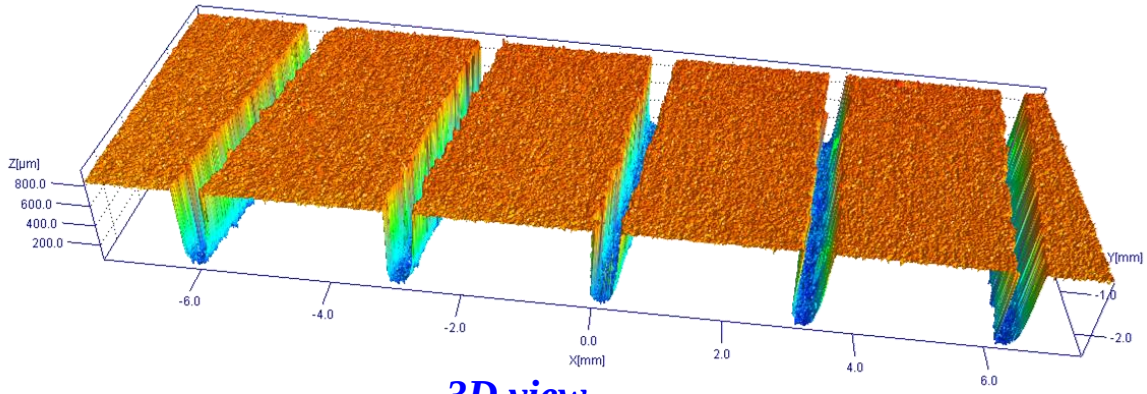
Polishing pad



Altitude measurement



Extracted microtopography from the white rectangle



3D view

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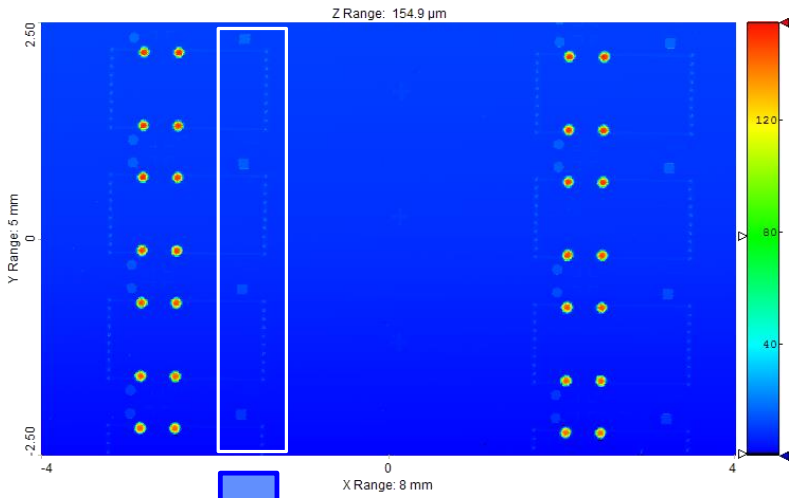
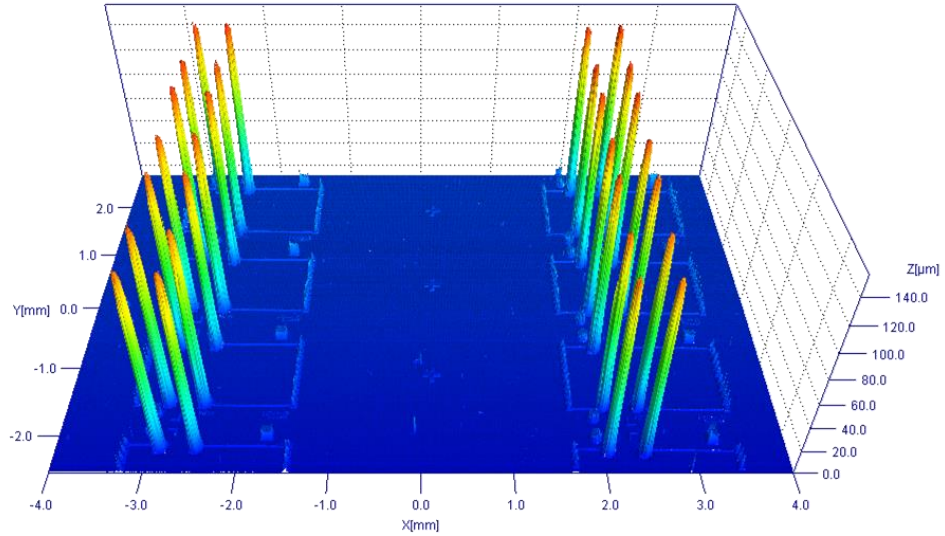
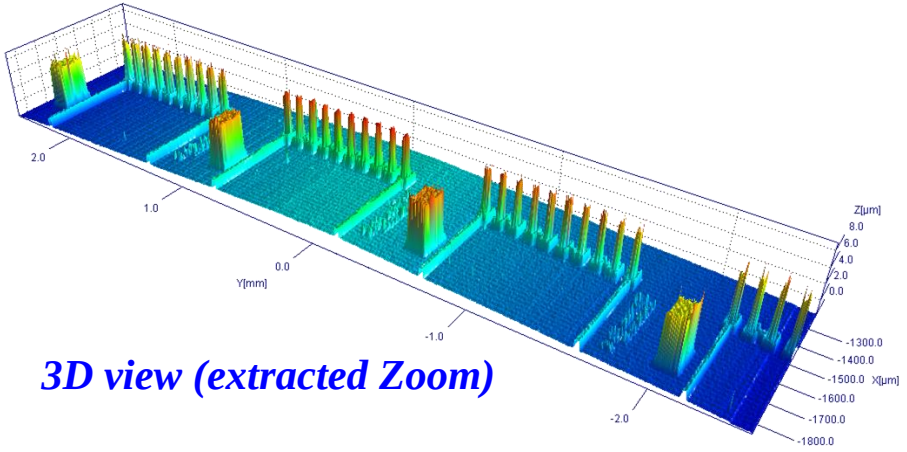
Micro bumps



Altitude measurement



3D view



3D view (extracted Zoom)

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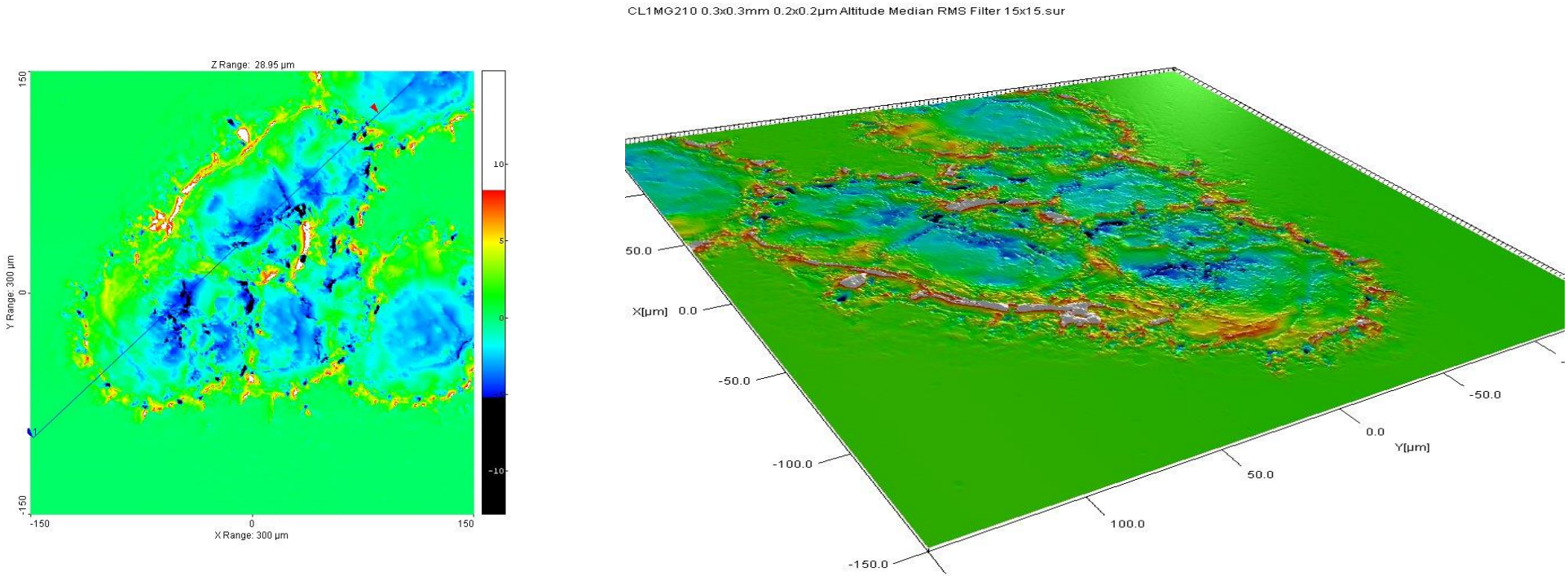
Laser impacts on PCB

Modular optical pen type : CL1+MG210



Altitude measurement ***3D view***

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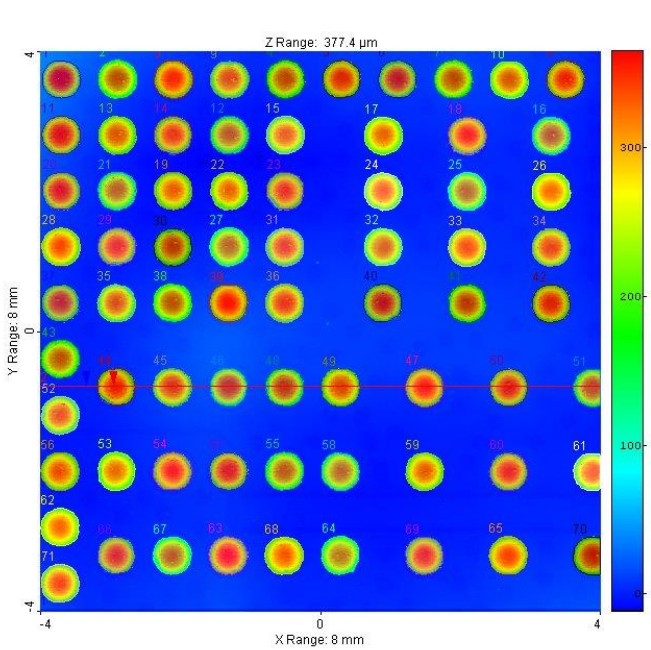
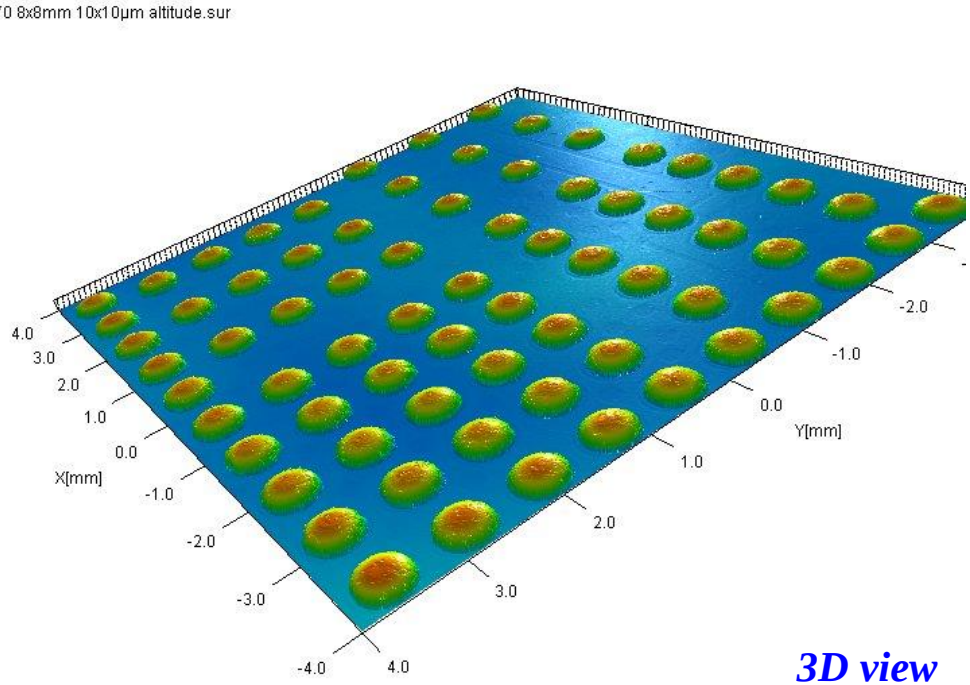
Micro bumps

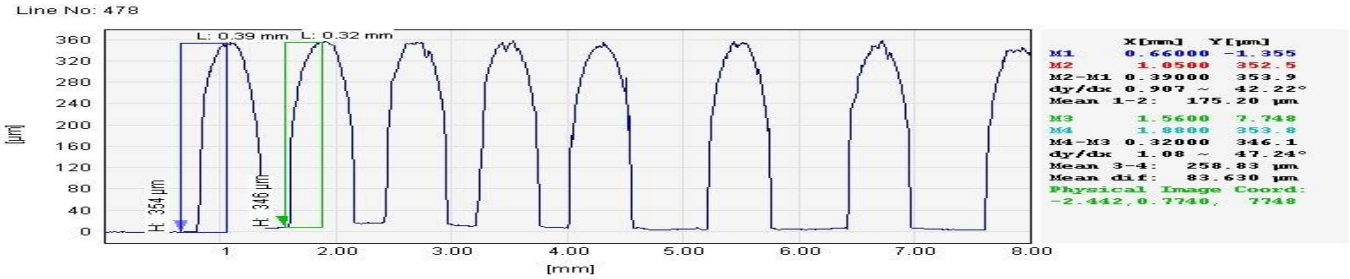
Modular optical pen type : CL2+MG210



Altitude measurement



3D view



3D view (extracted Zoom)

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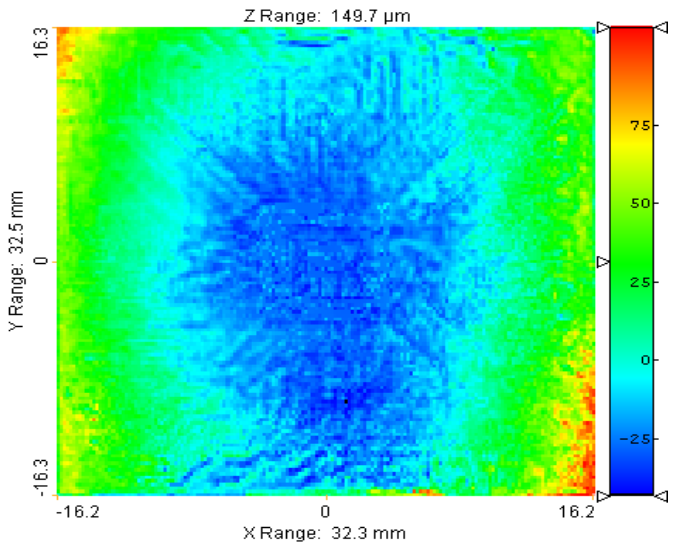
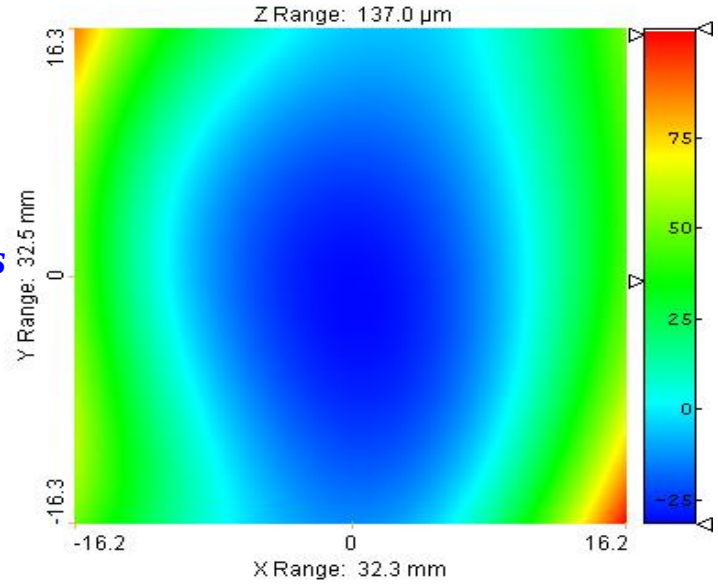
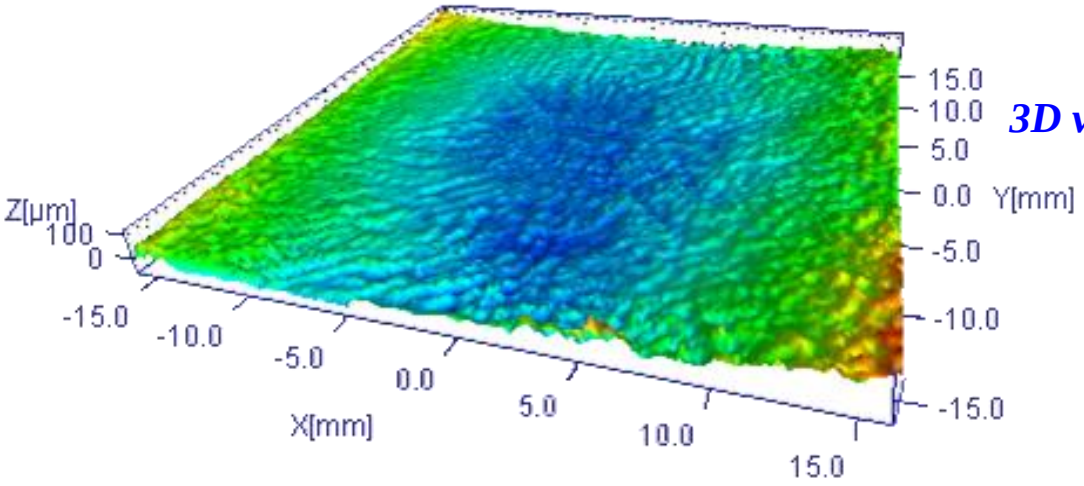
Warpage measurement of Printed Circuit Board

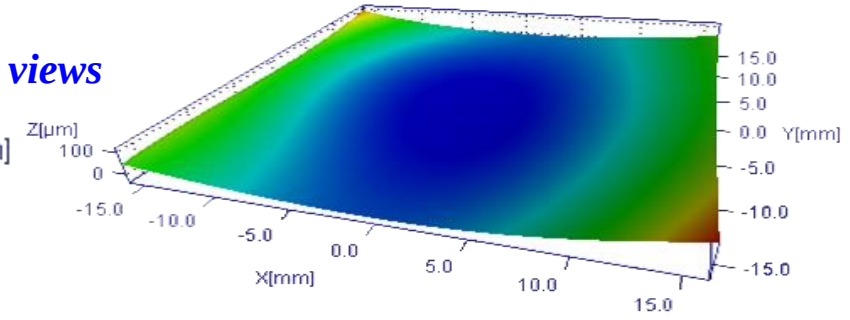


Altitude measurements



3D views





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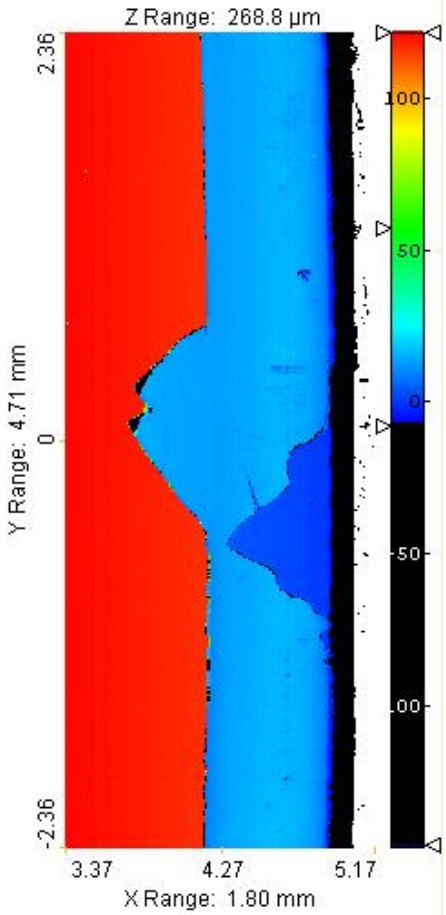
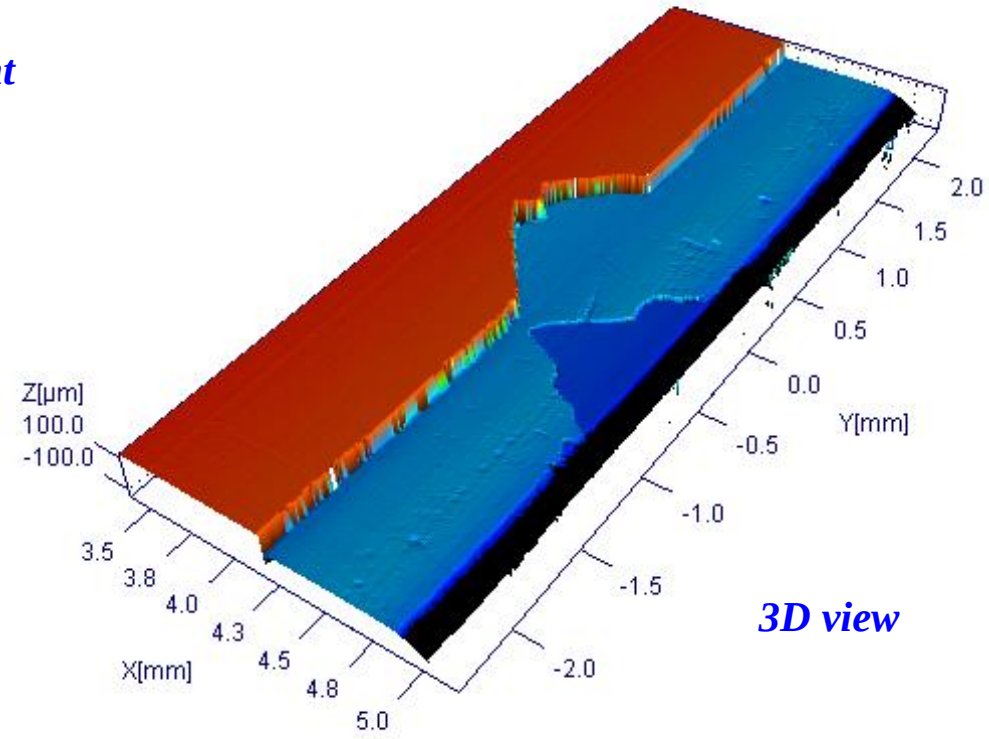
Top surface of wafer edge measurement

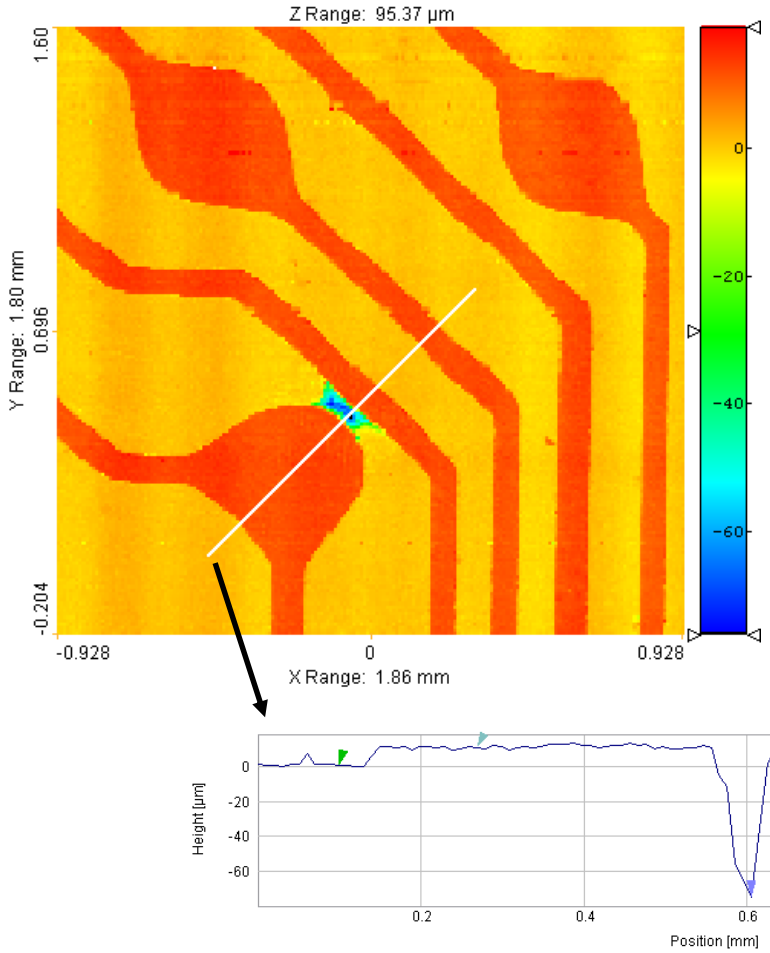


Altitude measurement

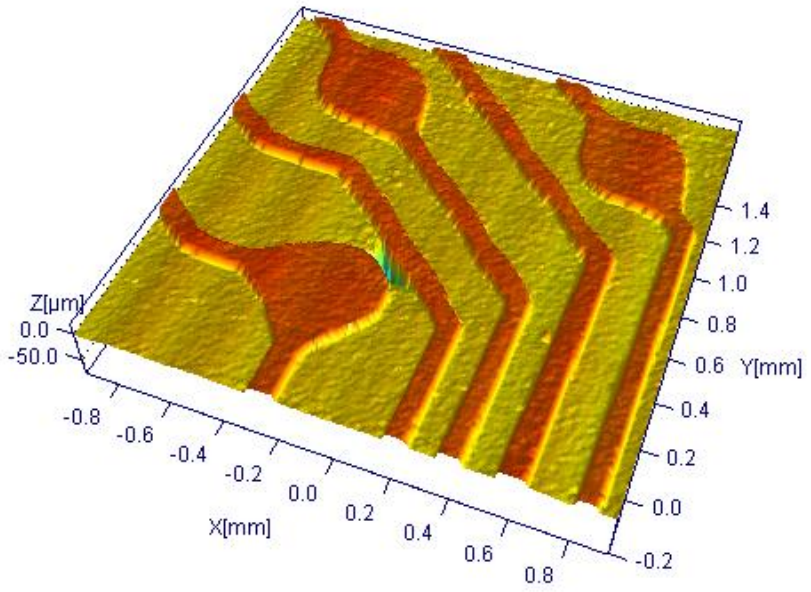


3D view

PCB defects measurement



Altitude measurement



3D view

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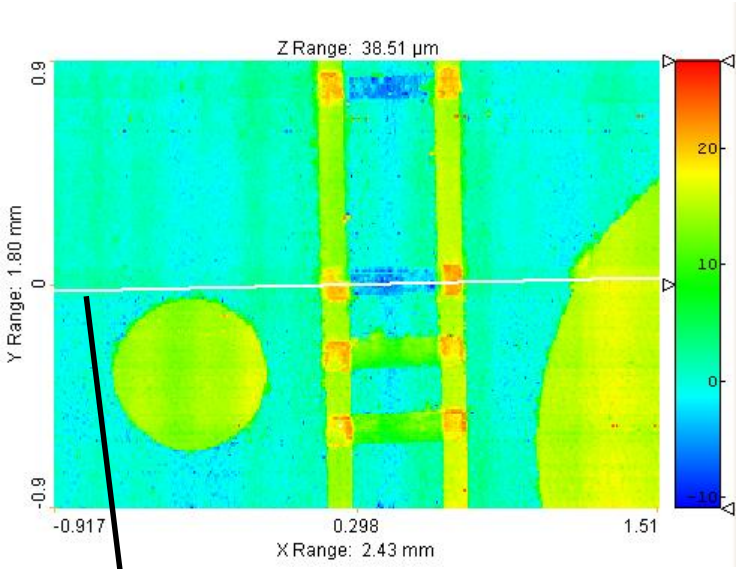
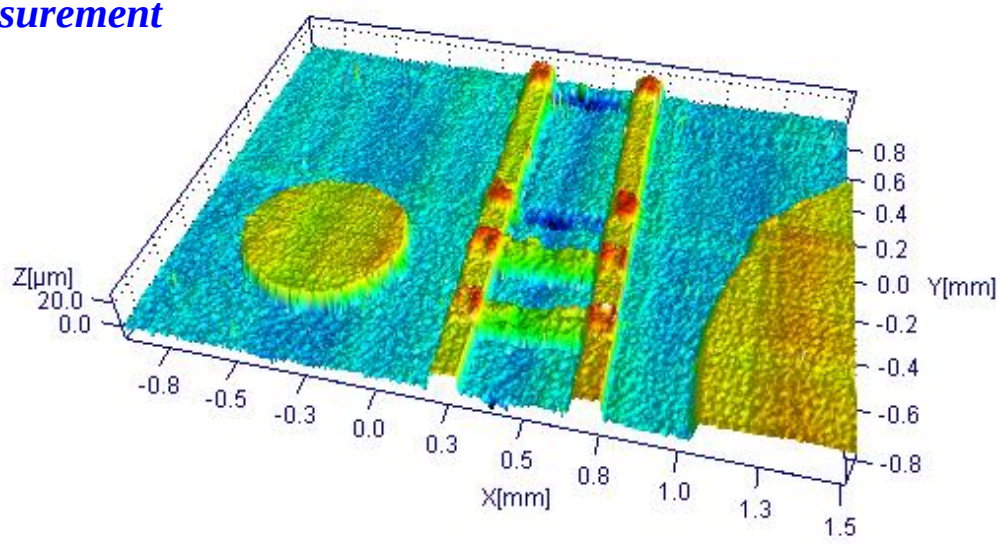
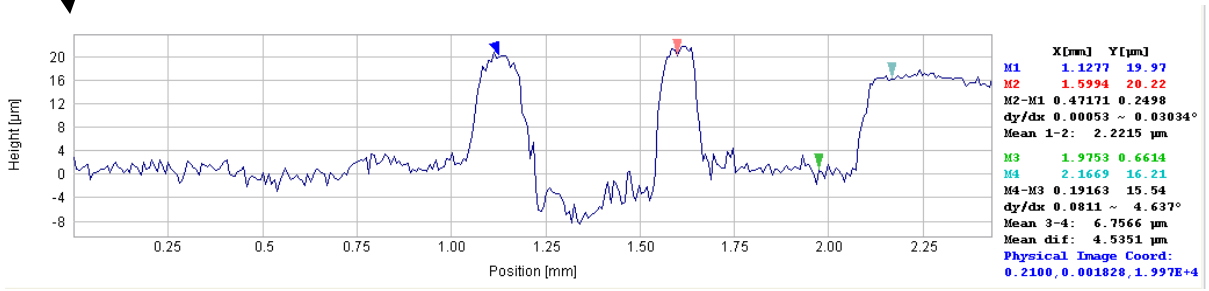
PCB defects measurement



Altitude measurement



3D view



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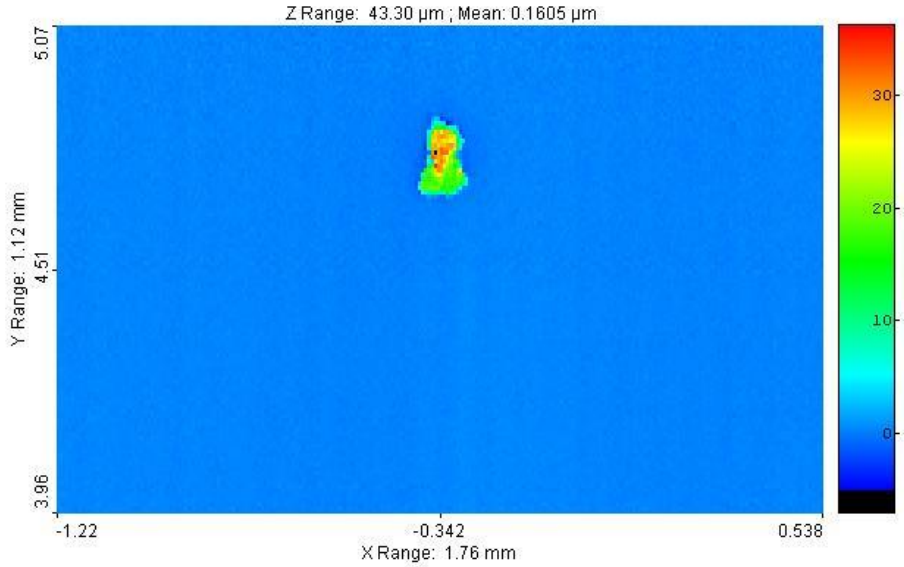
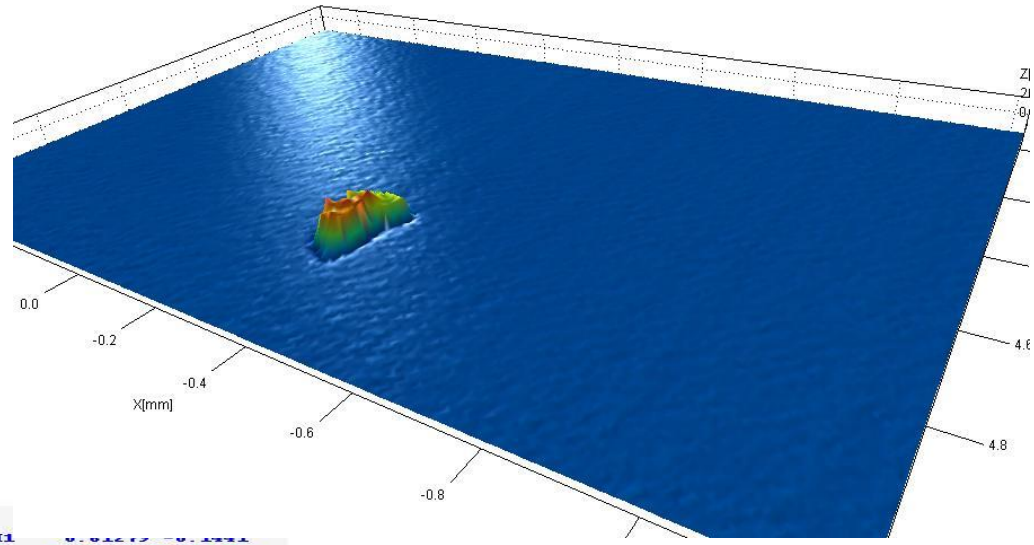
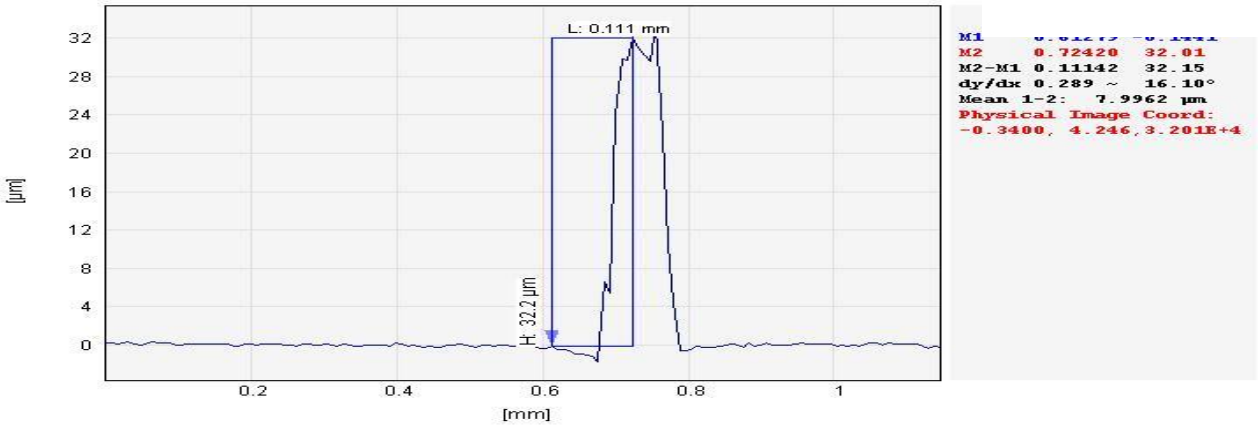
WAFER defects measurement







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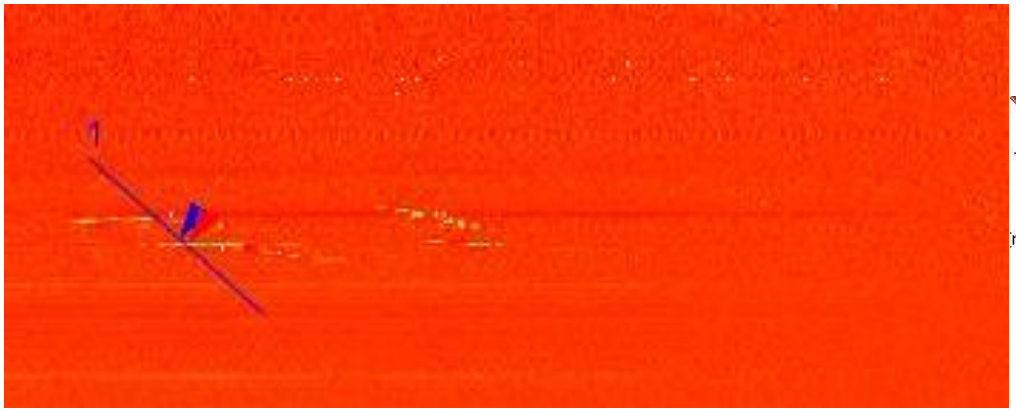
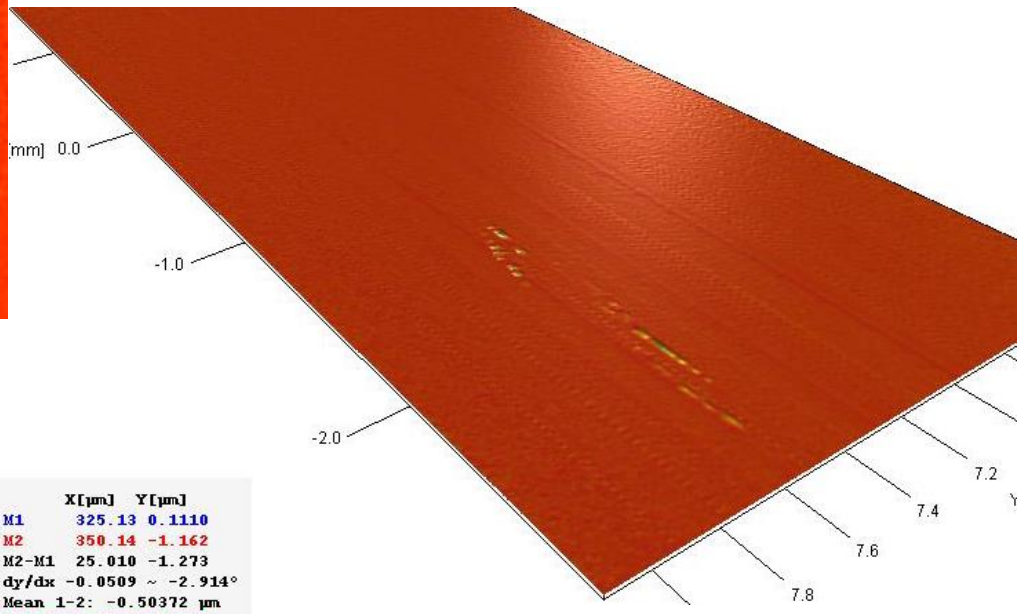
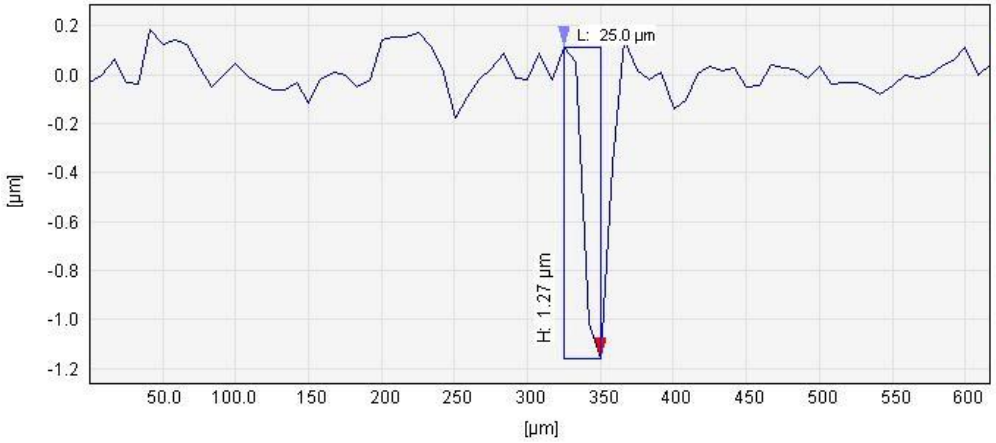
WAFER defects measurement







	X[µm]	Y[µm]
M1	325.13	0.1110
M2	350.14	-1.162
M2-M1	25.010	-1.273

dy/dx -0.0509 ~ -2.914°
Mean 1-2: -0.50372 µm
Physical Image Coord:
-2272, 6984, -1162

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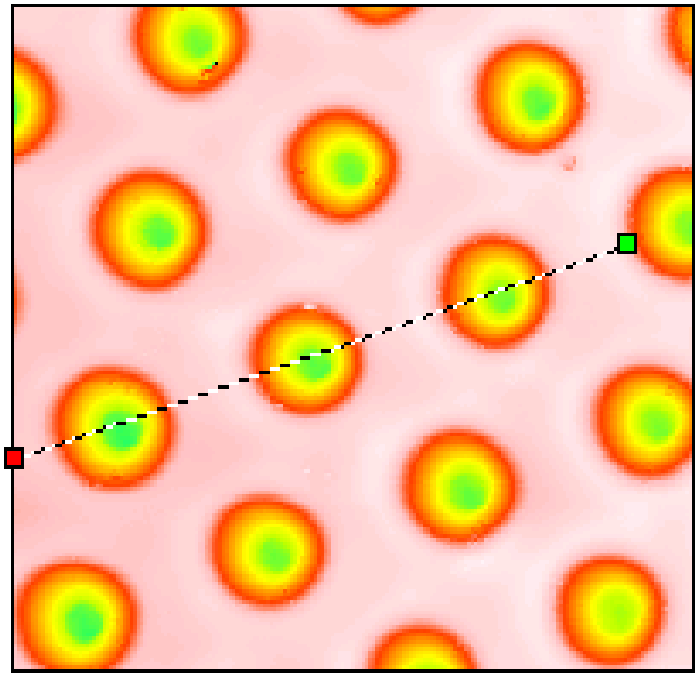
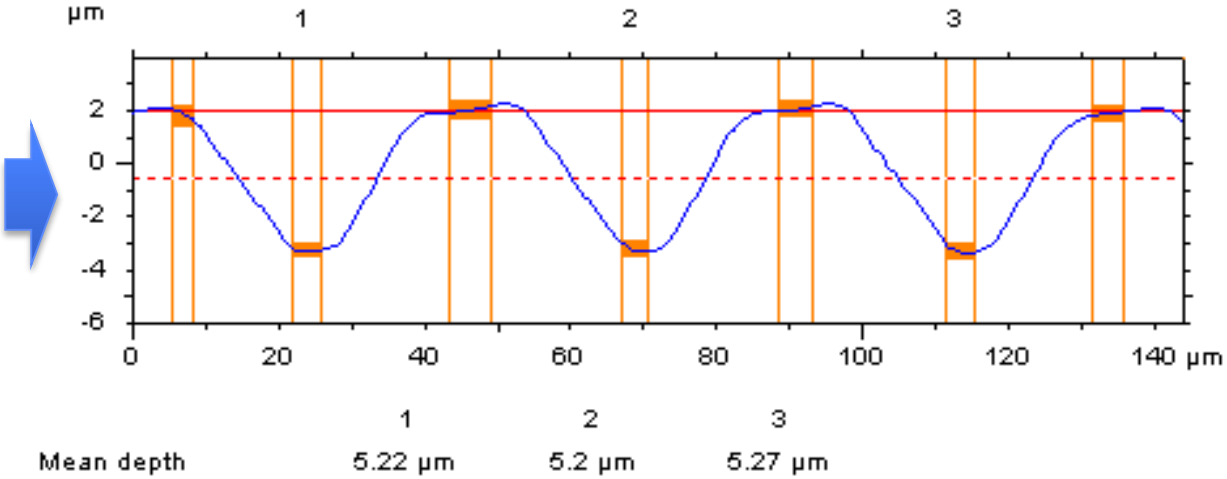
Microstructured metallic surface: shape and depth of holes

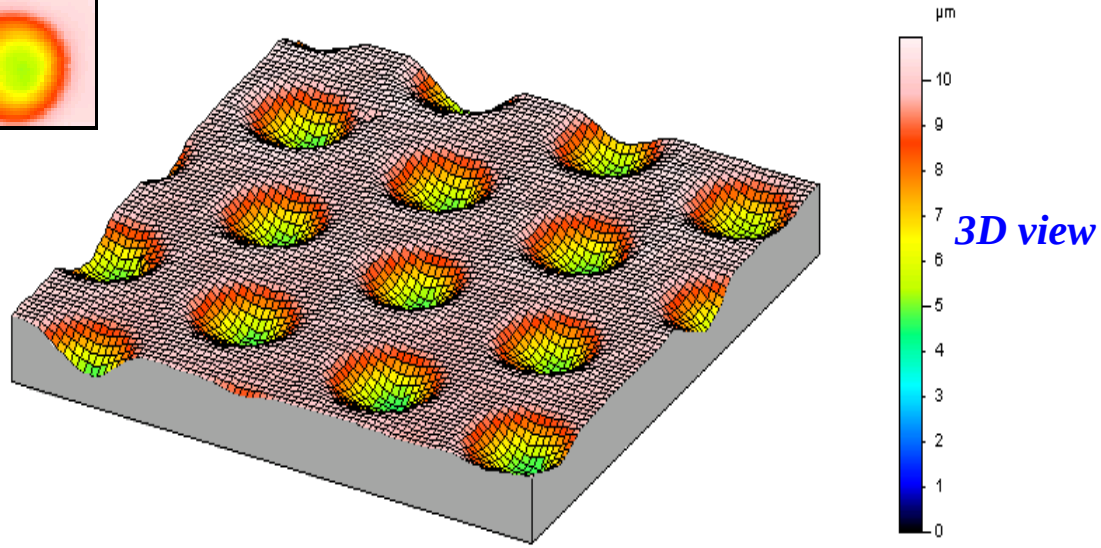


Extracted profile

Altitude measurement



Extracted profile from the surface



3D view

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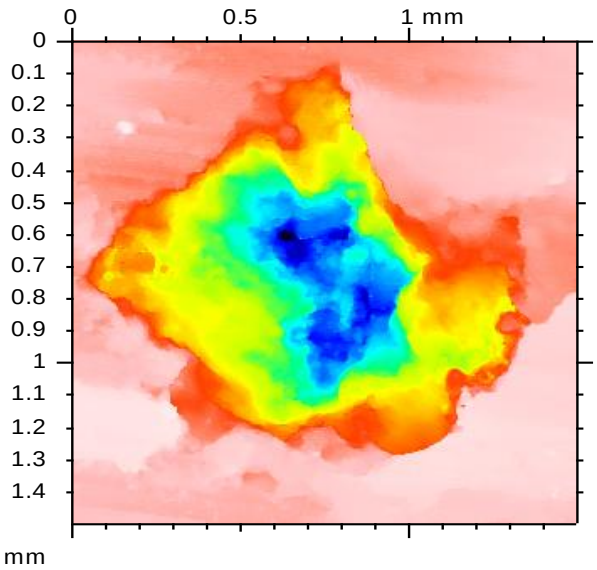
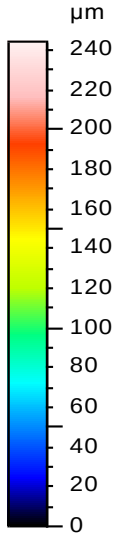
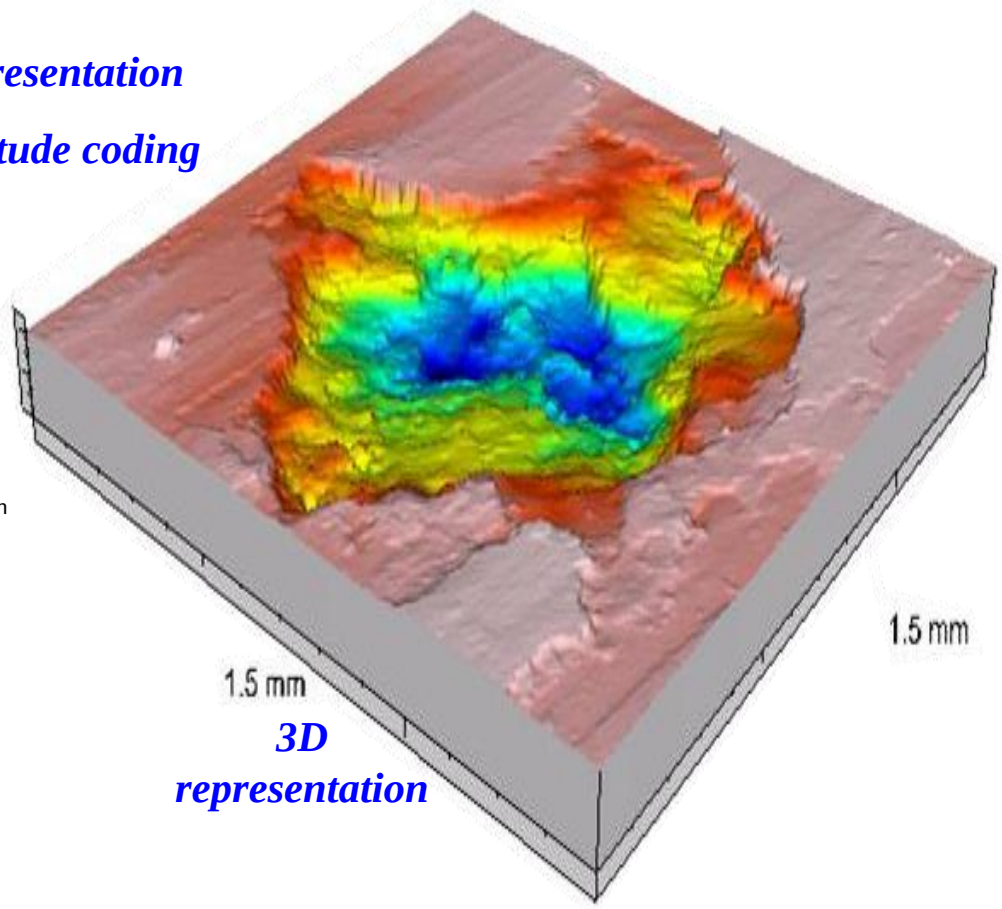
Porosity in brake lining material



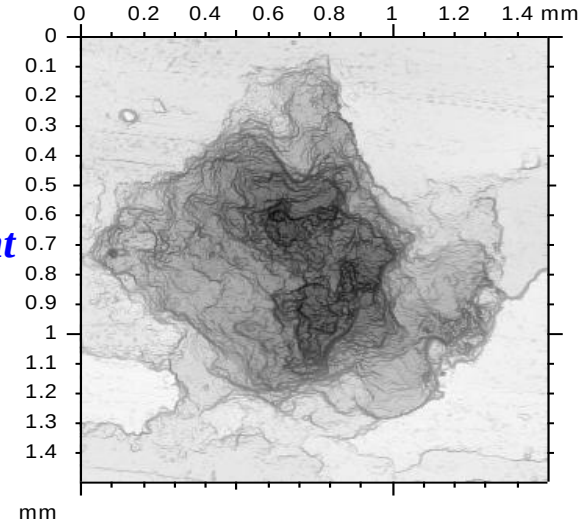


2D representation with altitude coding



3D representation

Intensity measurement



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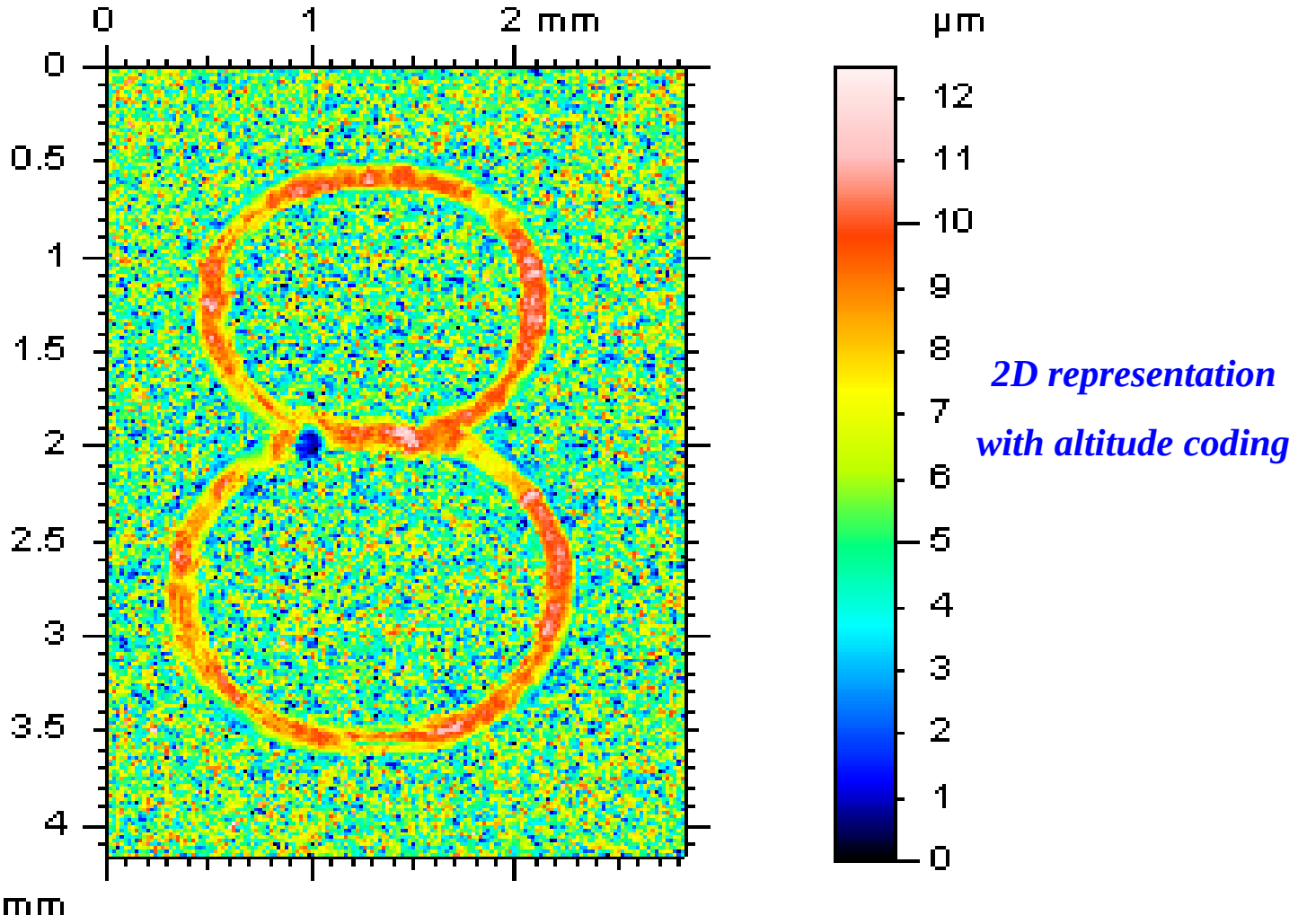
Laser engraving on a titanium part



2D representation with altitude coding

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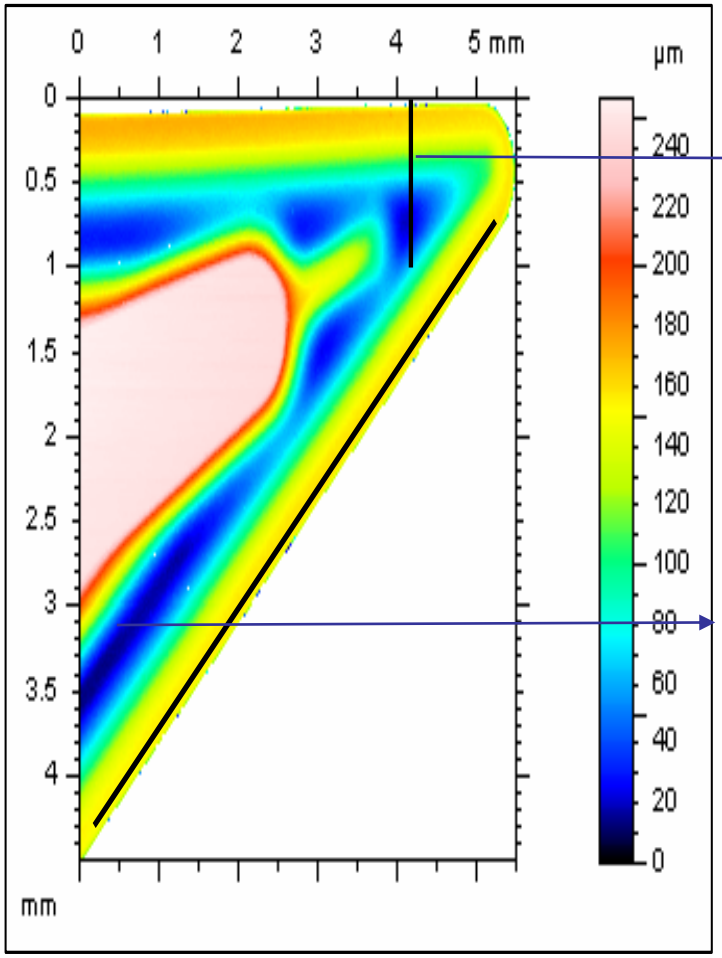
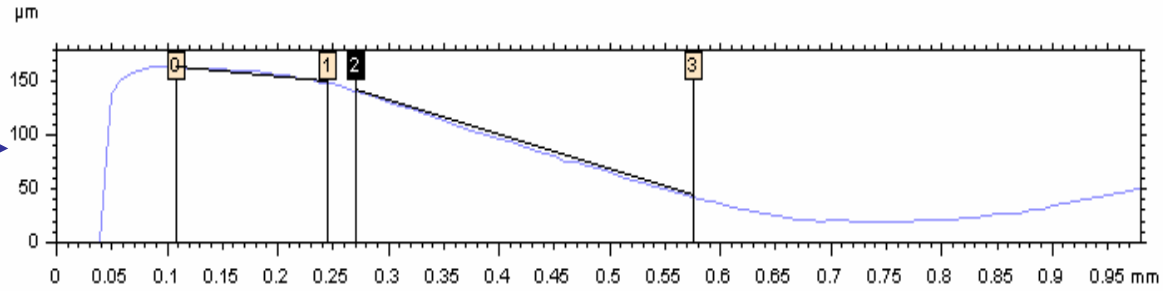
Cutting tool edge

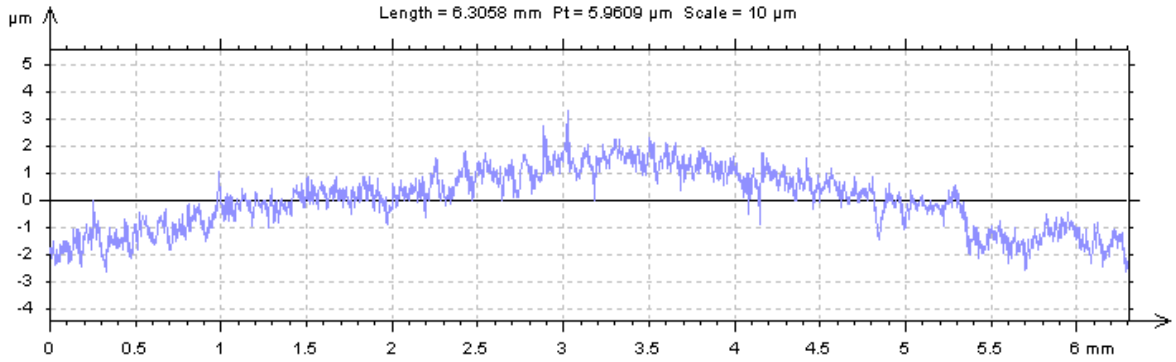


2D representation with altitude coding



	0-1	2-3
Angle :	**-6.23 °**	**-18 °**

Extracted profiles from the surface



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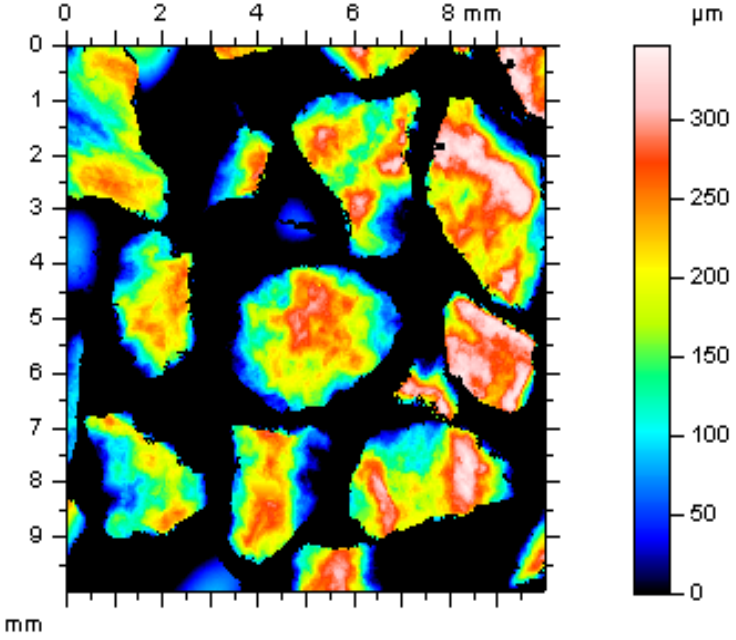
Grains used in concrete manufacturing
Shape, texture and roughness analysis



Altitude view of multiple grains

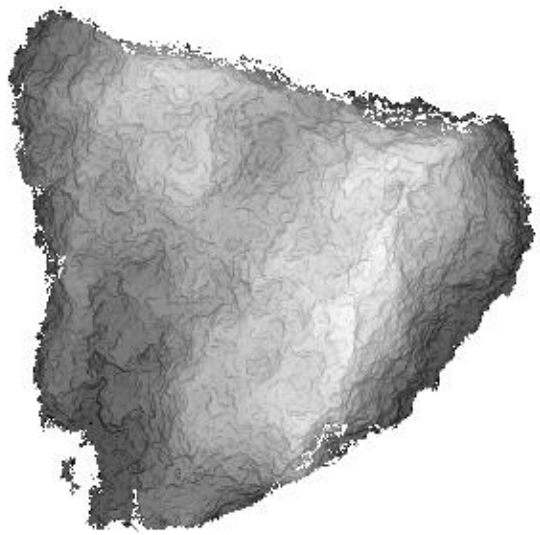
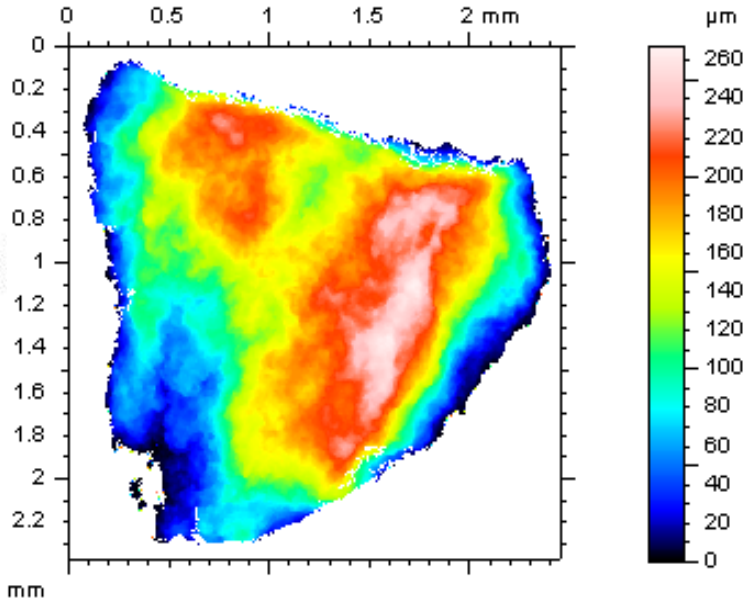


Photo simulation using 3D data



Altitude view of chalky grain

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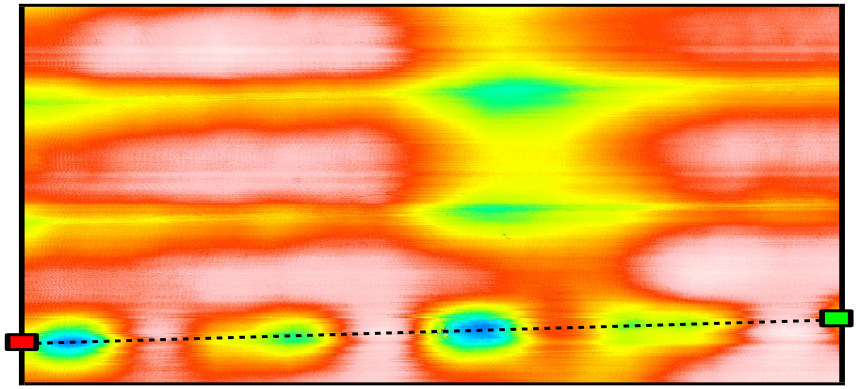
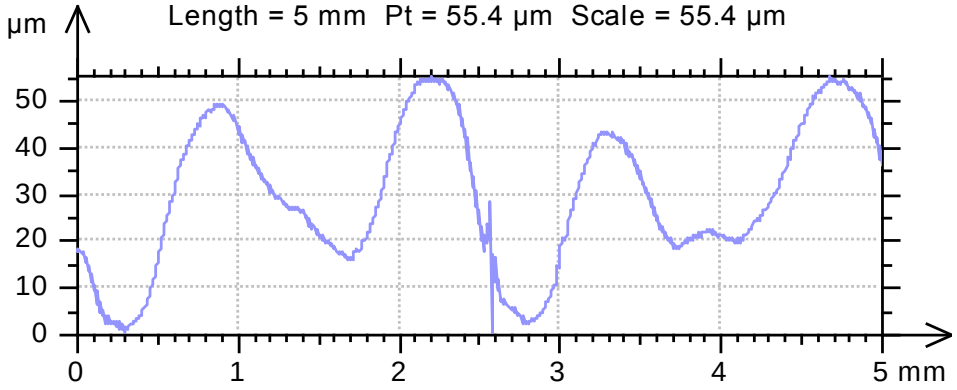
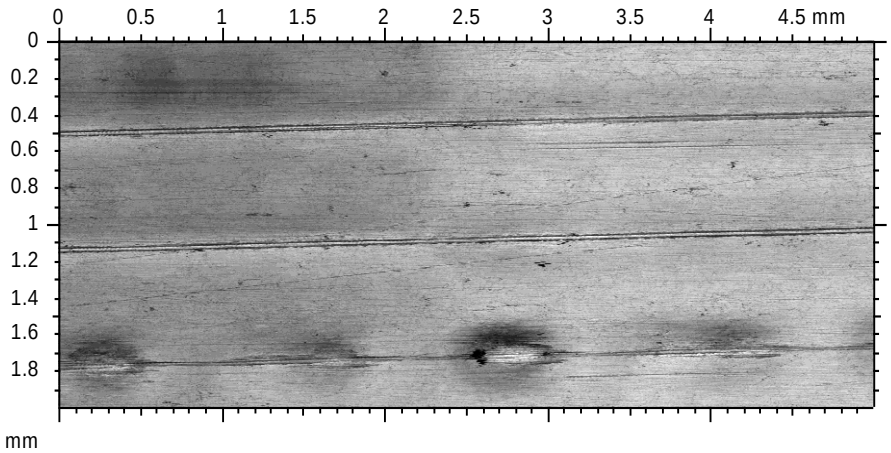
Aluminium recording media

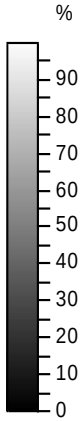


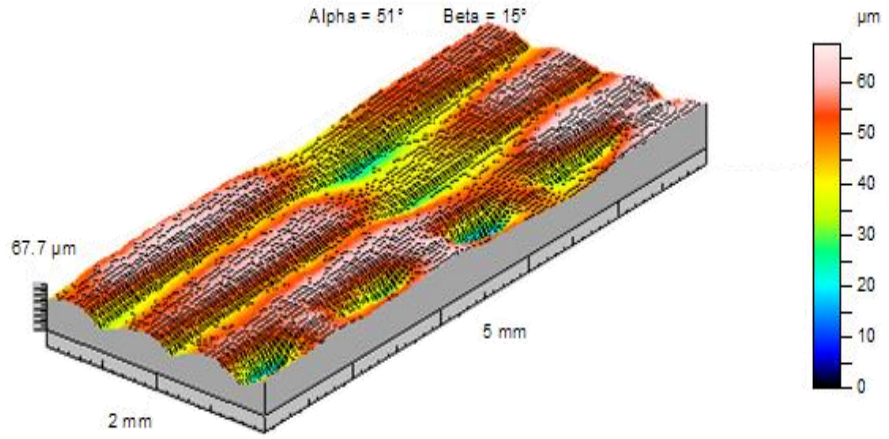


Altitude measurement

Extracted profile from the surface







Intensity measurement

3D view

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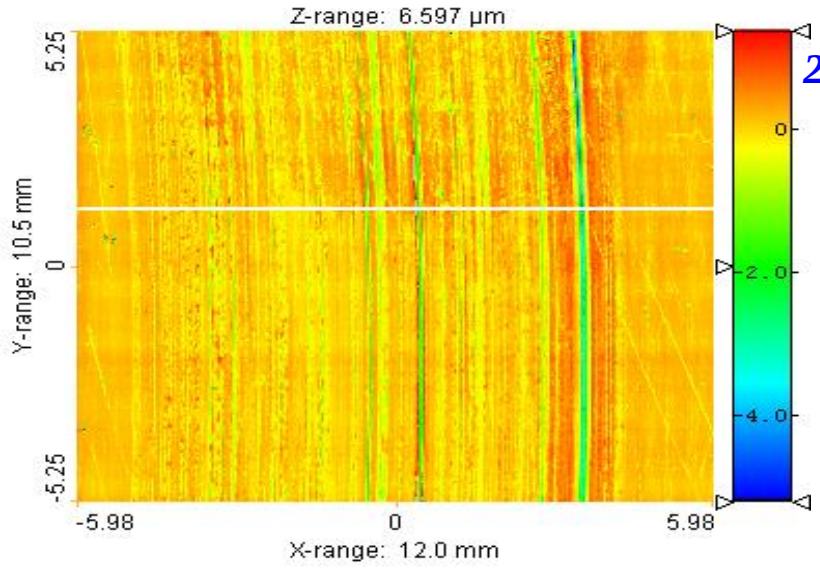
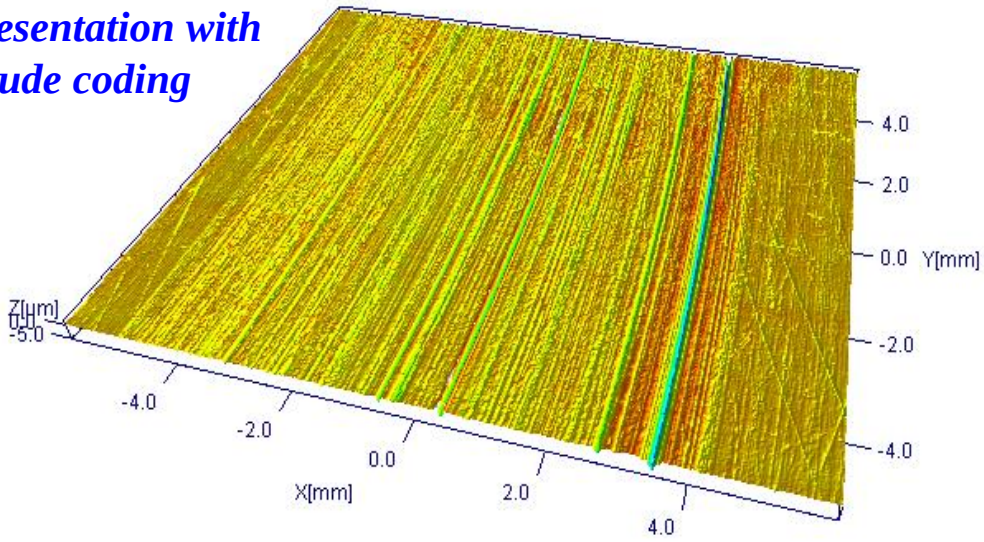
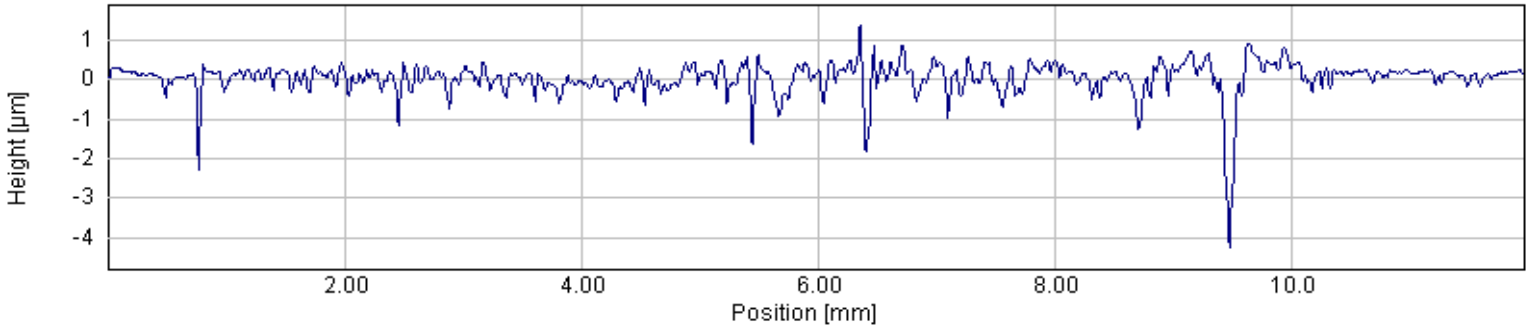
Tribology – scratches on a metallic part



2D representation with altitude coding



3D view



Extracted profile from the surface

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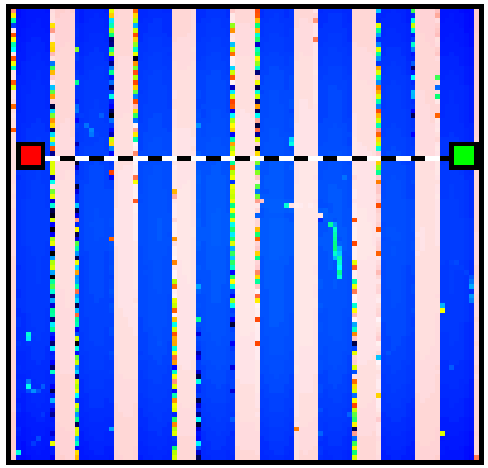
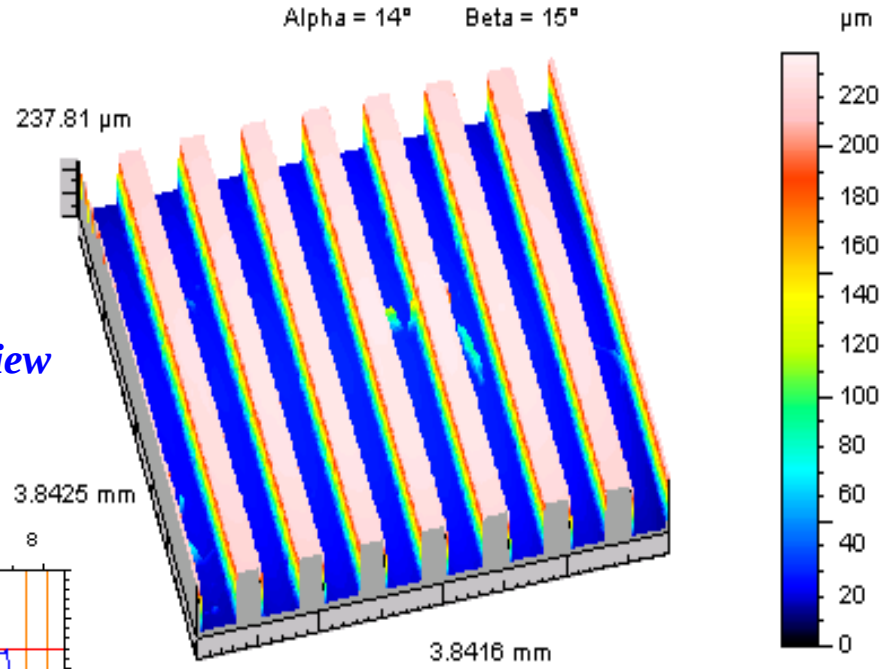
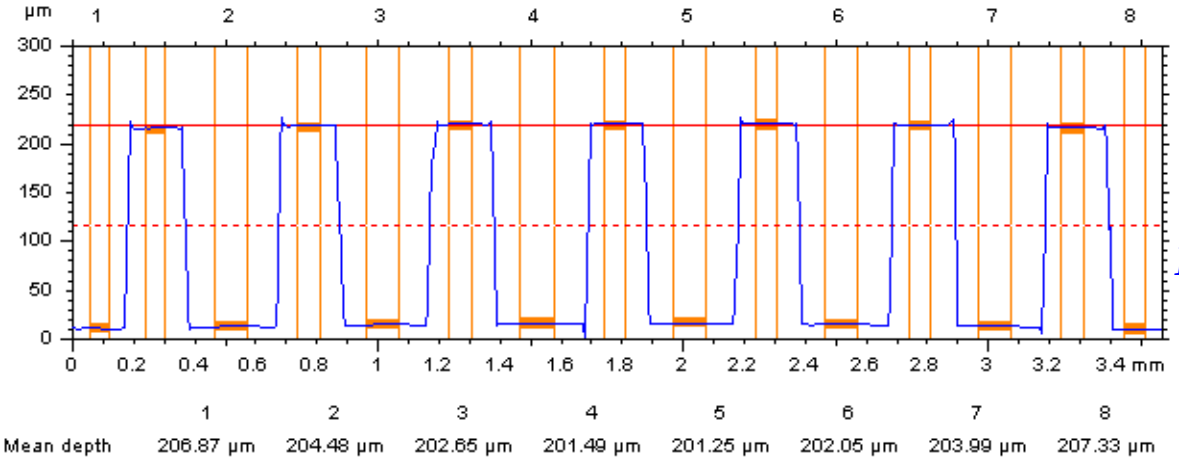
Microchannels in transparent polymer: measurement of channels depth



Height measurement

3D view





Extracted profile from the surface

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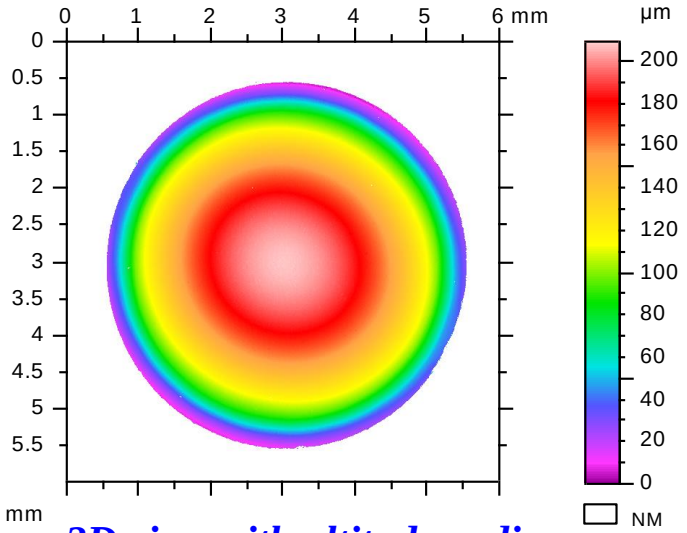
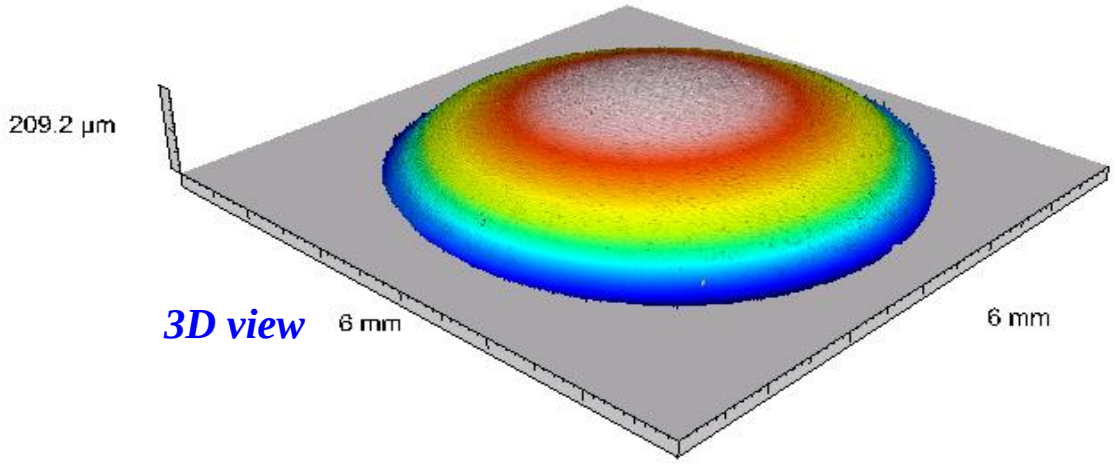
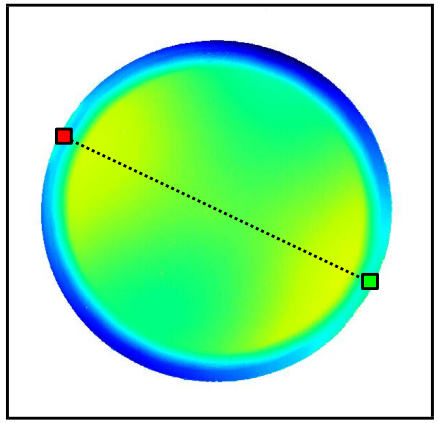
Metallic cap for sensitive keypad



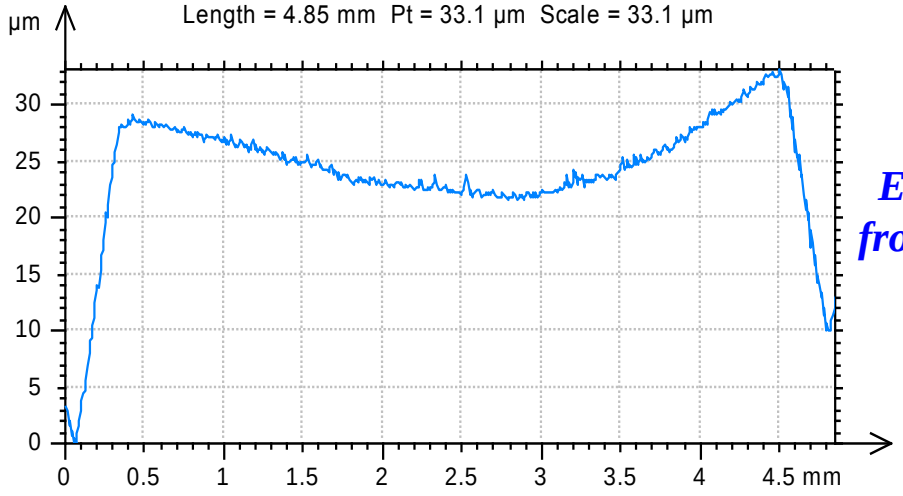
2D view with altitude coding



3D view



Difference after comparison with a spherical shape



Extracted profile from the difference picture

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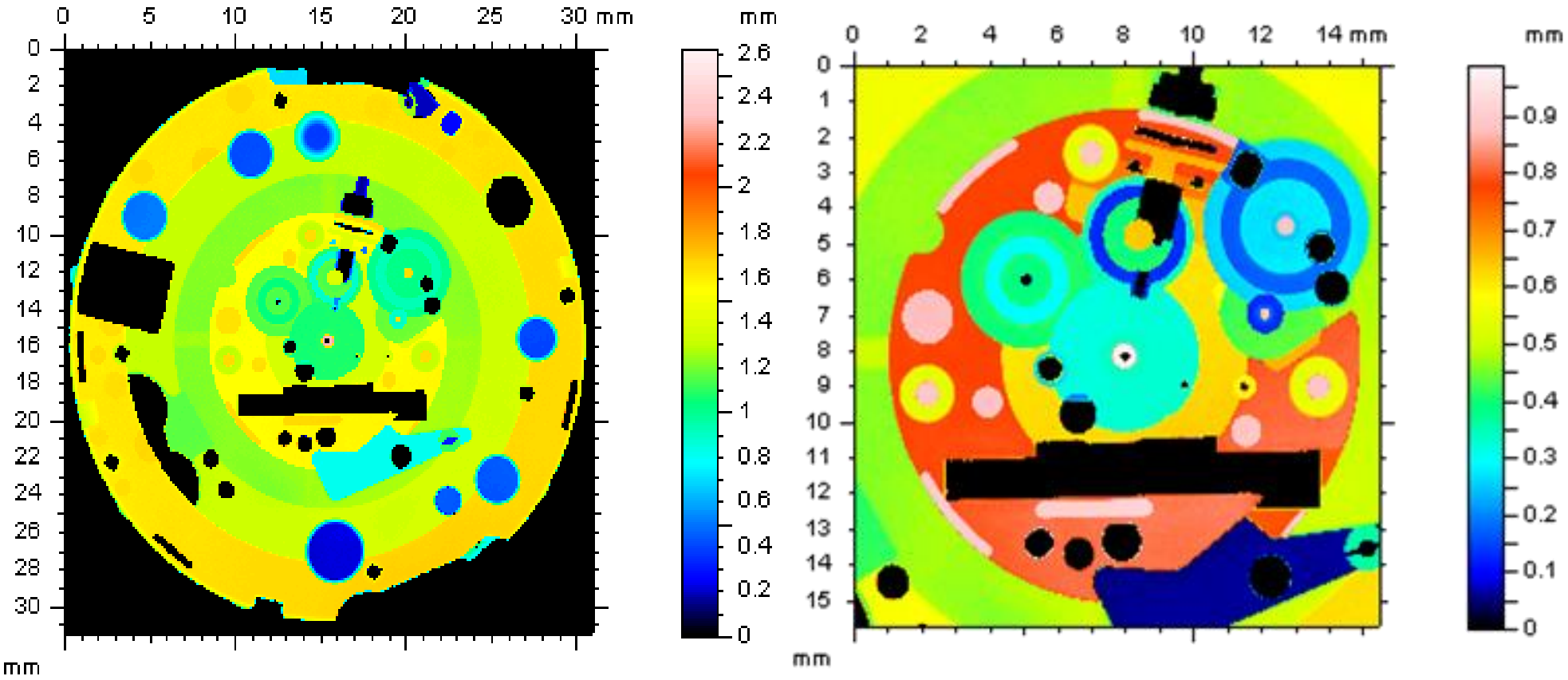
Watch mechanism



2D representations with altitude coding

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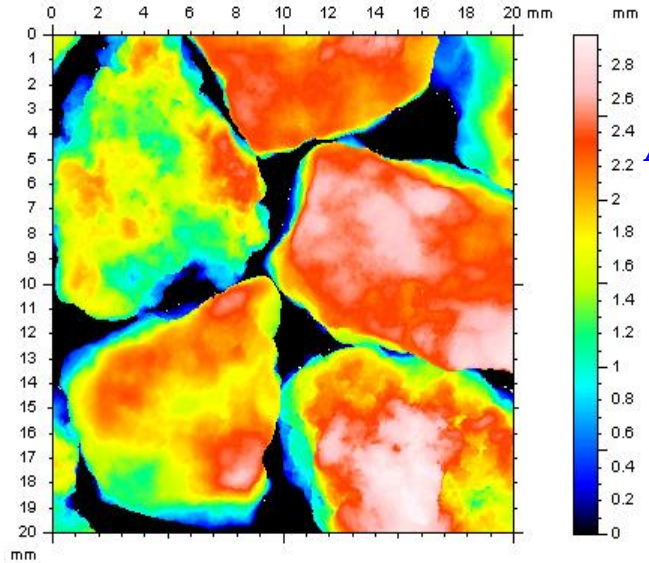
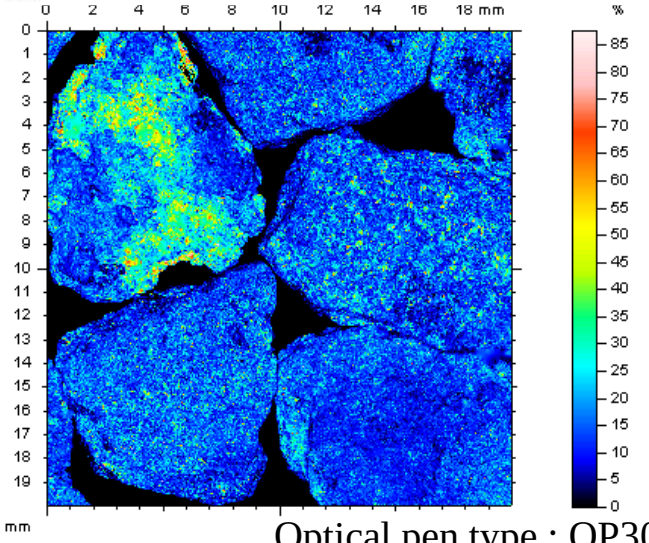
Road Asphalt

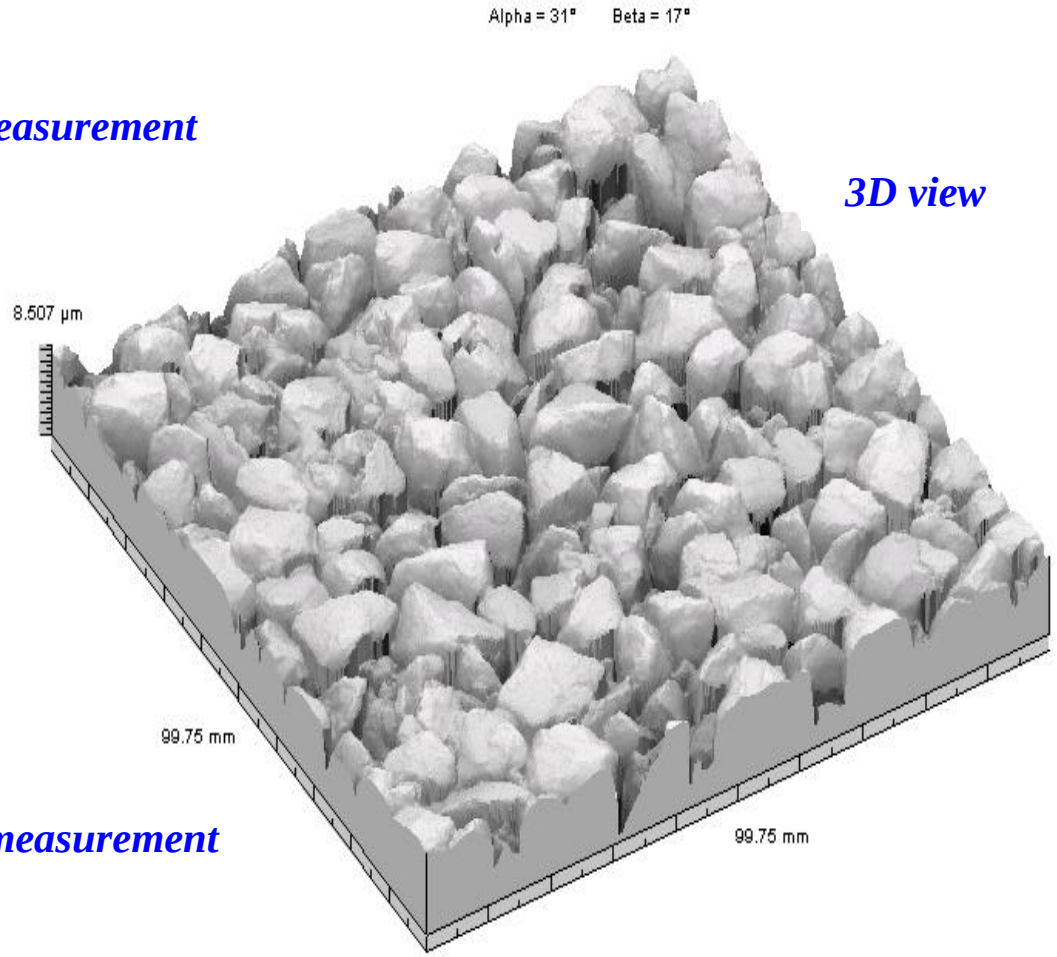


Altitude measurement



Intensity measurement

3D view



Optical pen type : OP3000

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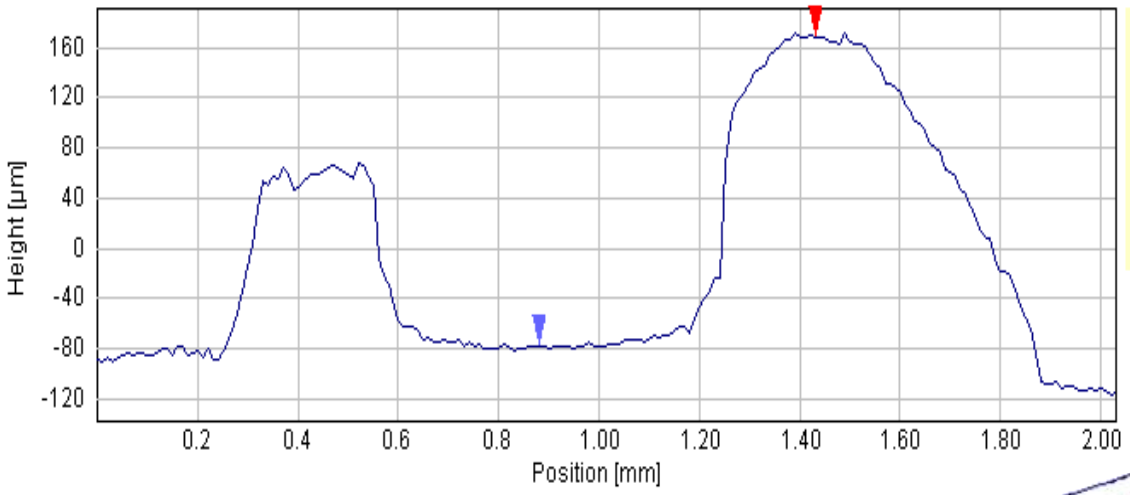
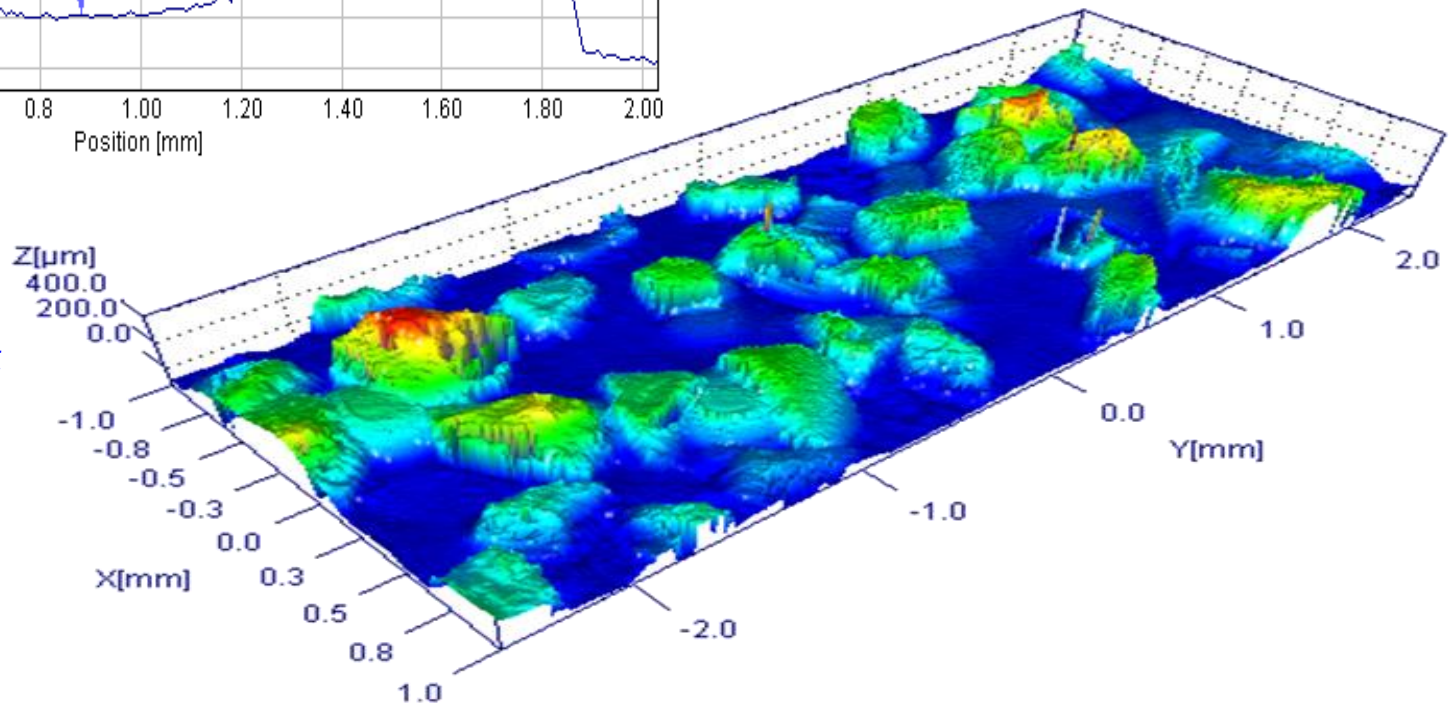
Diamond coated mill



	X[mm]	Y[µm]
M1	0.88021	-77.24
M2	1.4303	167.8
M2-M1	0.55013	245.06
dy/dx	0.445 ~	24.01°
Mean 1-2:	3.9766 µm	
Phys Image Coord:		
0.4148,0.9130,1.678E+5		

Extracted profile from the analyzed surface

Measurement 3D view



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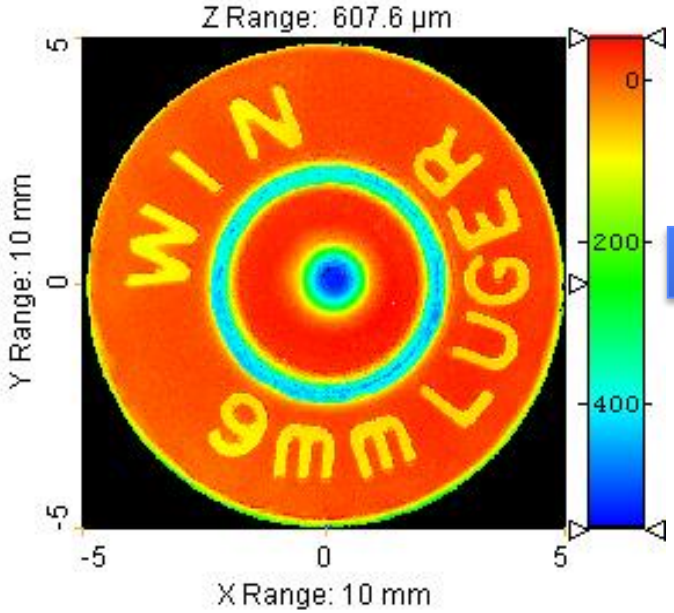
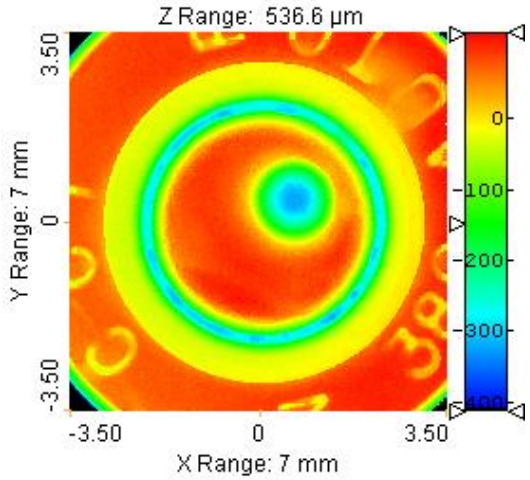
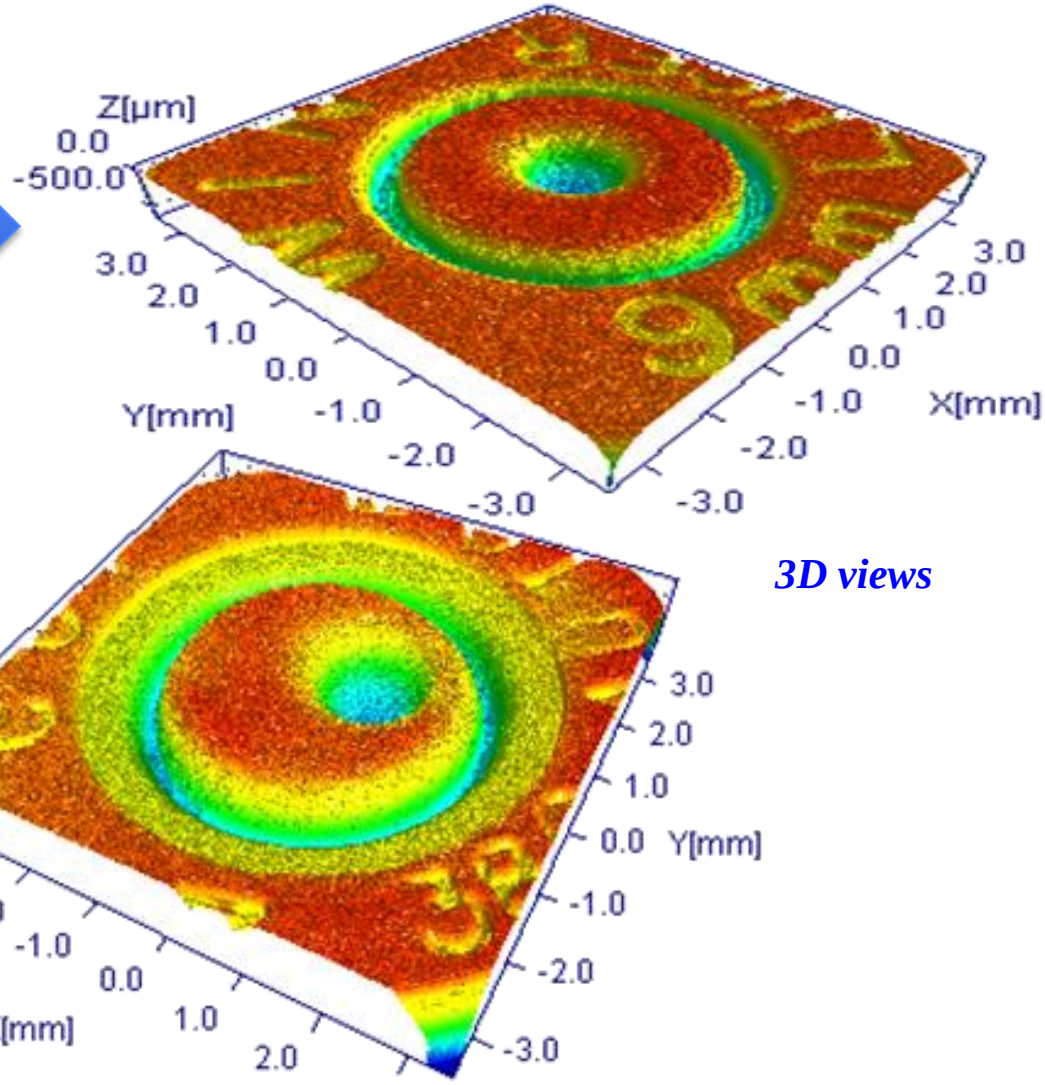
Measurements on a bullet cartridge



Altitude measurements





3D views

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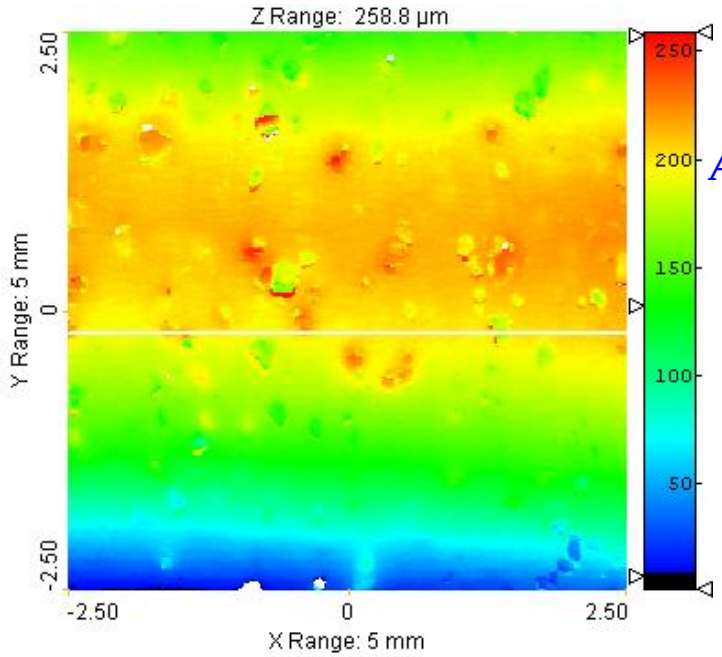
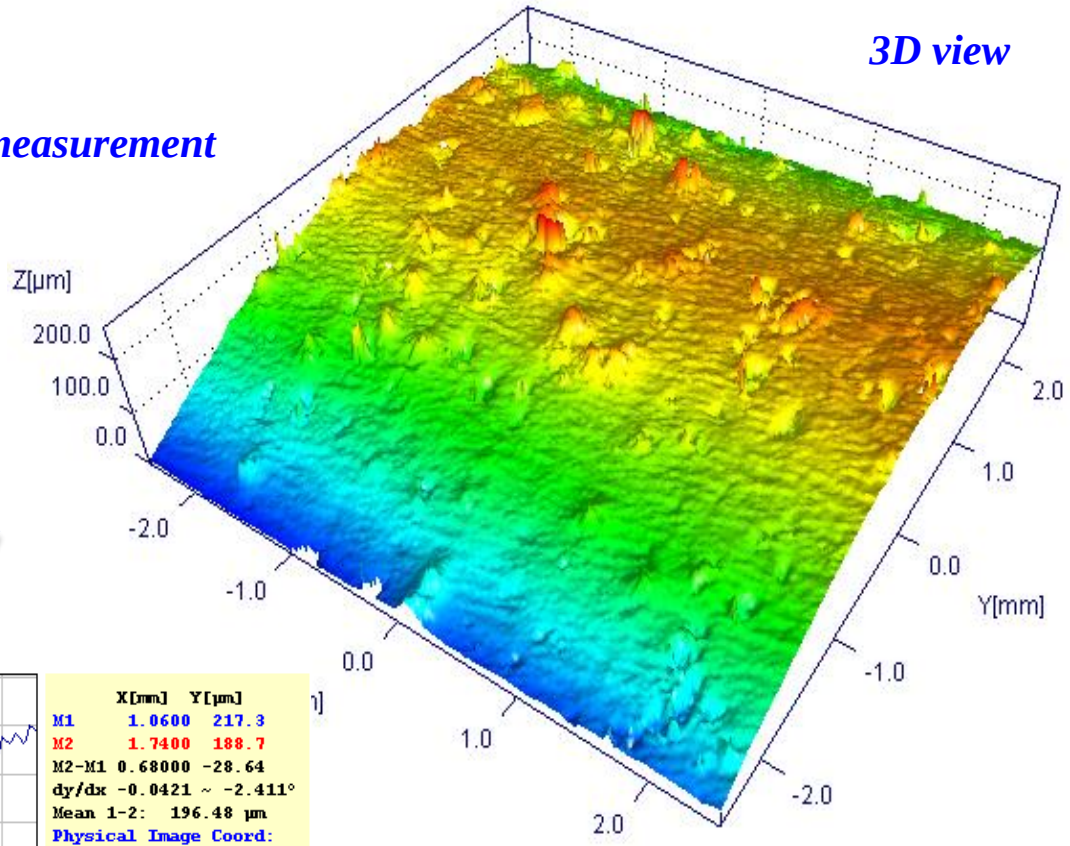
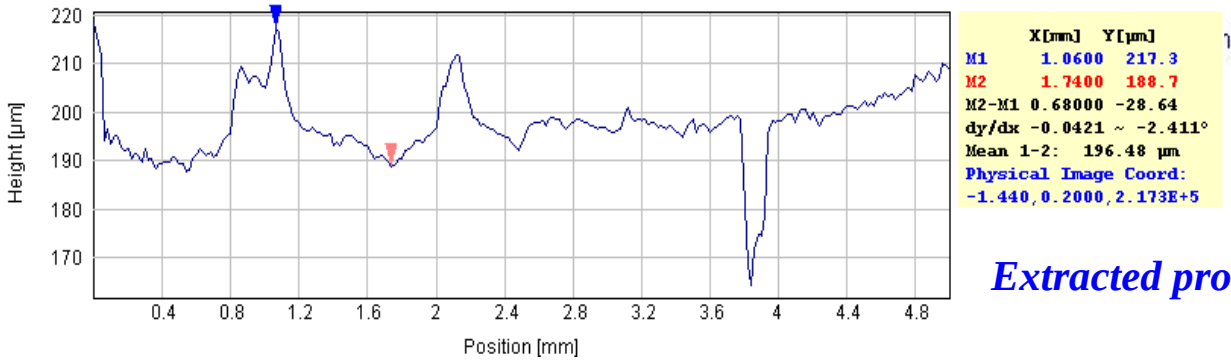
Surface microtopography of a driving roller



Altitude measurement

3D view





	X[mm]	Y[µm]
M1	1.0600	217.3
M2	1.7400	188.7
M2-M1	0.68000	-28.64
dy/dx	-0.0421 ~ -2.411°	
Mean 1-2:	196.48 µm	
Physical Image Coord:		
-1.440,0.2000,2.173E+5		

Extracted profile from the surface

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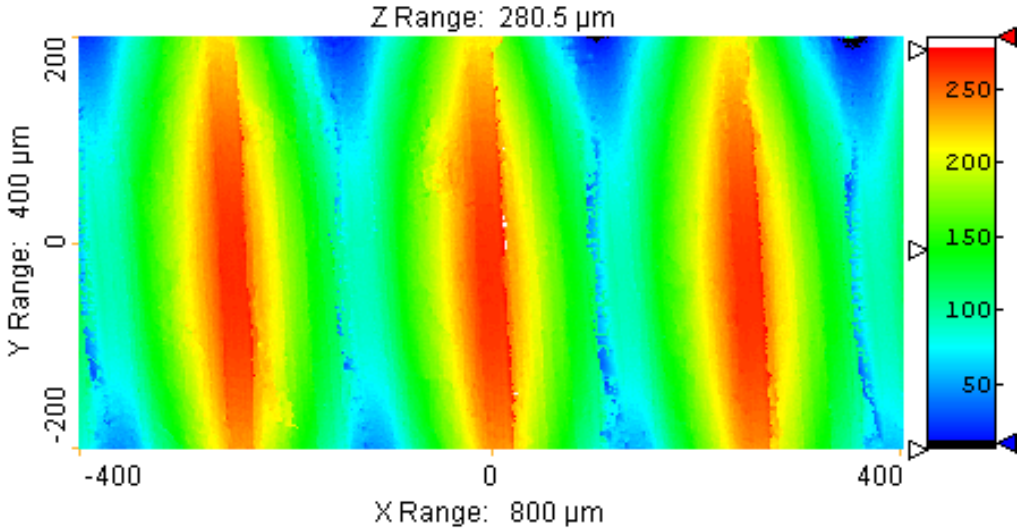
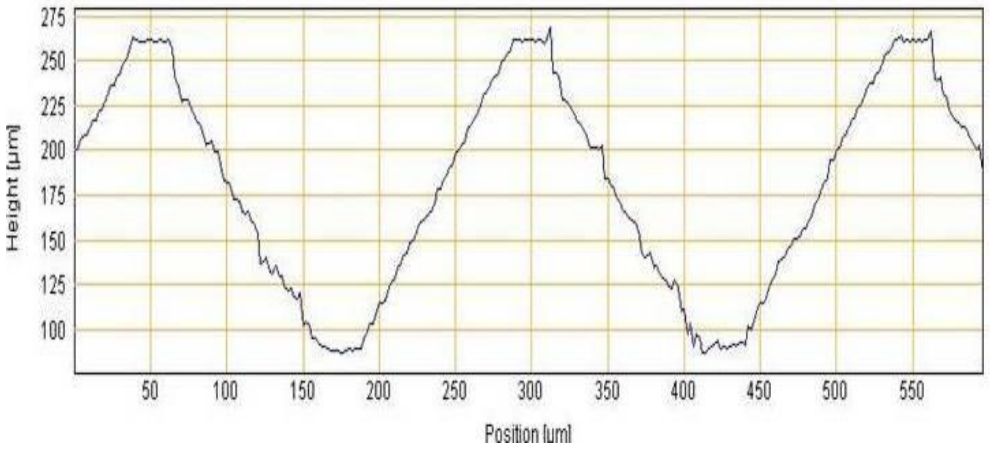
3D analysis of a metallic screw thread

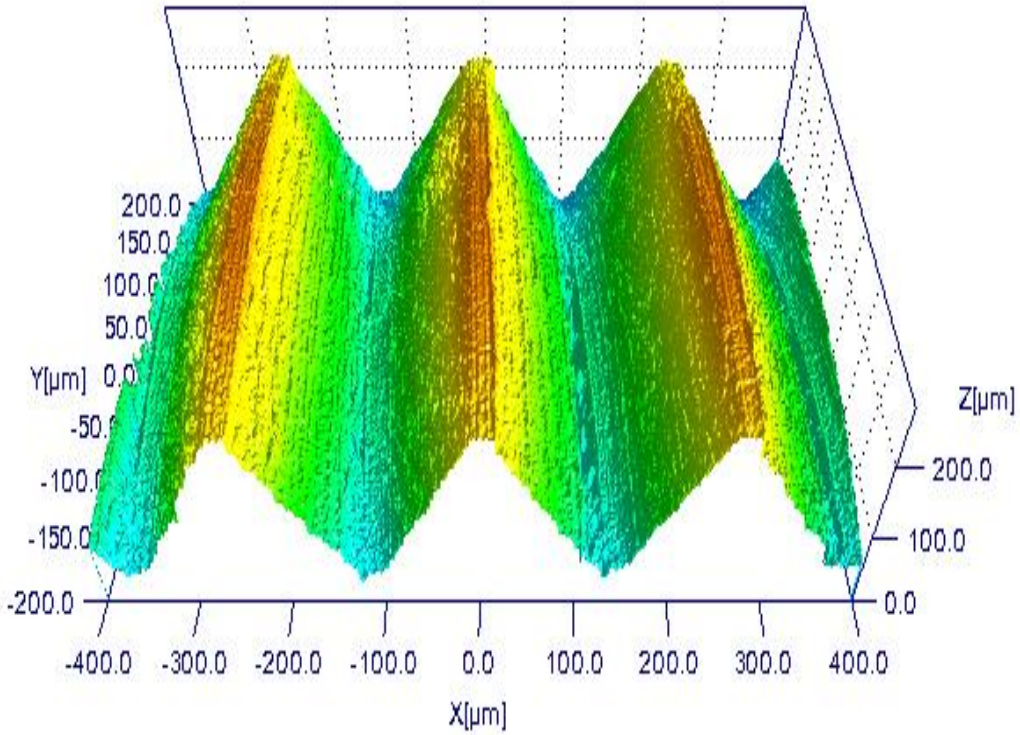


Altitude measurement



Extracted profile from the surface

3D view



Ra = 2.52 µm

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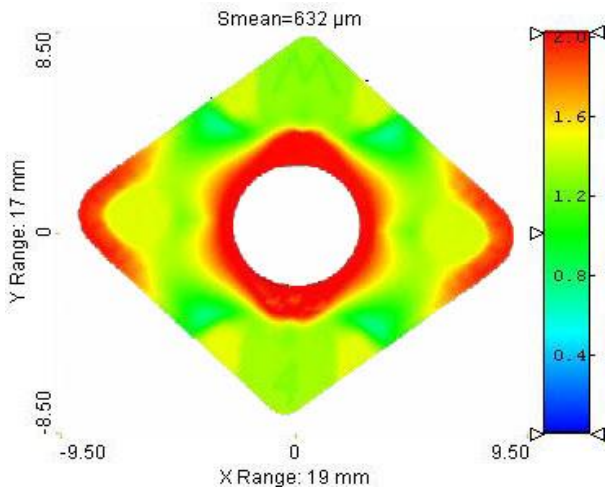
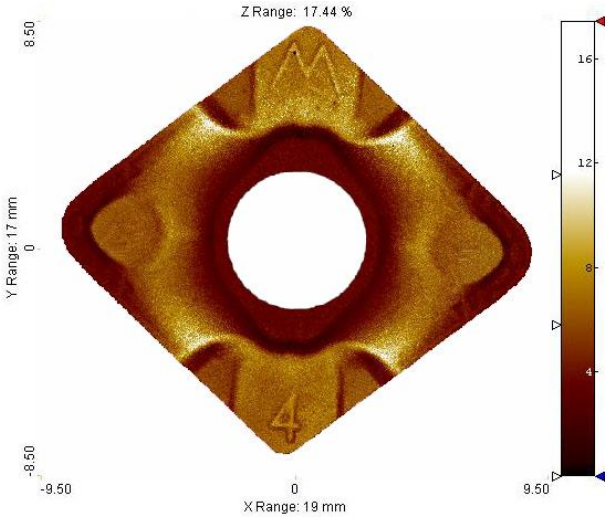
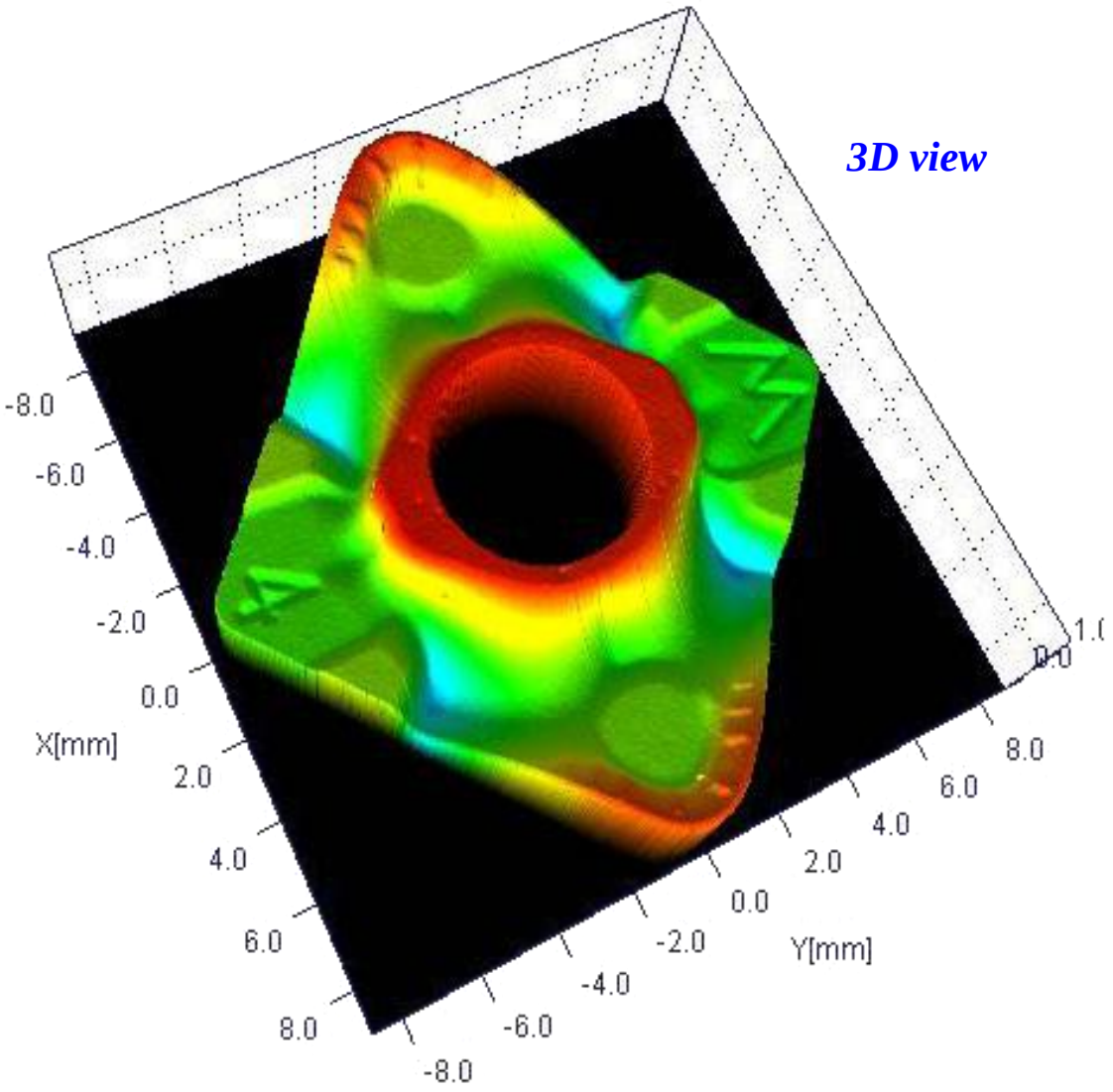
Surface microtopography of a HTW insert



Altitude measurement



Intensity measurement



3D view

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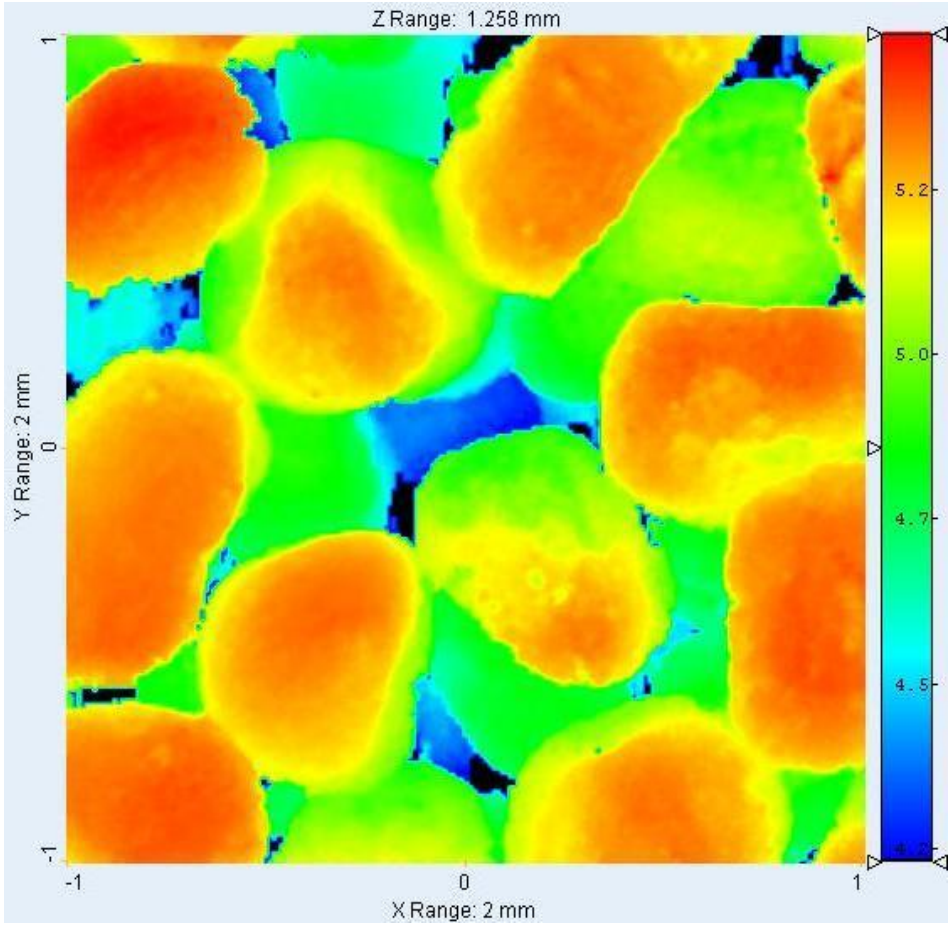
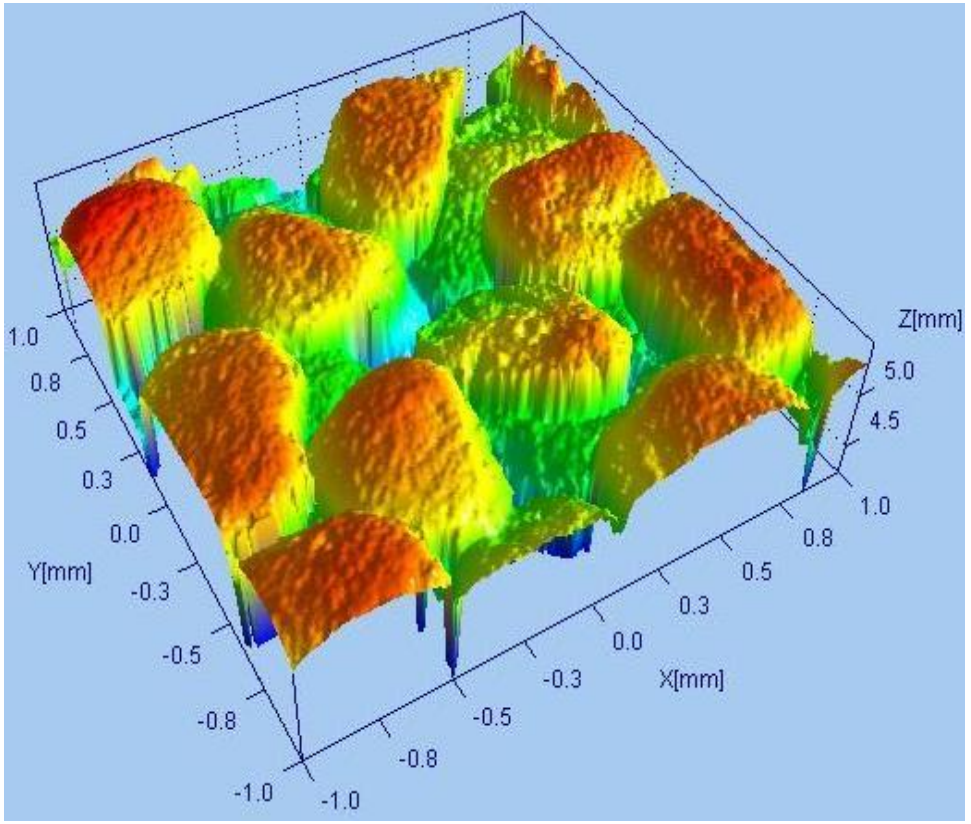
Topography of sand particles



2D view with altitude coding



3D view

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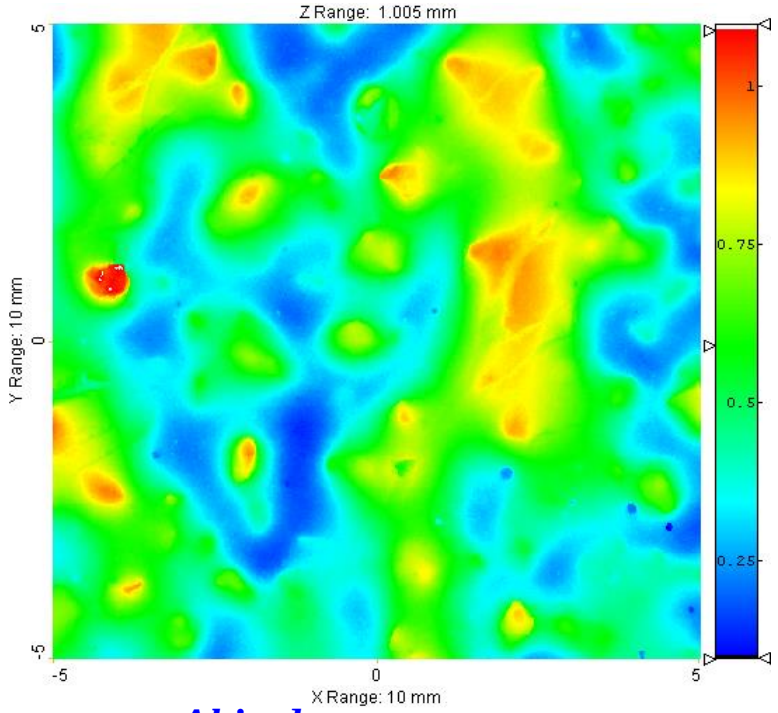
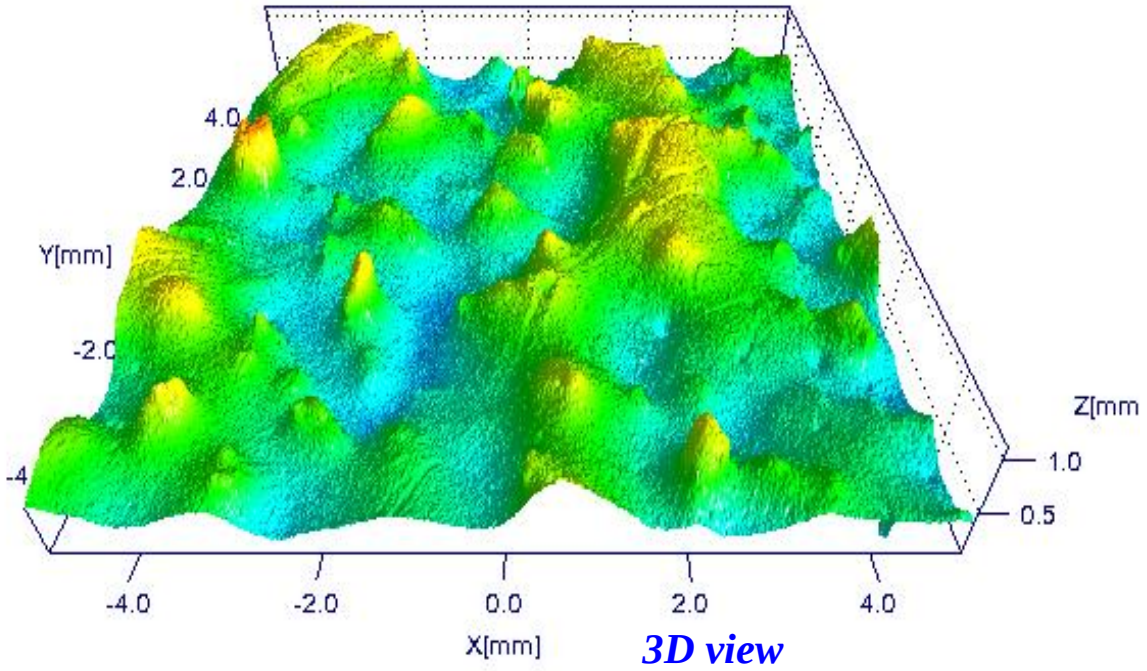
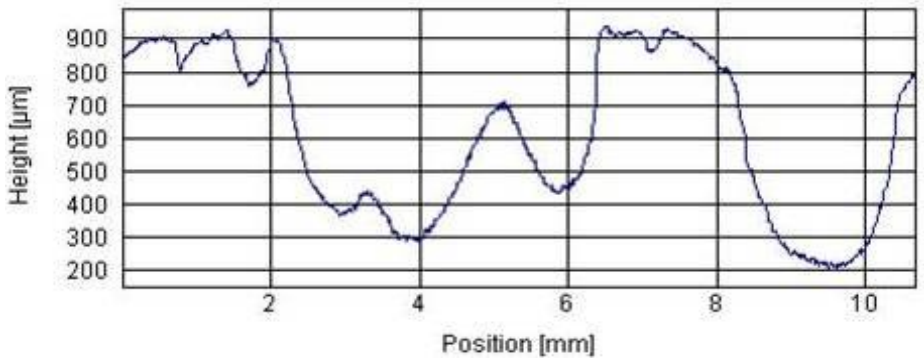
Sand paper topography



Altitude measurement



3D view



Extracted profile from the surface

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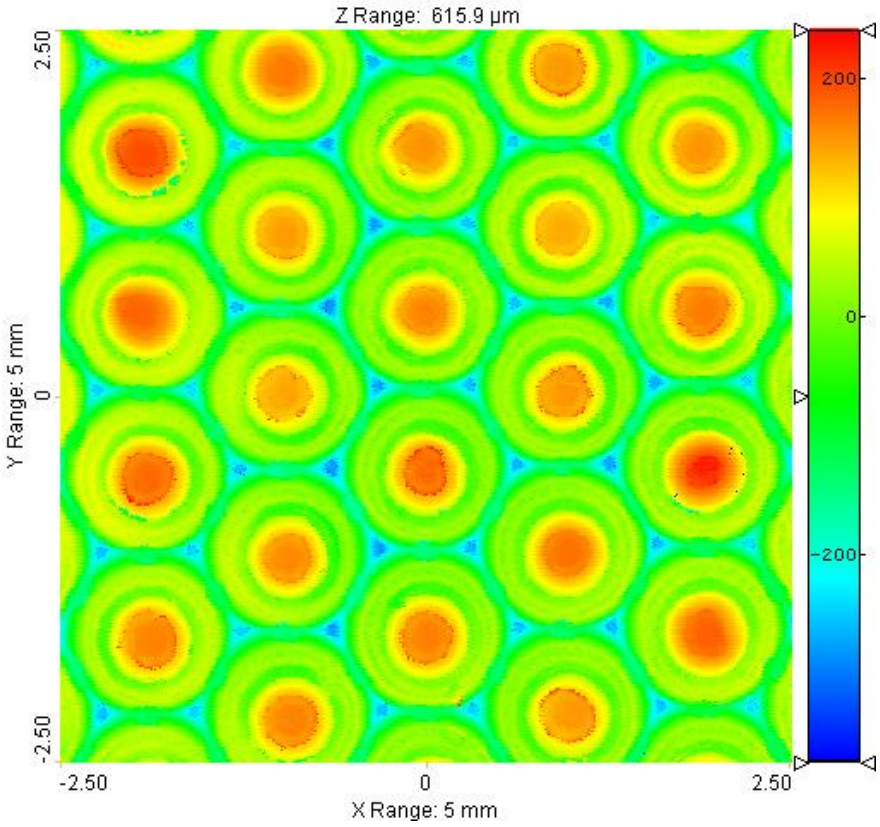
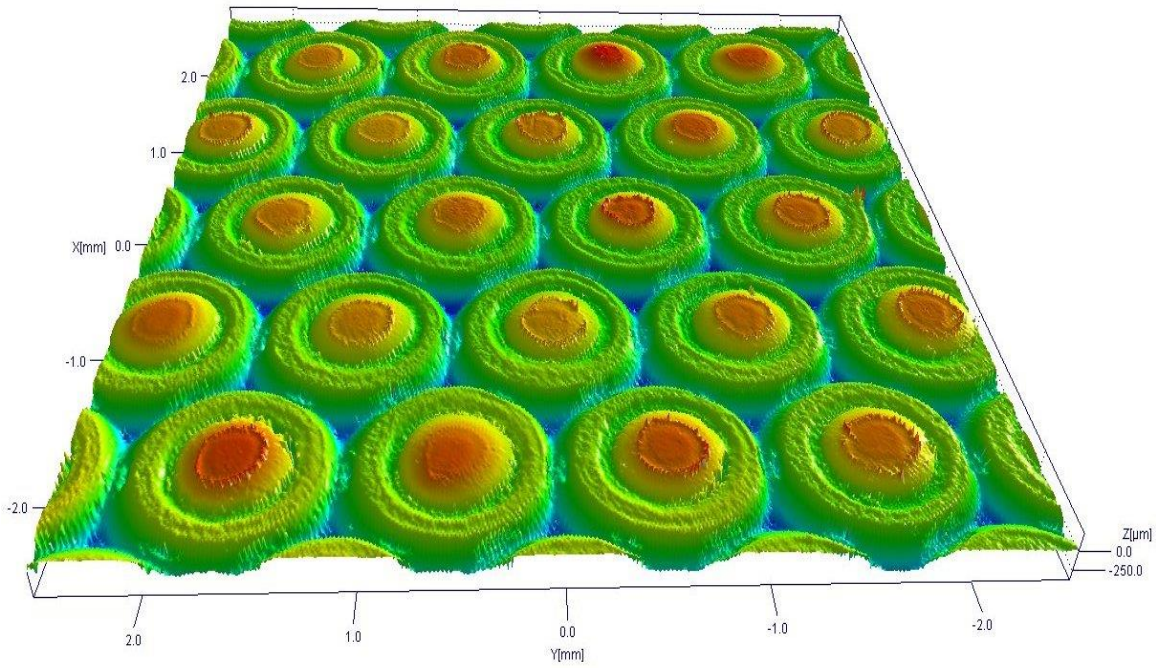
Spherical patterns on Aluminium sheet





Height measurement

3D View

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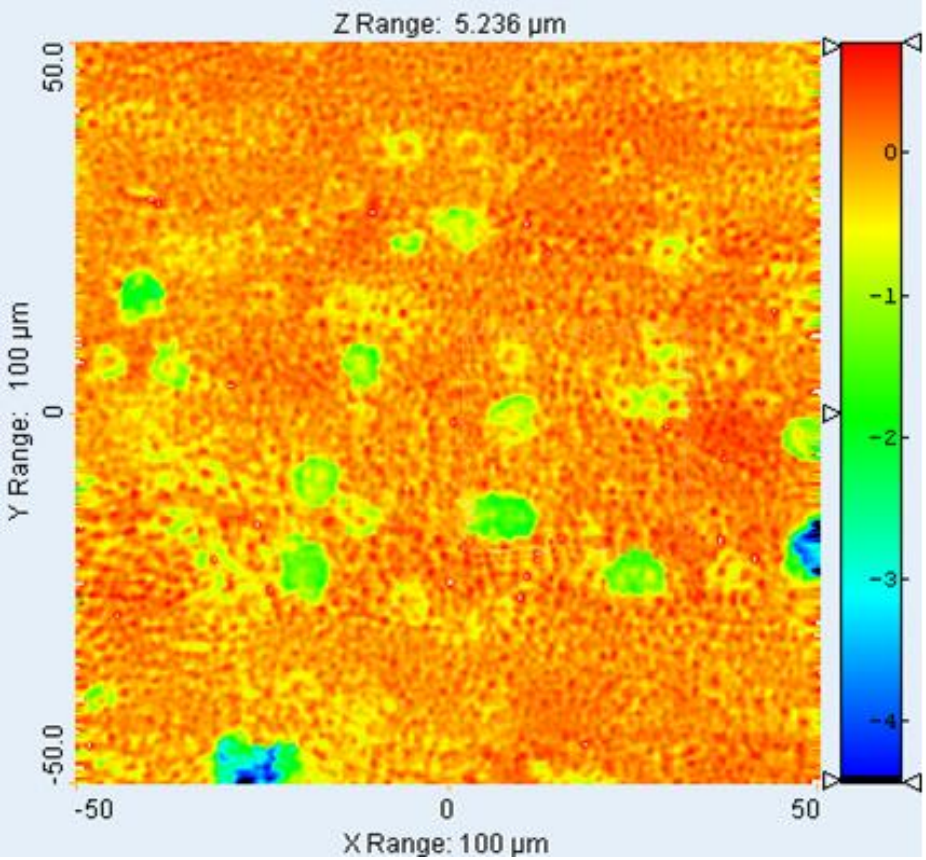
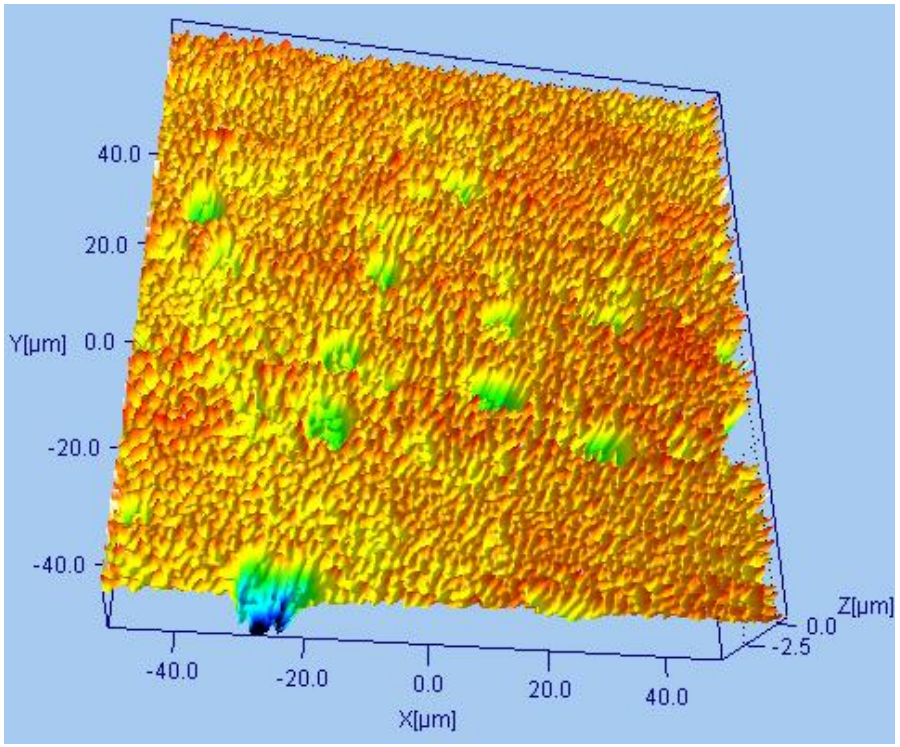
Oxidation measurement on metal sample



Height measurement



3D View

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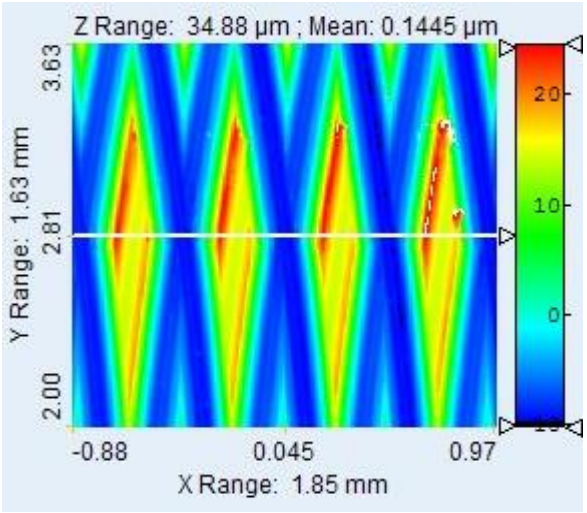
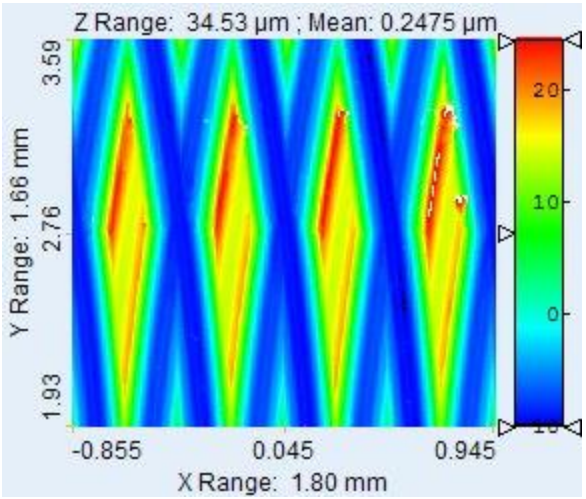
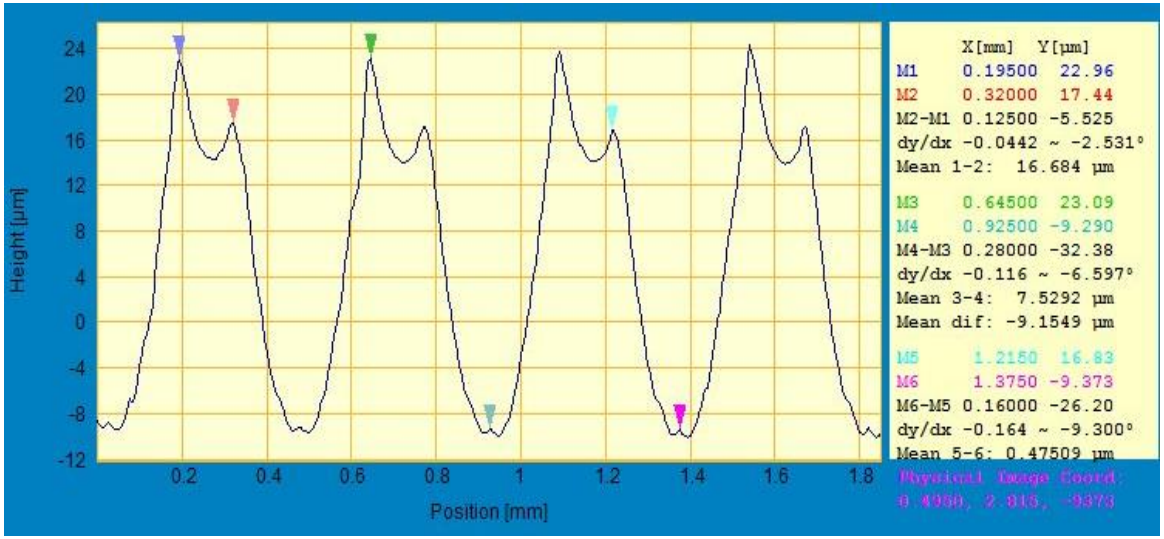
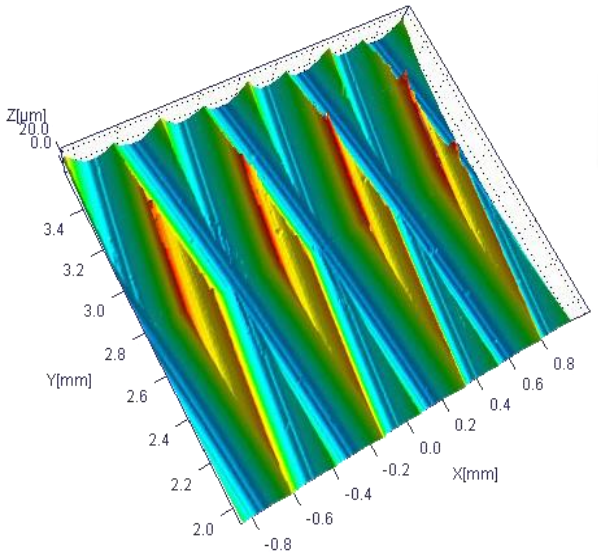
Machined metal piece measurement



Altitude measurements







3D view

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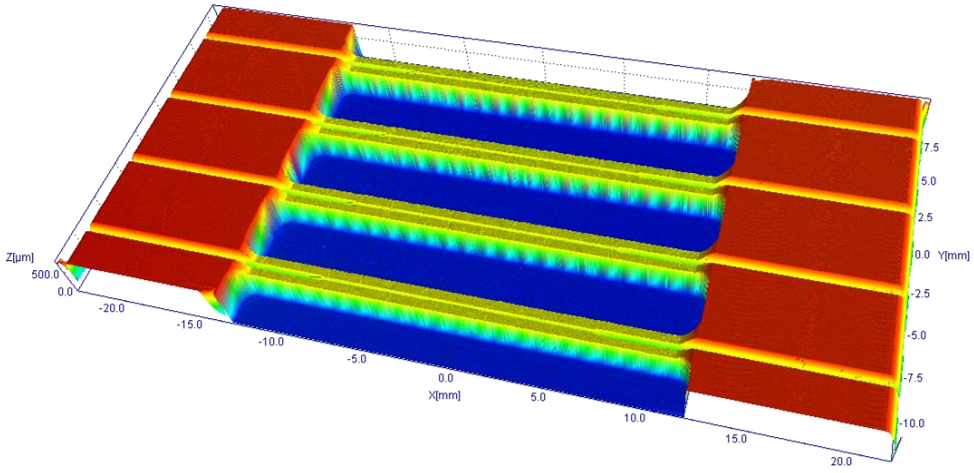
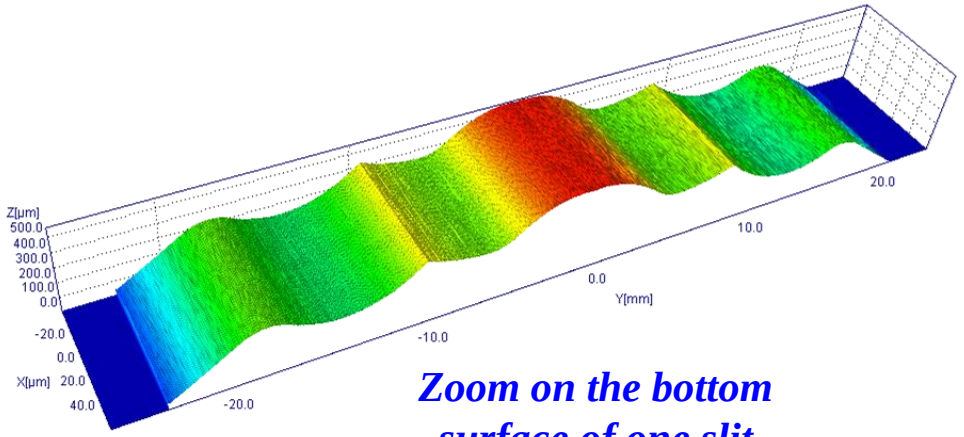
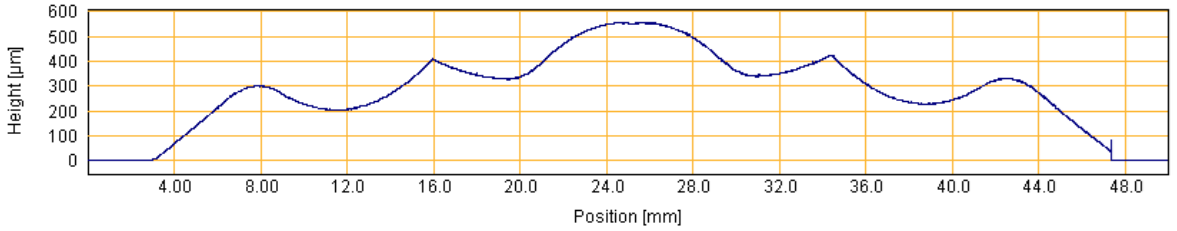
Aluminium sample with 4 structured slits



Altitude measurement



Zoom on the bottom surface of one slit



Extracted profile

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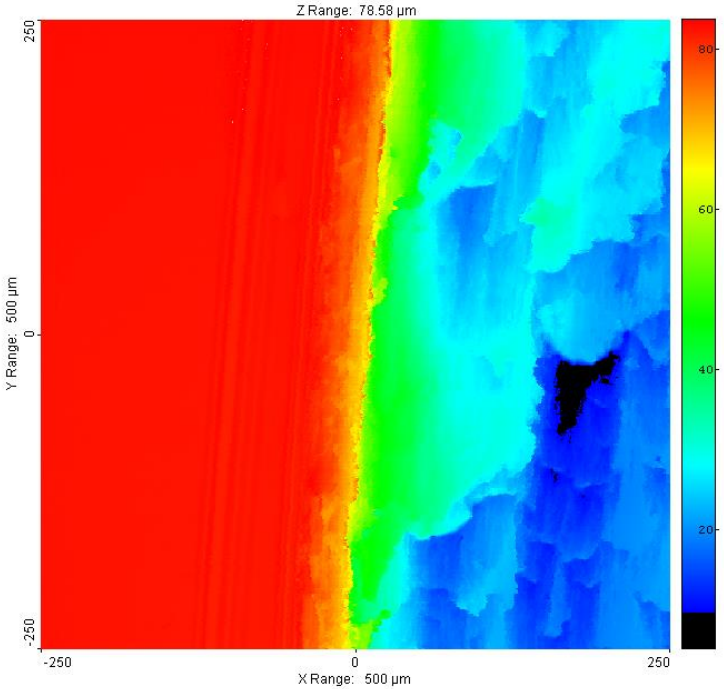
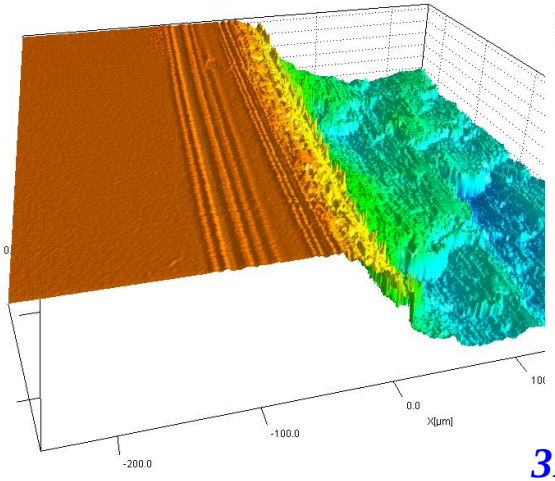
Metallic part measurement



Altitude measurement



3D view

Intensity view

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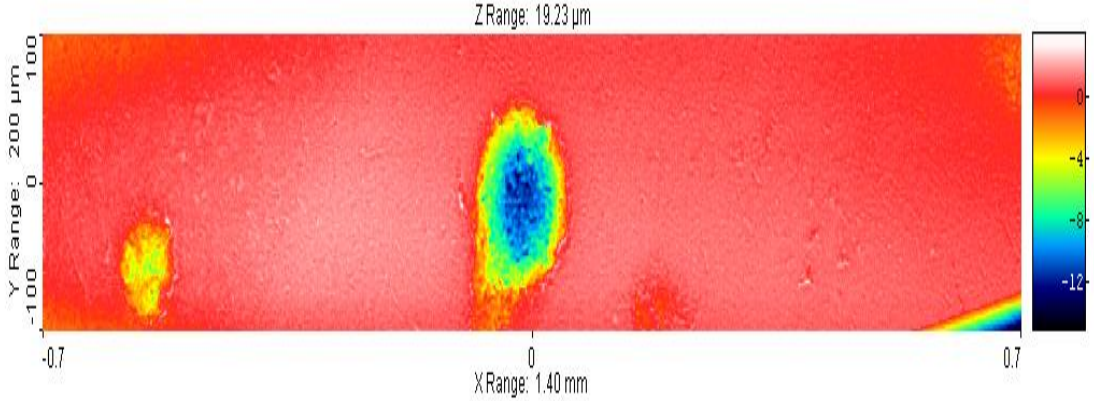
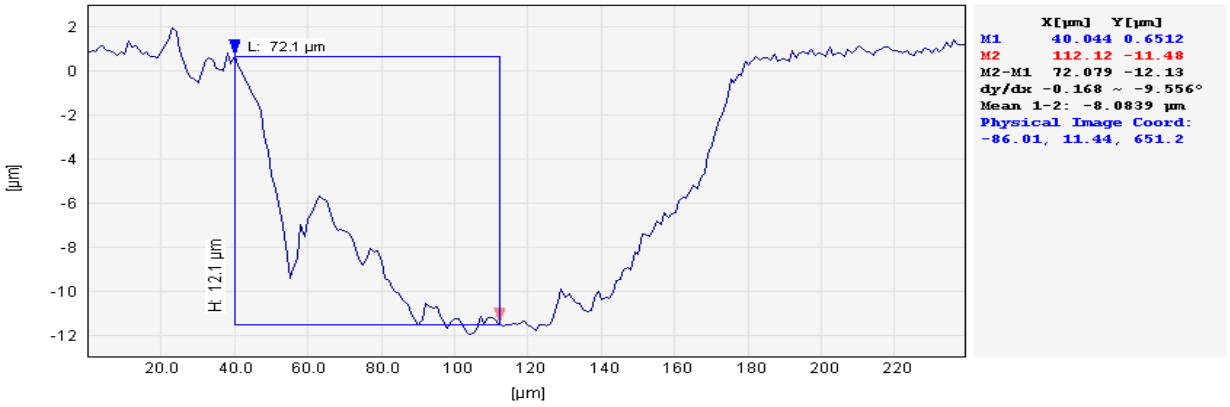
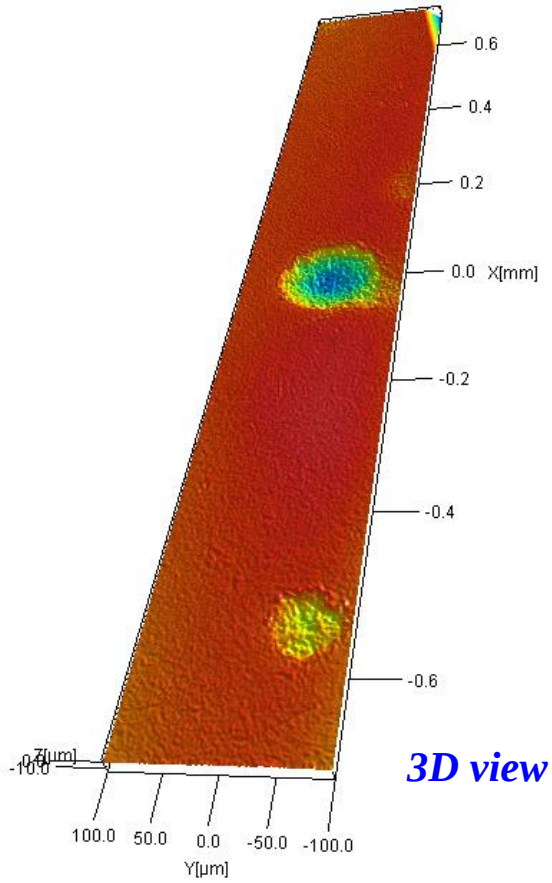
Impact measurement



Altitude measurement



Extracted profile



3D view

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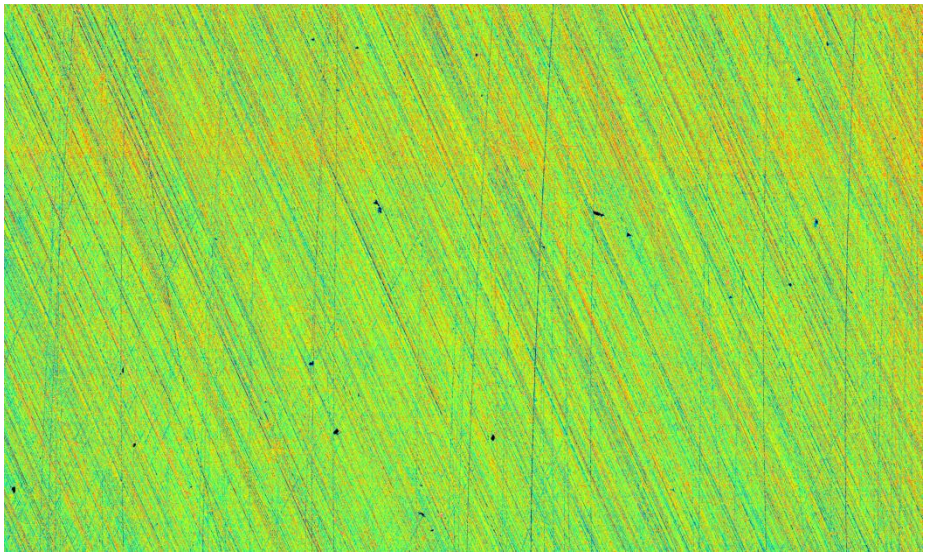
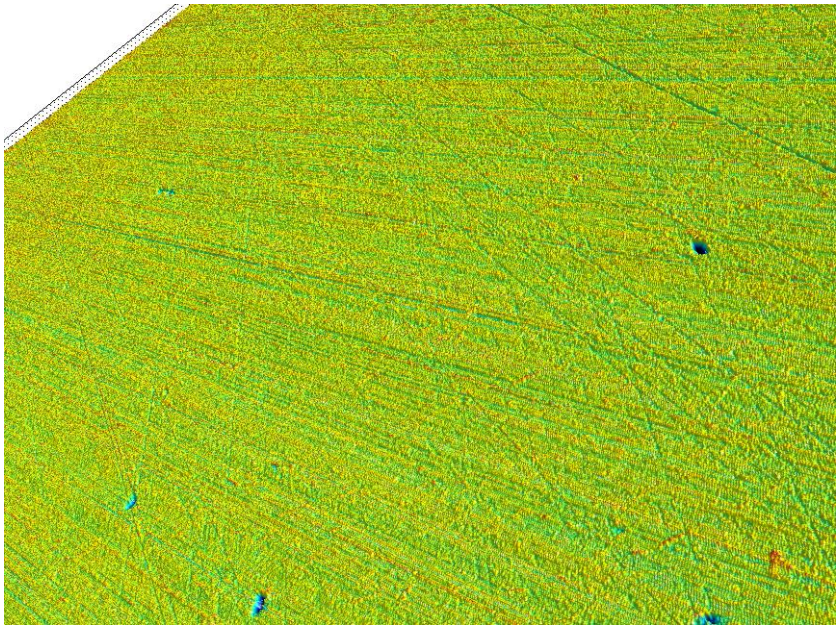
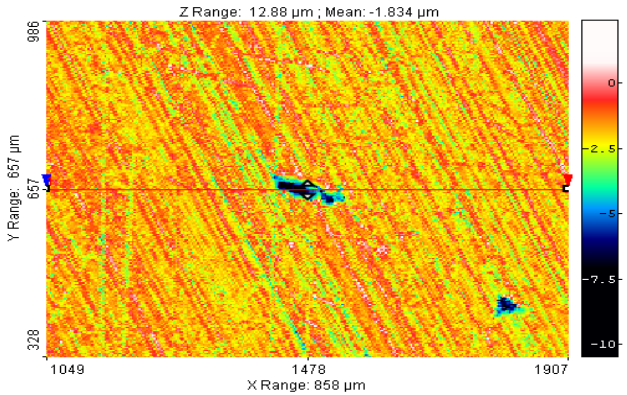
Cylinder measurement



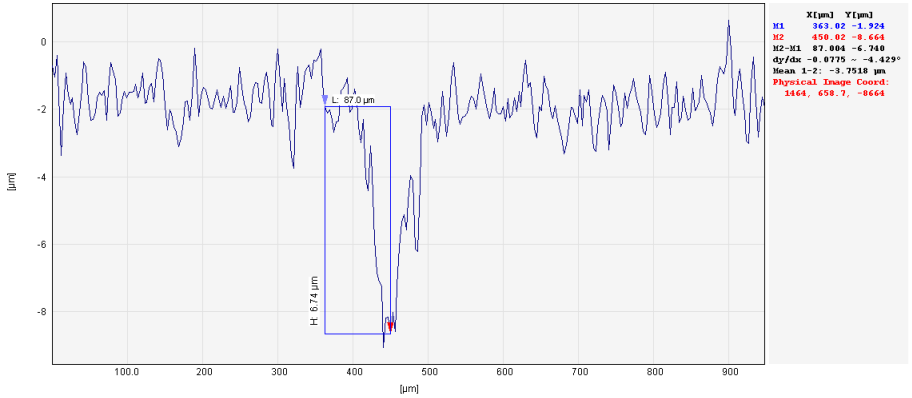
Altitude measurement



3D view



Zoom extracted



Extracted profile

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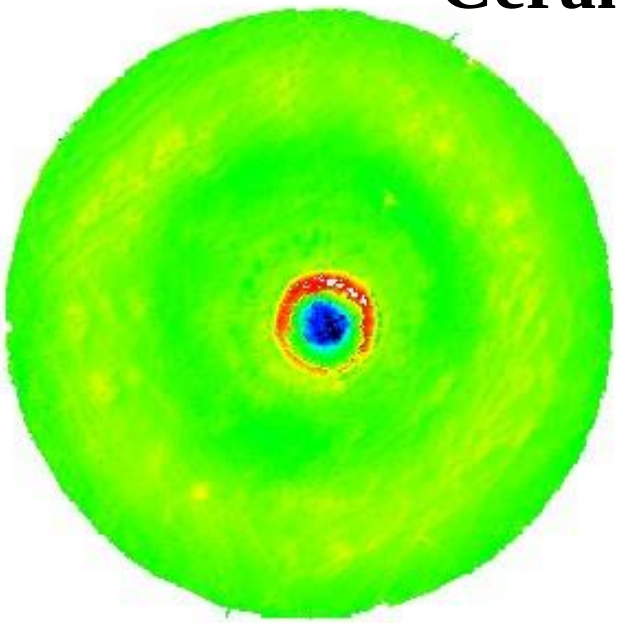
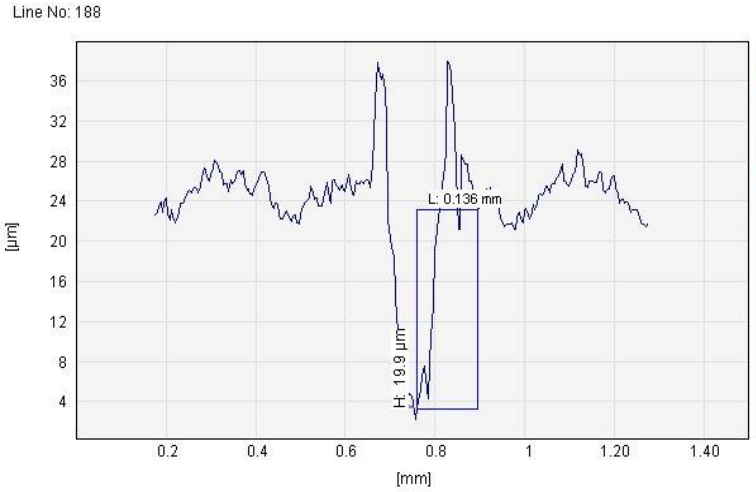
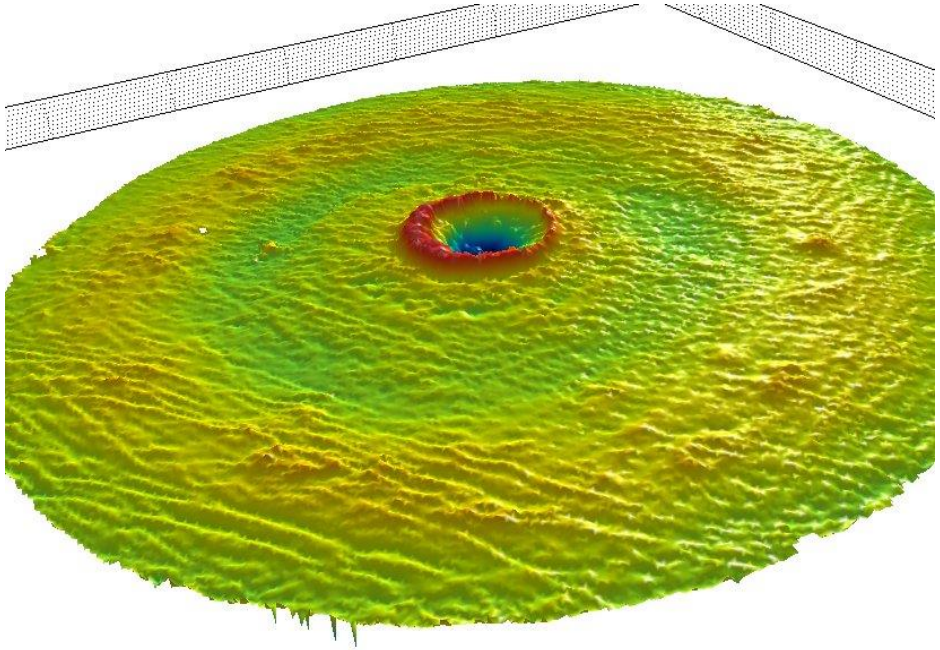
Ceramic watch part measurement



Altitude measurement



Profile extracted



3D view

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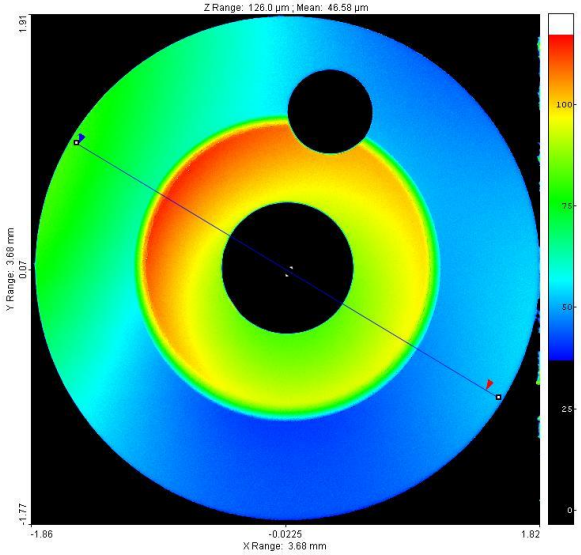
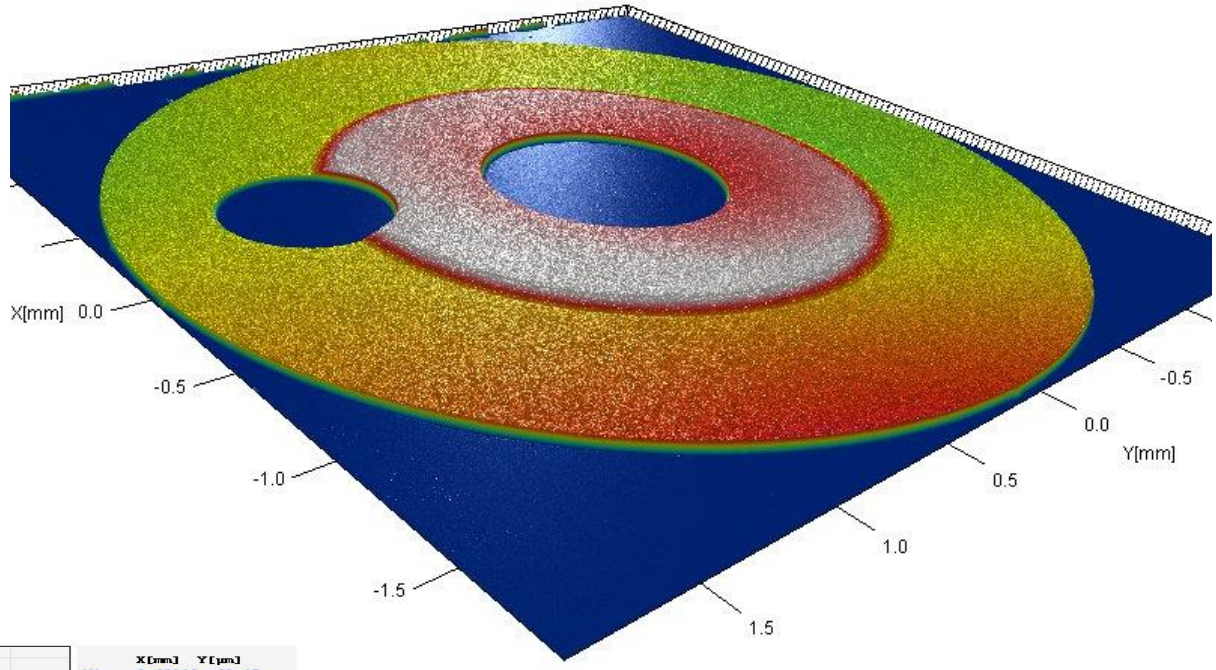
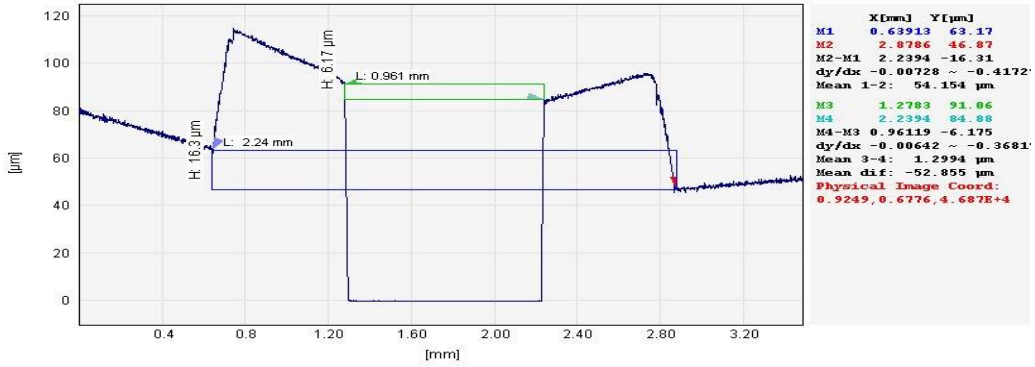
Metallic watch part measurement



Altitude measurement



3D view



Extracted profile

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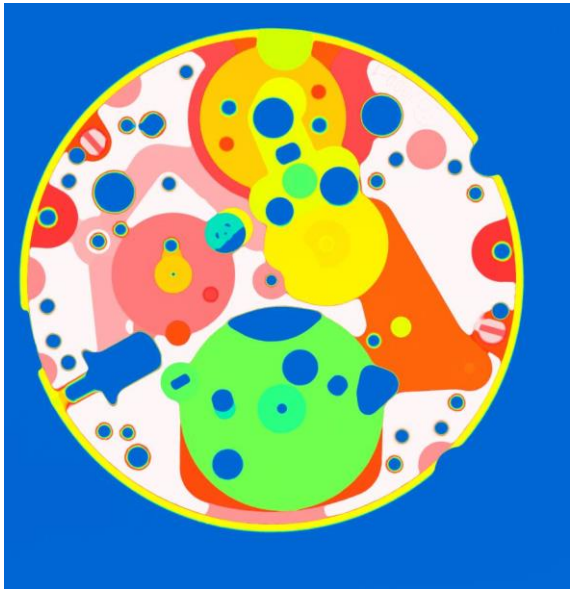
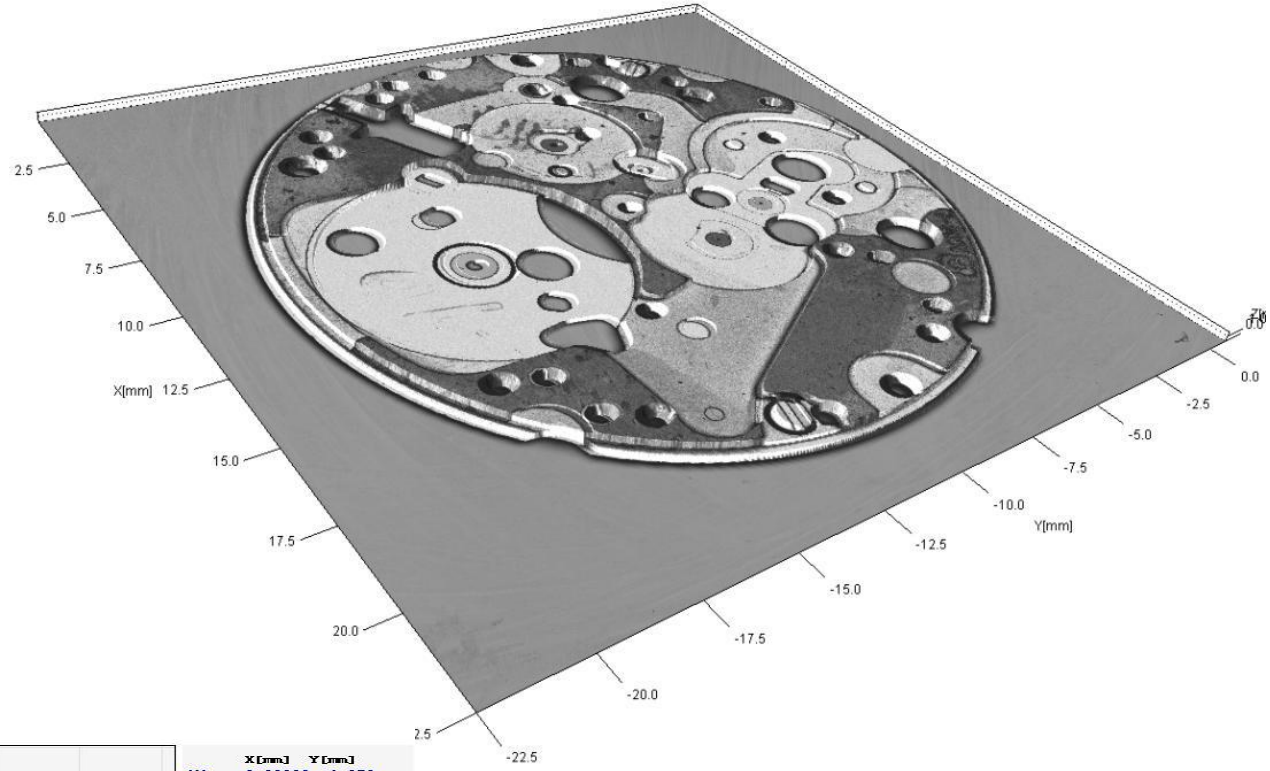
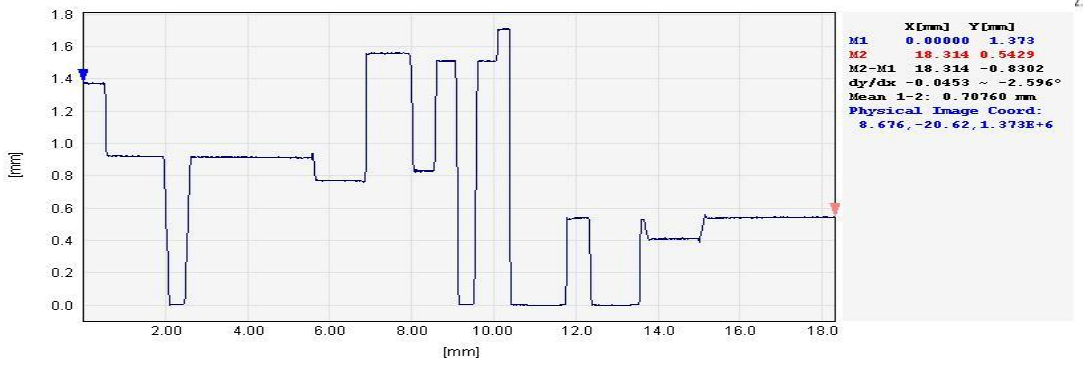
Metallic watch part measurement





Altitude measurement



3D view

Extracted profile

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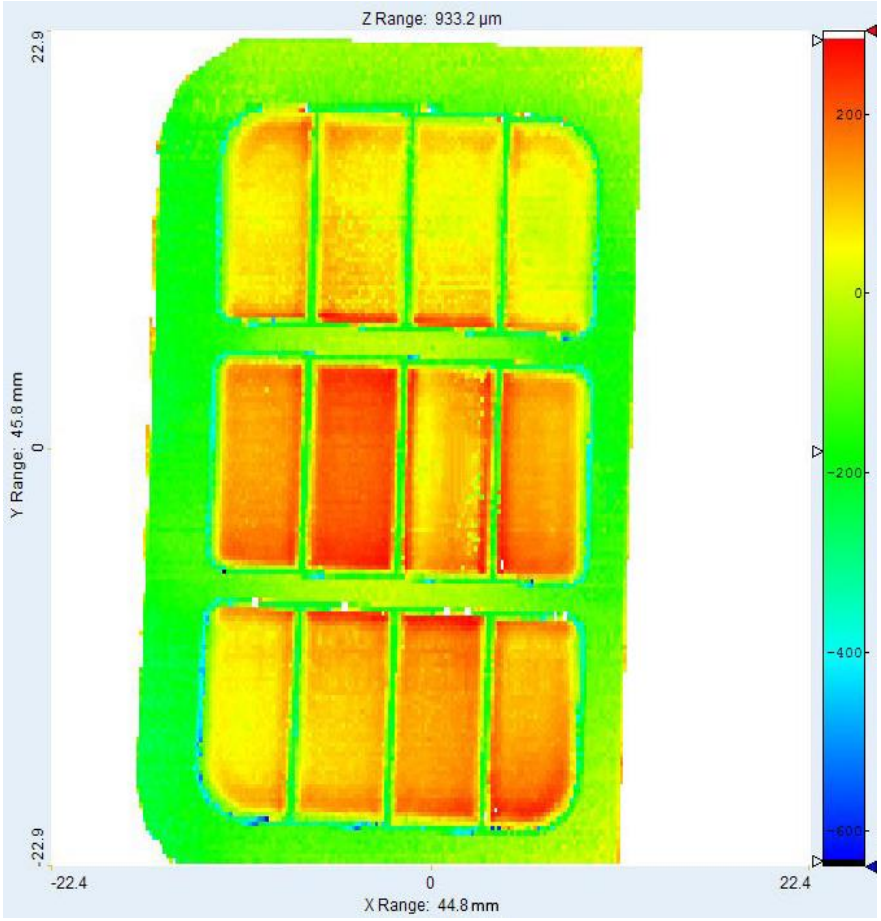
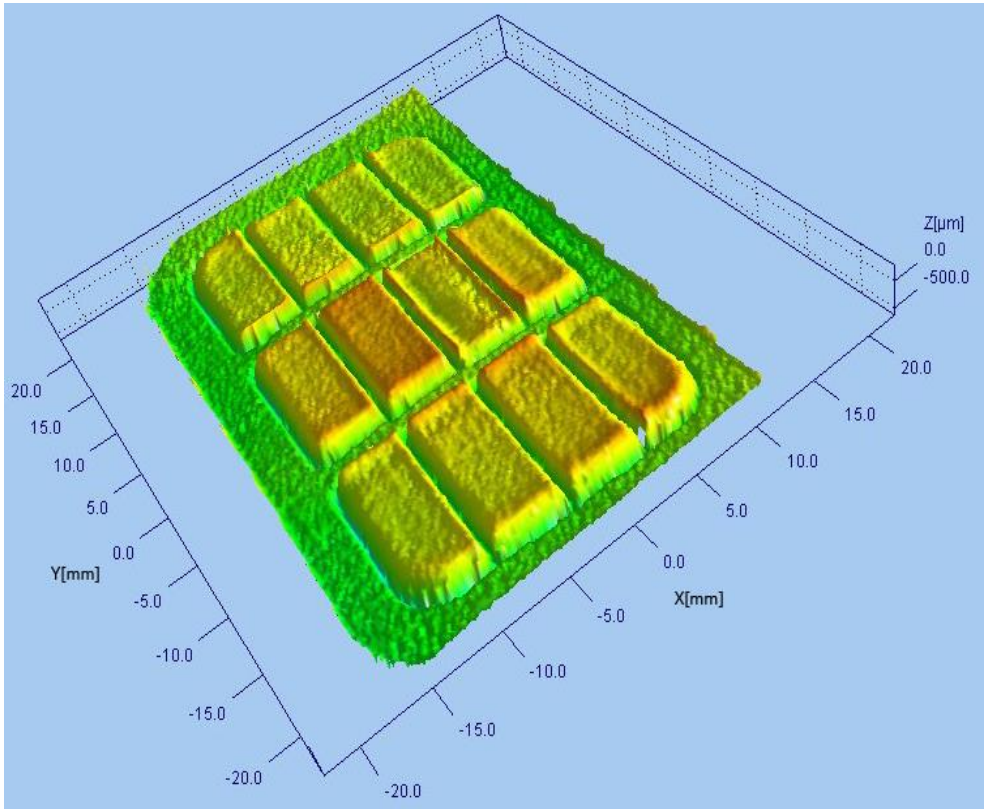
Mobile phone Keyboard measurement



Altitude measurement



3D view

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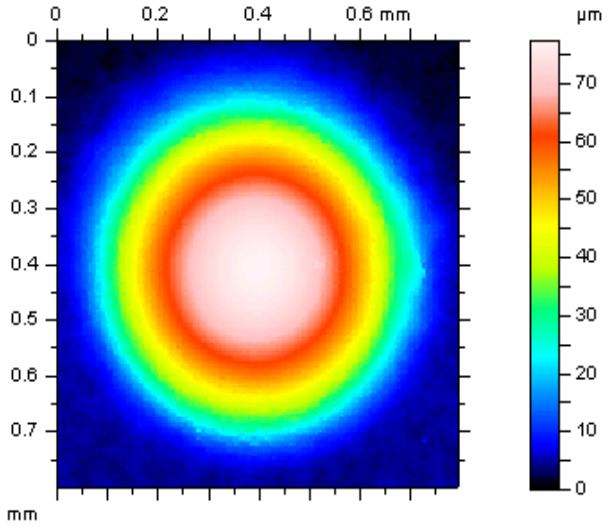
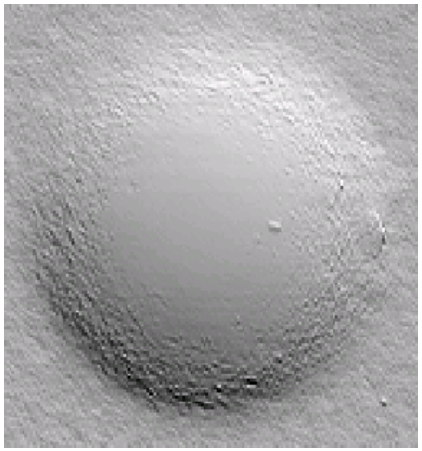
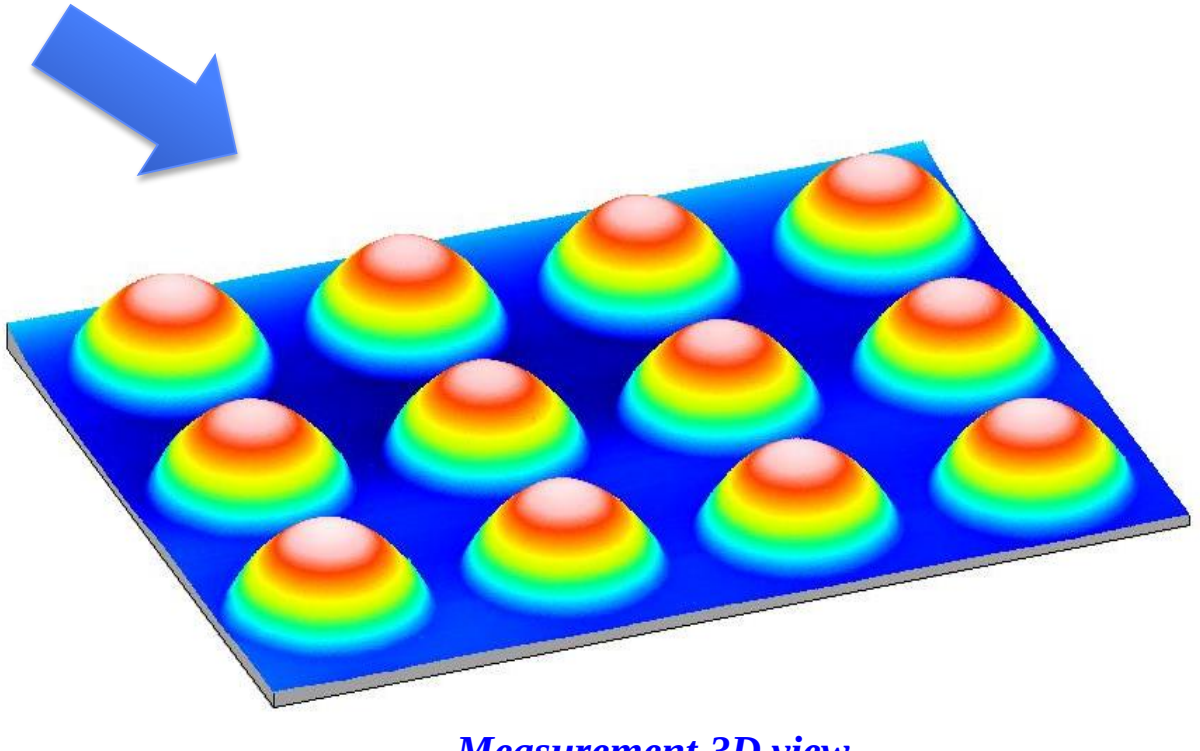
Microlens array



Altitude measurement



Intensity measurement



Measurement 3D view

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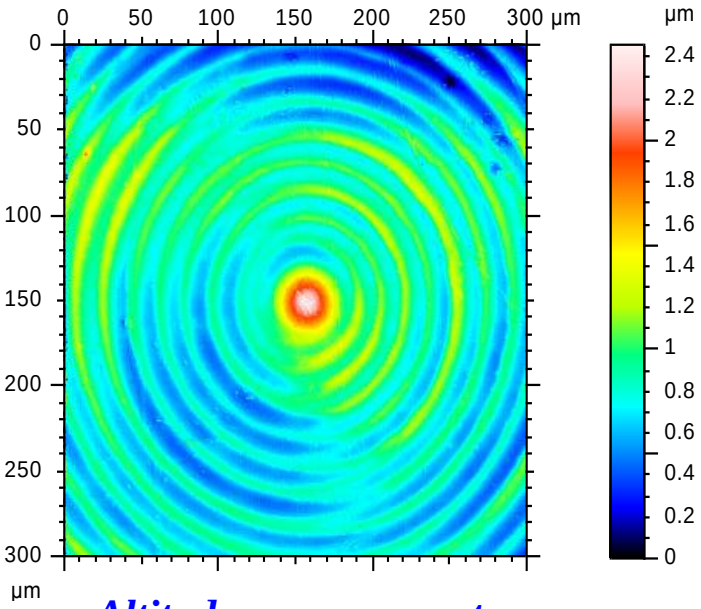
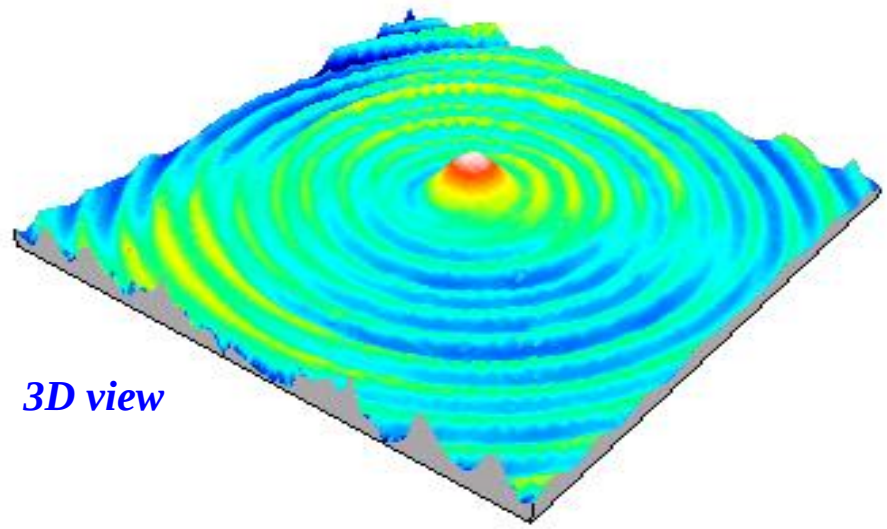
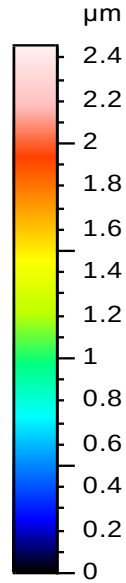
Diamond turned aluminium substrate

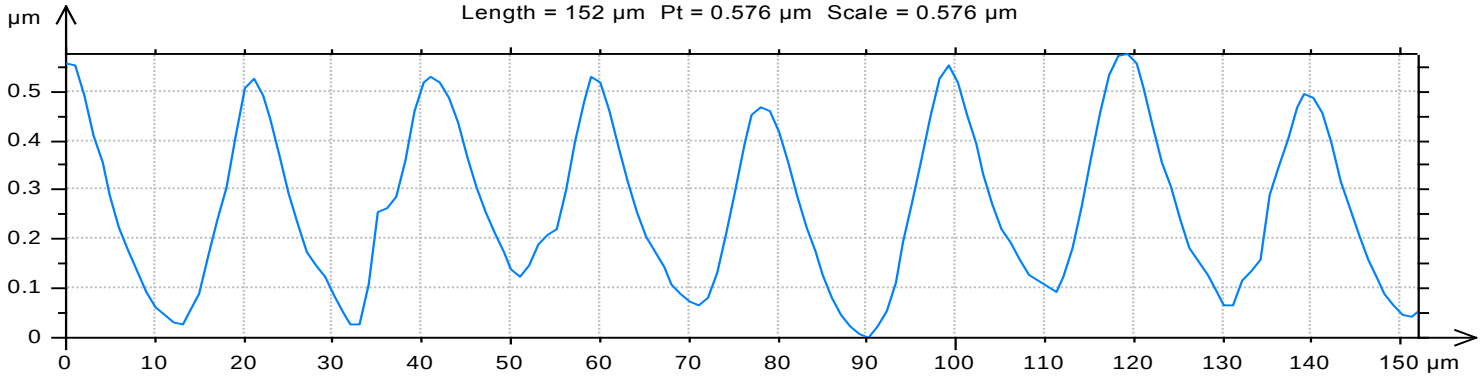


Altitude measurement



3D view





Extracted profile from the surface

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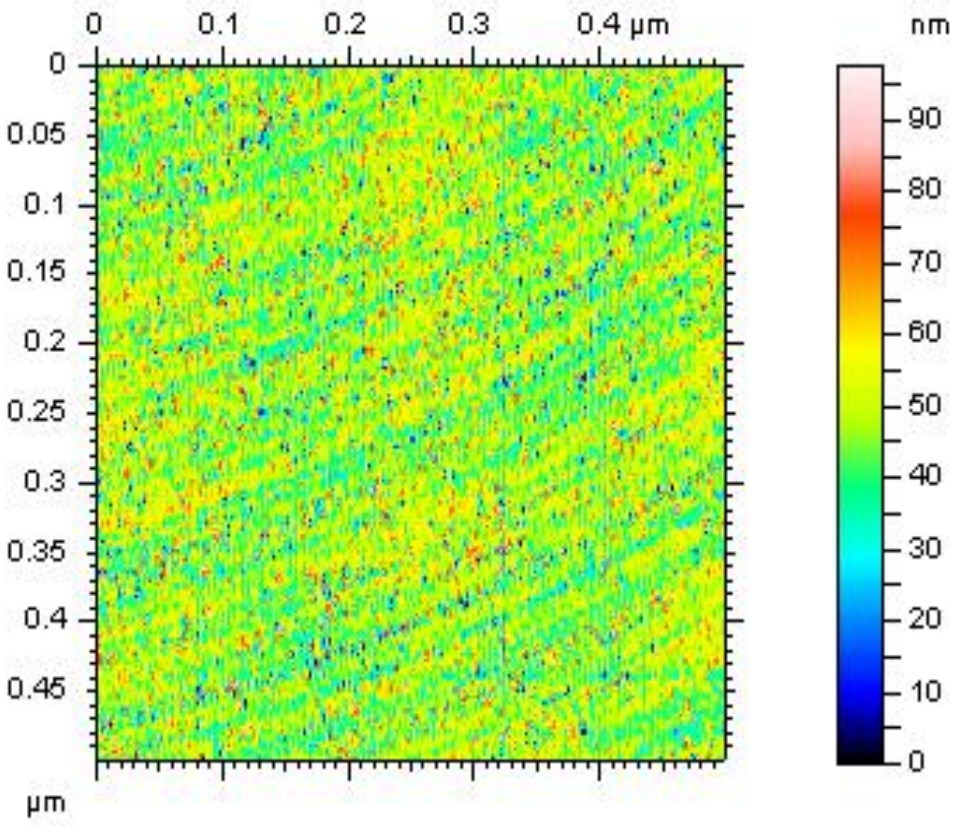
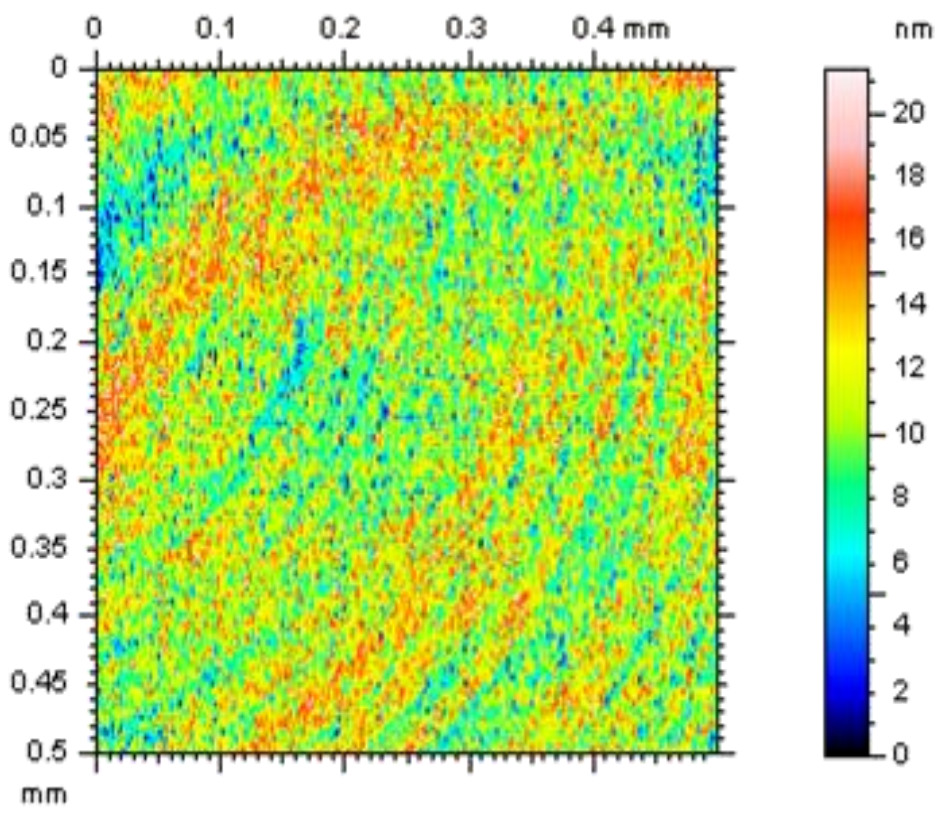
Diamond turning of metallic optical components



High radius convex surface



Mid range radius convex surface

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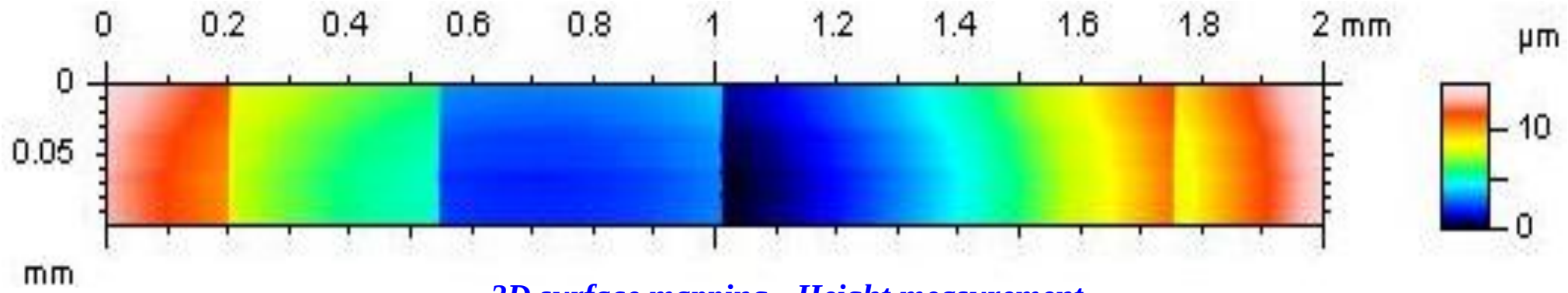
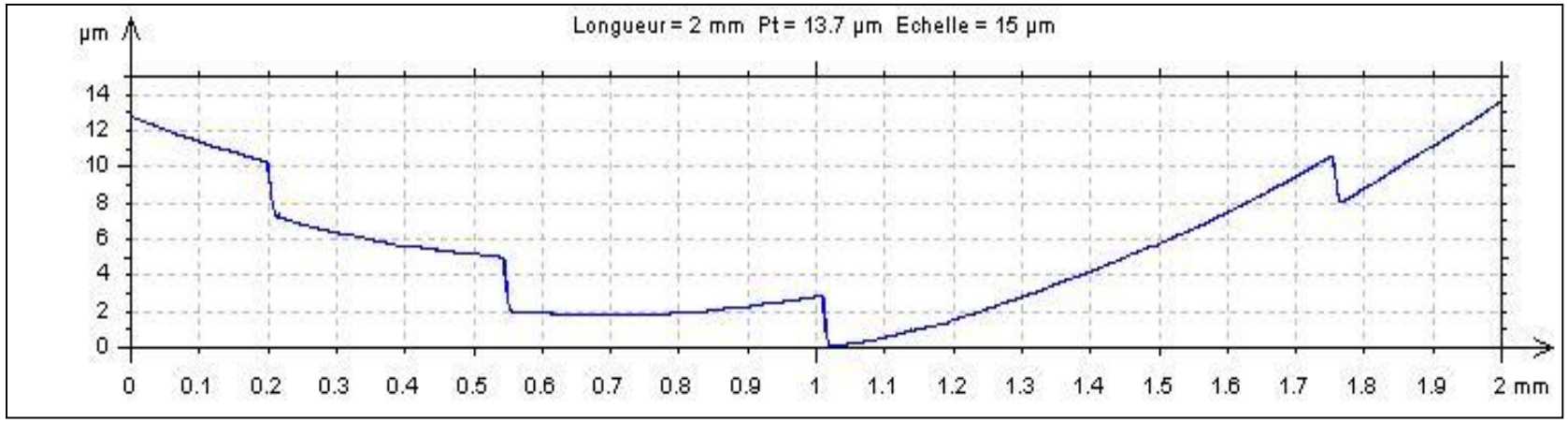
Diamond machined Diffractive Germanium lens



3D surface mapping - Height measurement



Profile extracted along the black line

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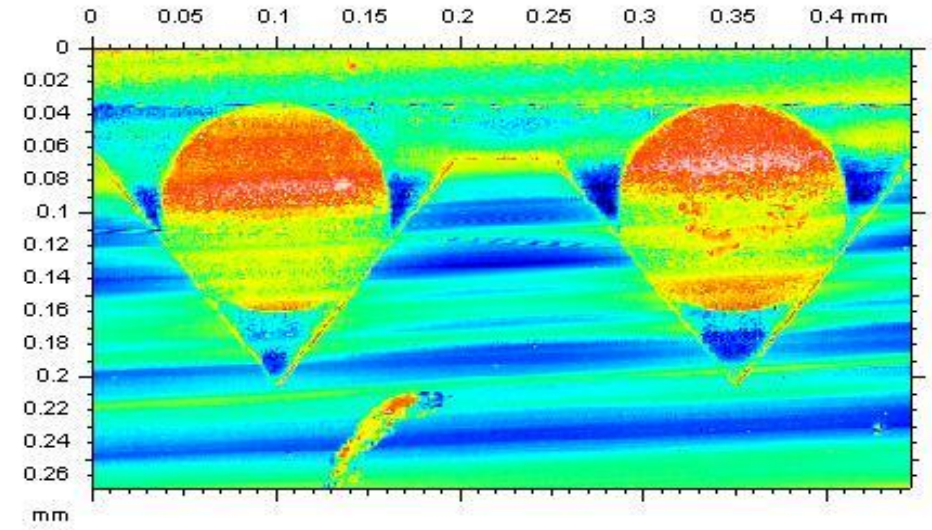
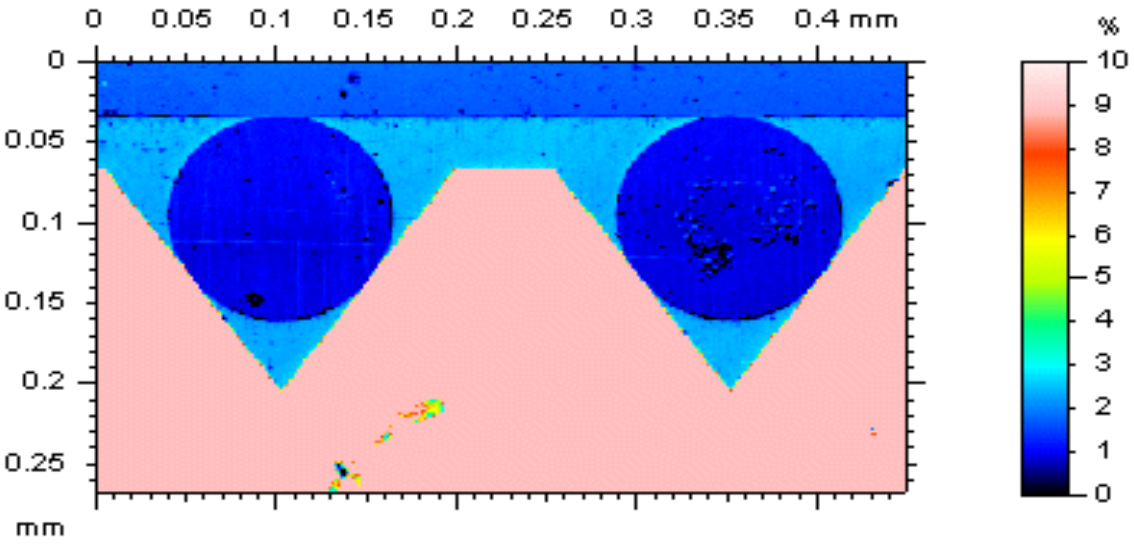
Optical waveguide



2D representation with altitude coding
Height measurement



Photorealistic rendering
Intensity measurement

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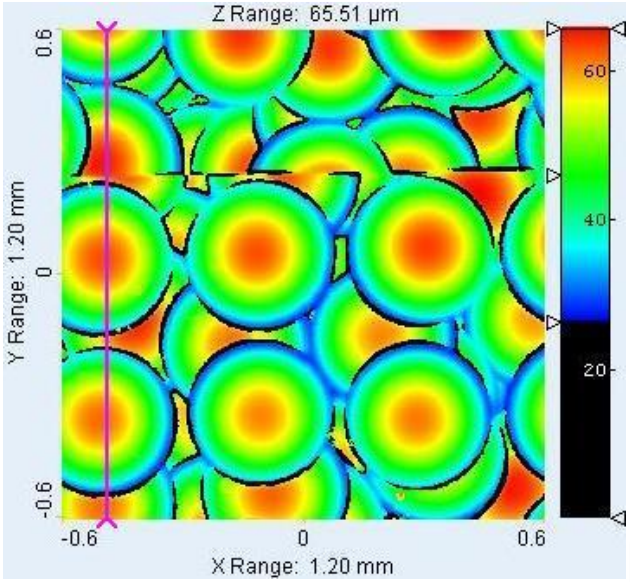
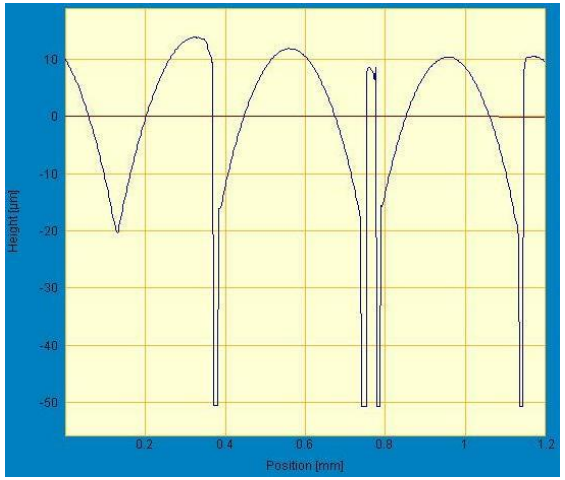
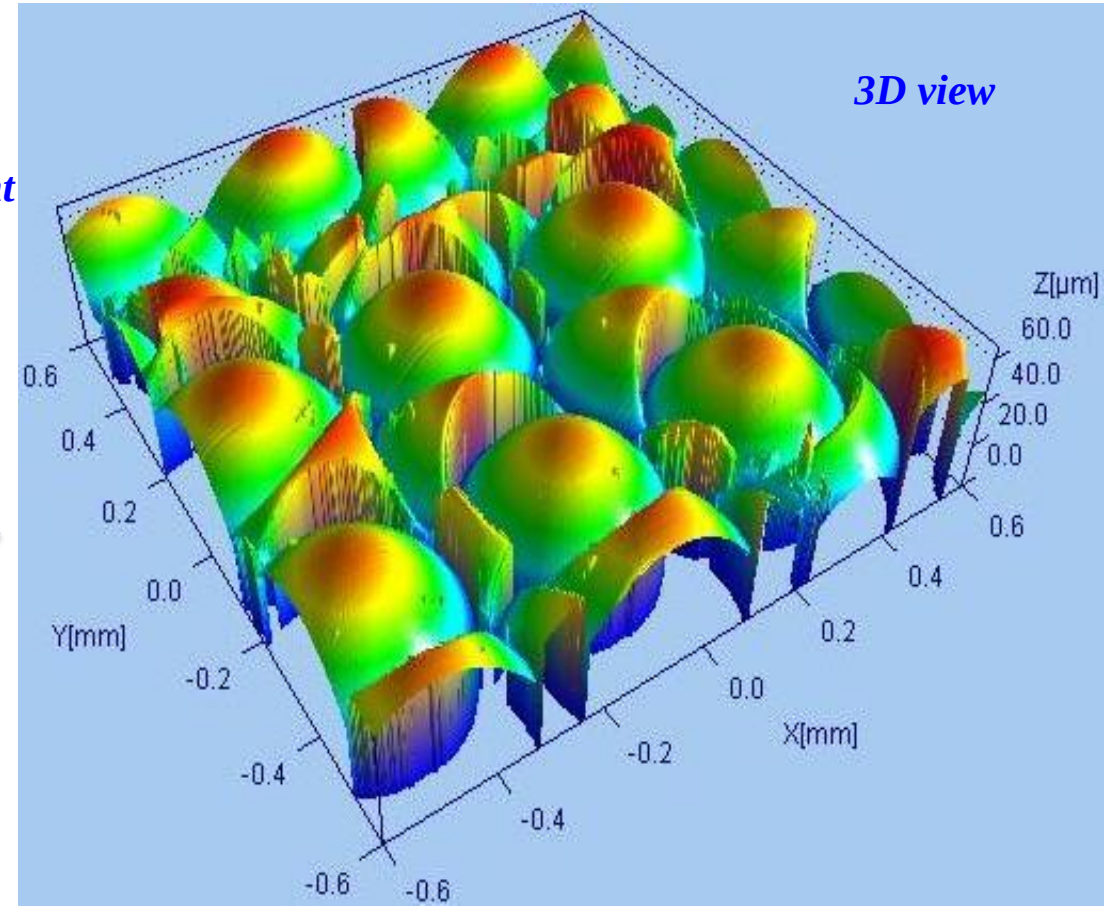
Diffuser surface topography



Altitude measurement



Extracted profile from the surface



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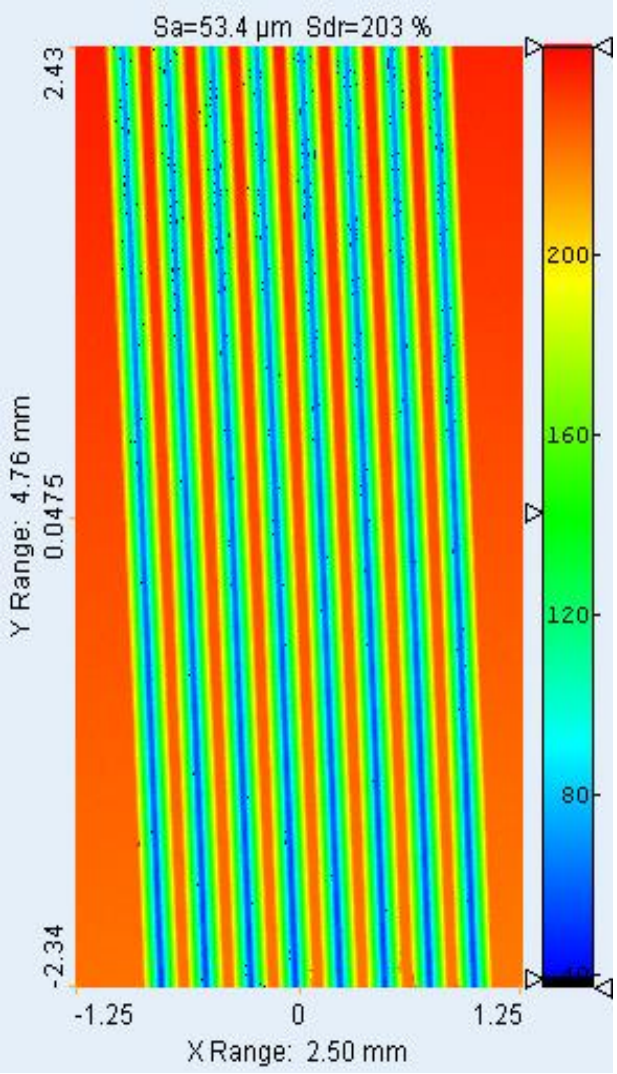
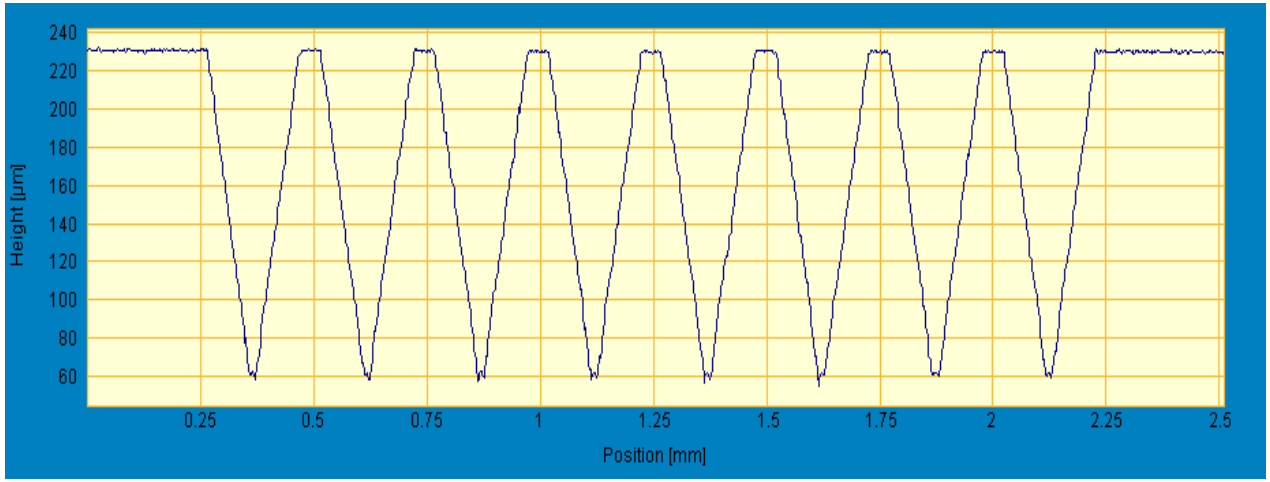
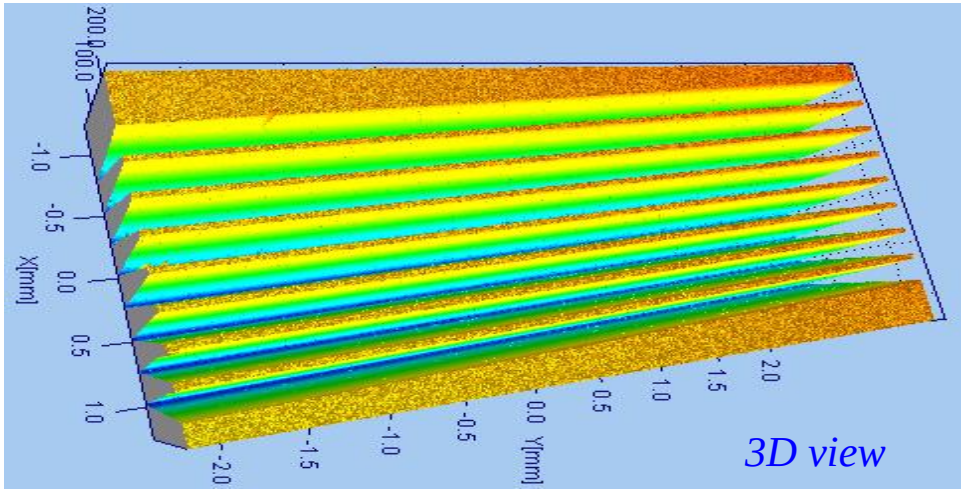
Topography of glass V grooves



Altitude measurement





Extracted profile from the surface

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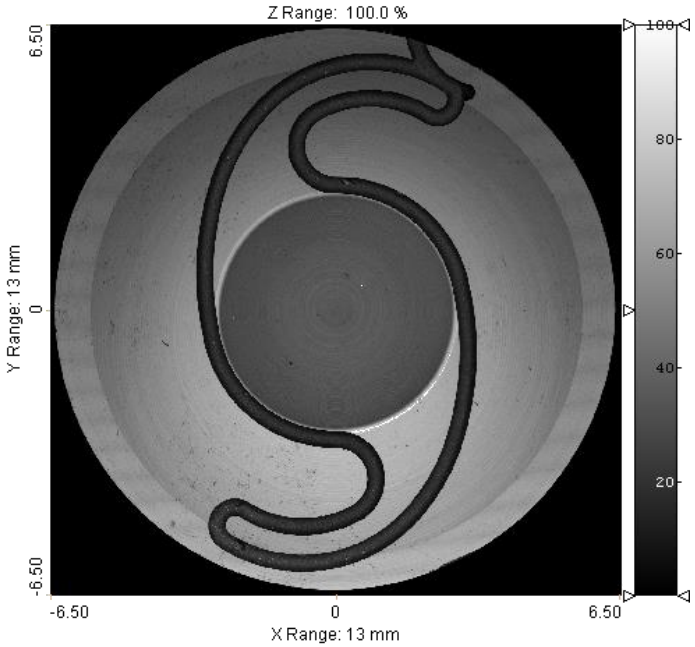
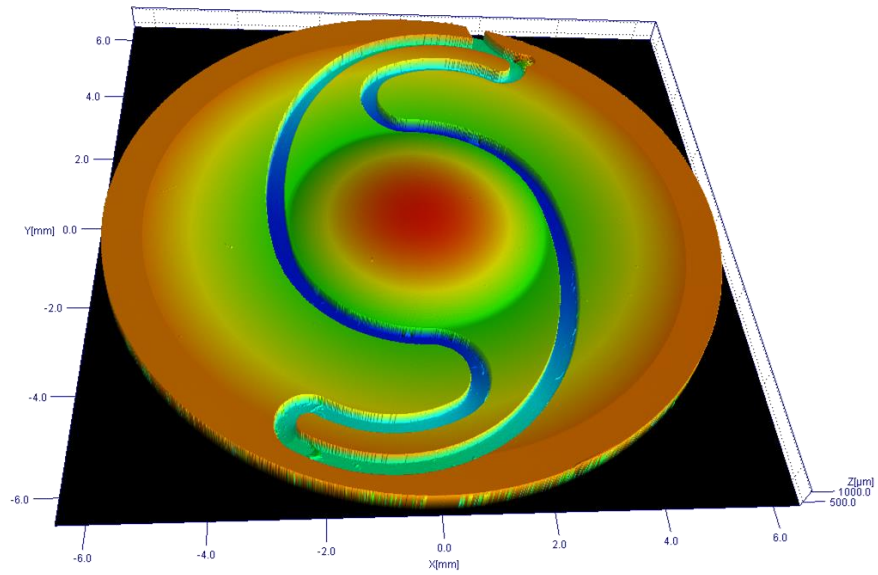
Engraved Lens surface topography



Intensity image

Microtopography perspective view



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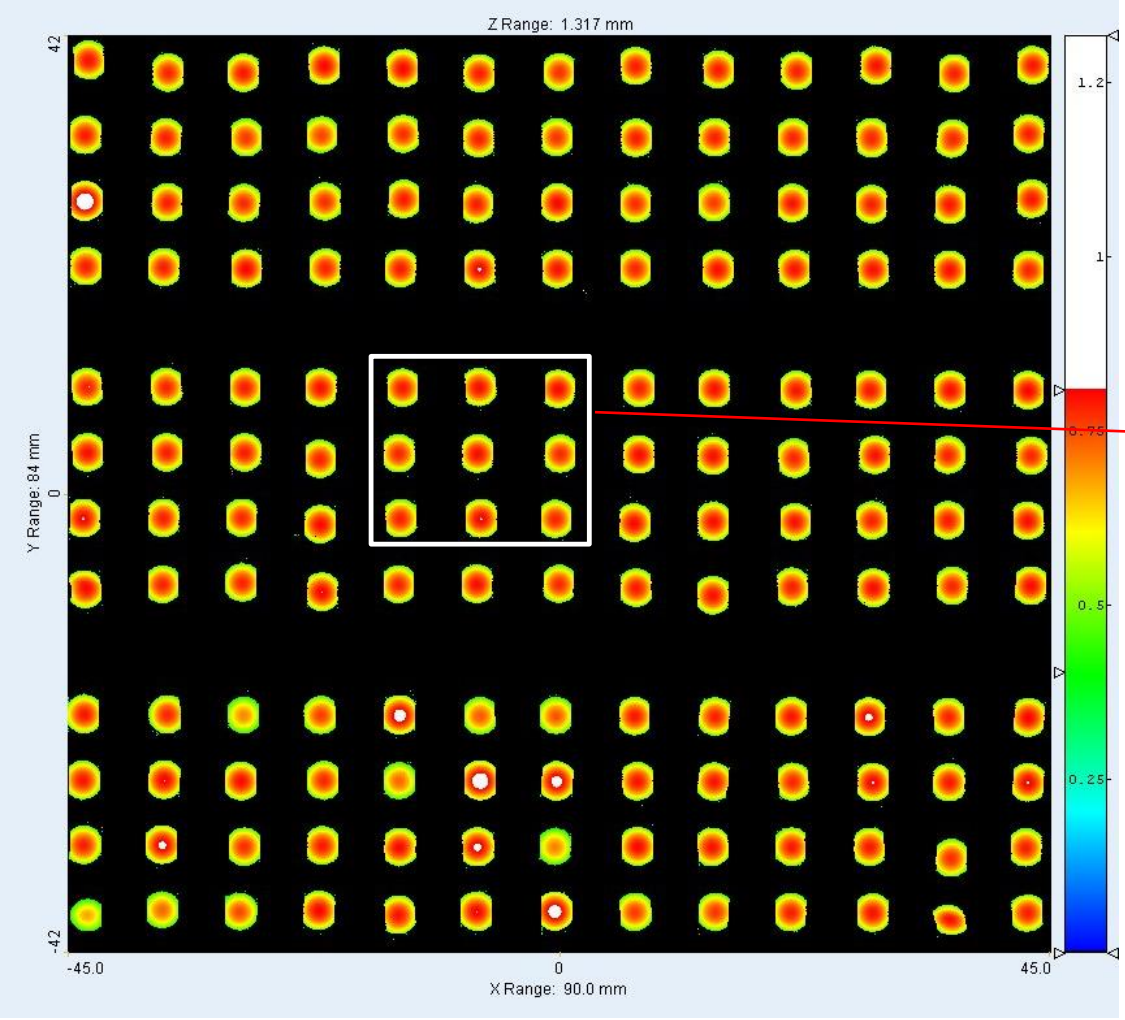
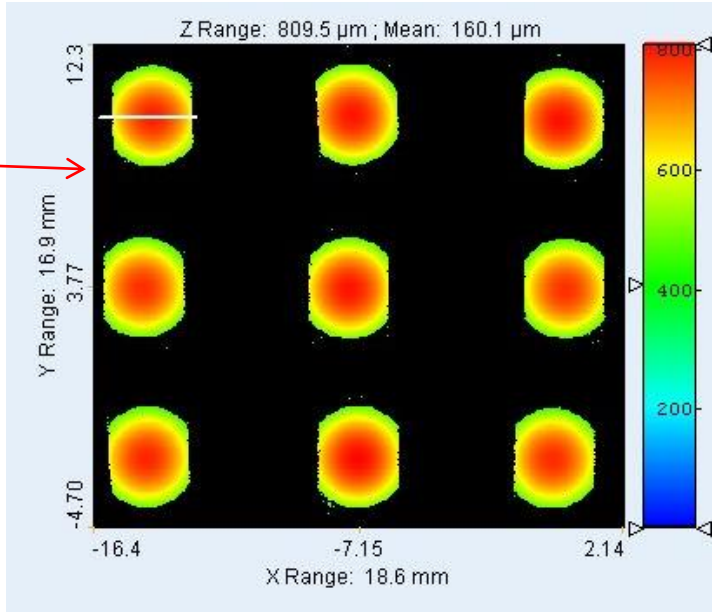
Lens inspection





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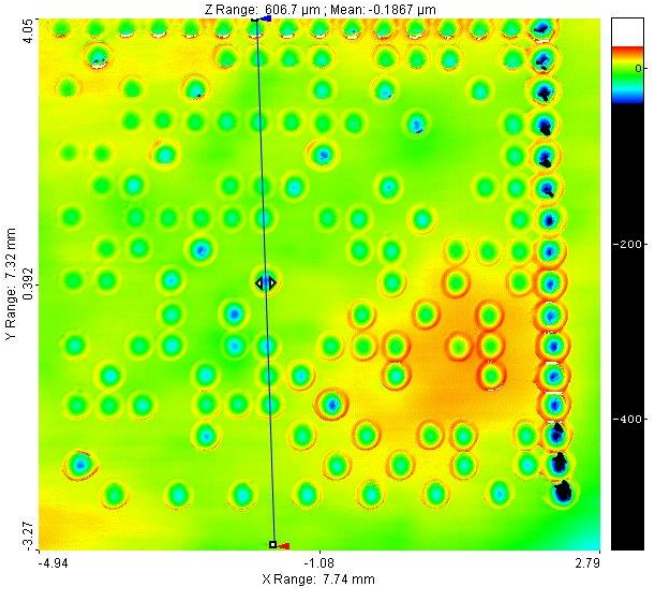
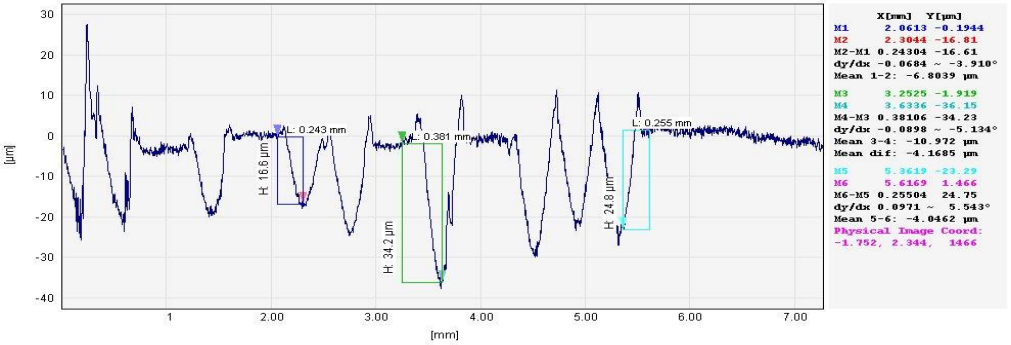
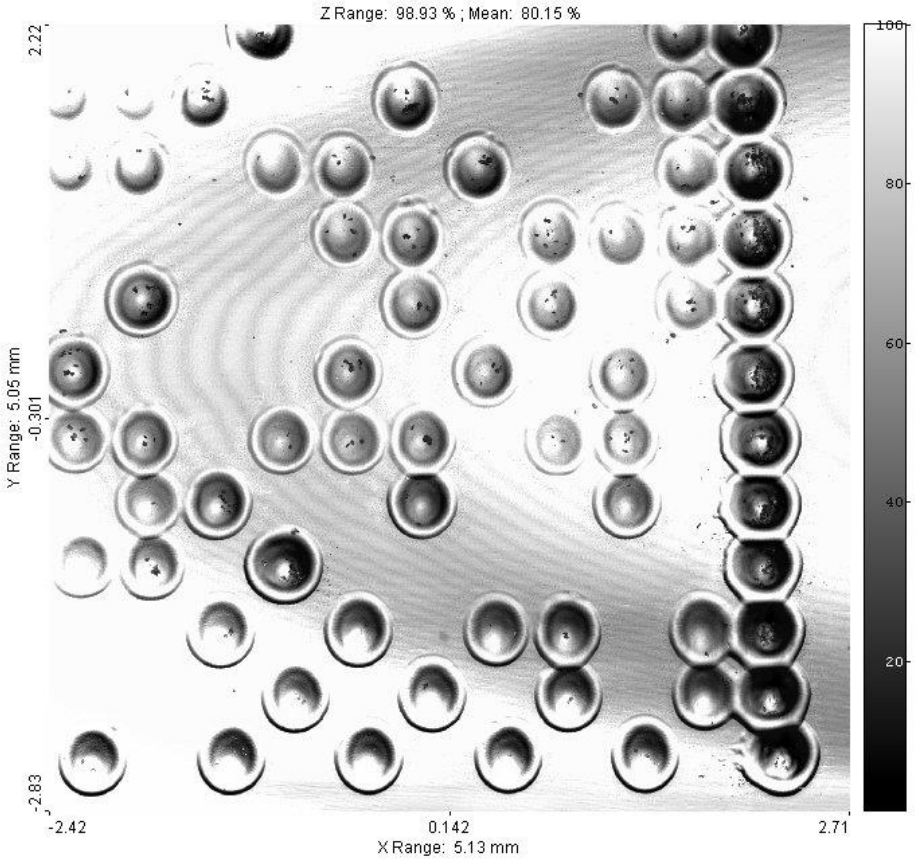
Data Matrix on bottle



Altitude image



Profile extracted



Intensity image

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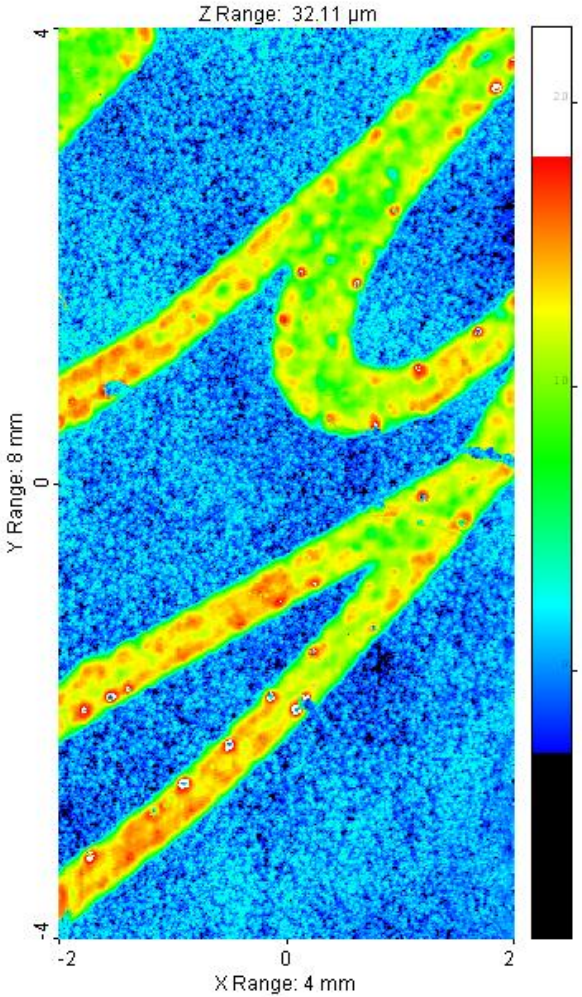
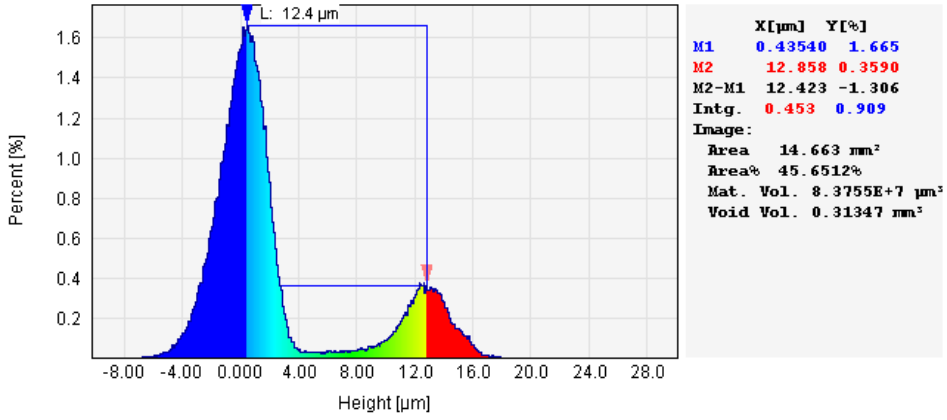
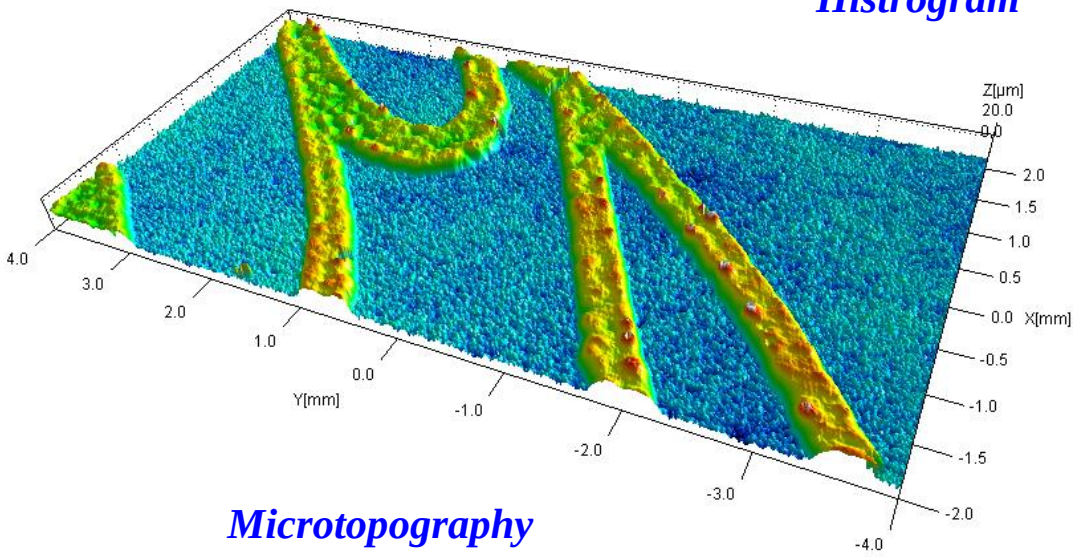
Coating on bottle



Altitude image



Histrogram



Microtopography perspective view

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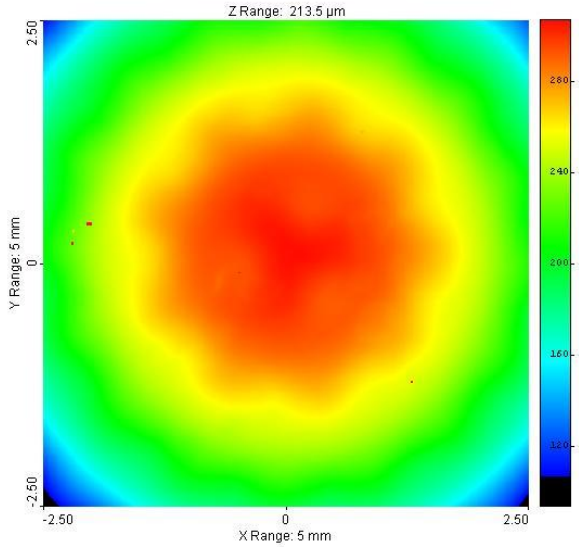
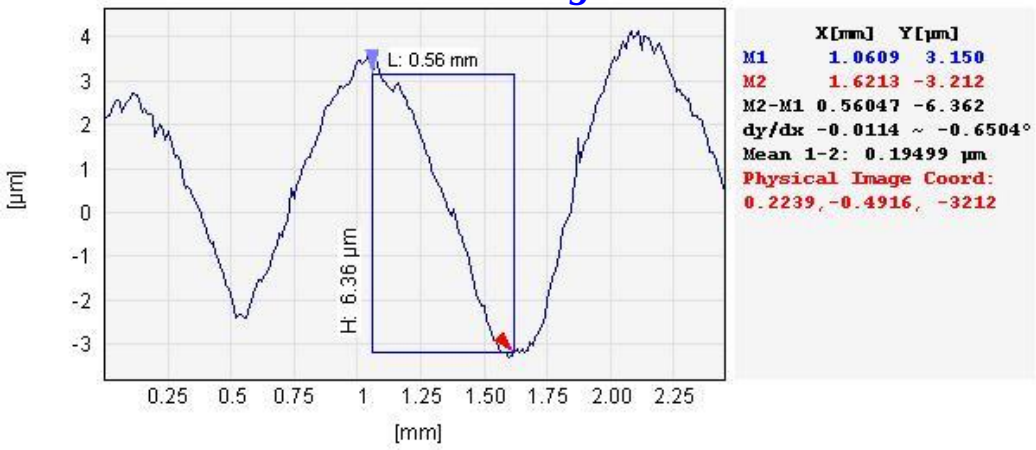
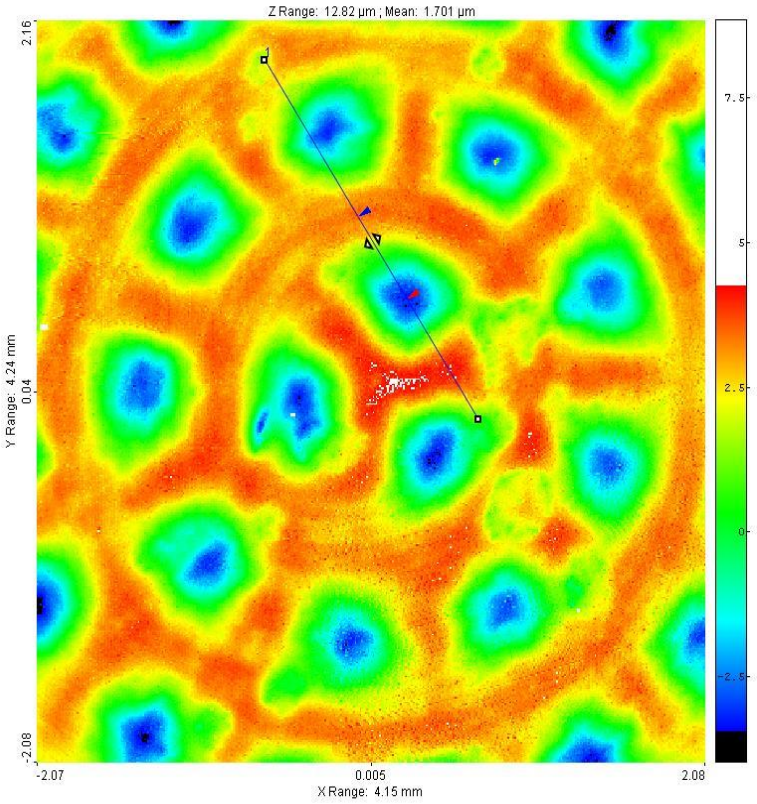
Micro-form



Altitude image



Profile extracted



Altitude image

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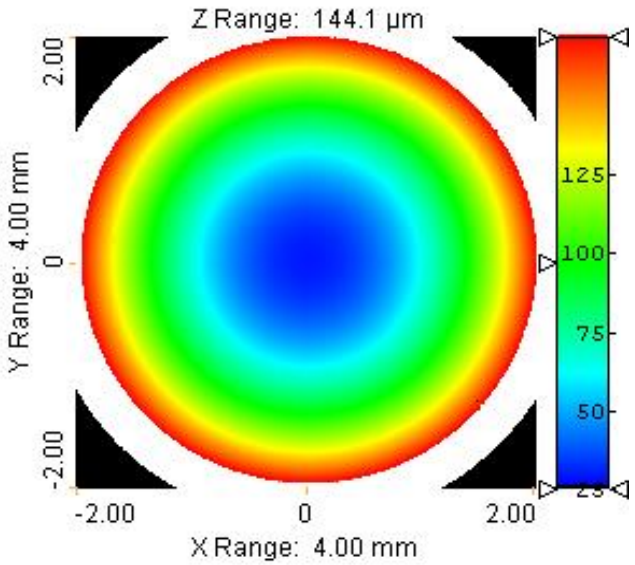
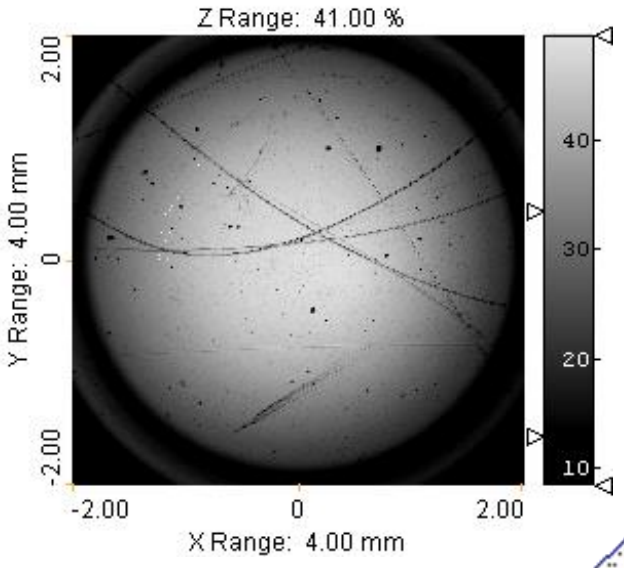
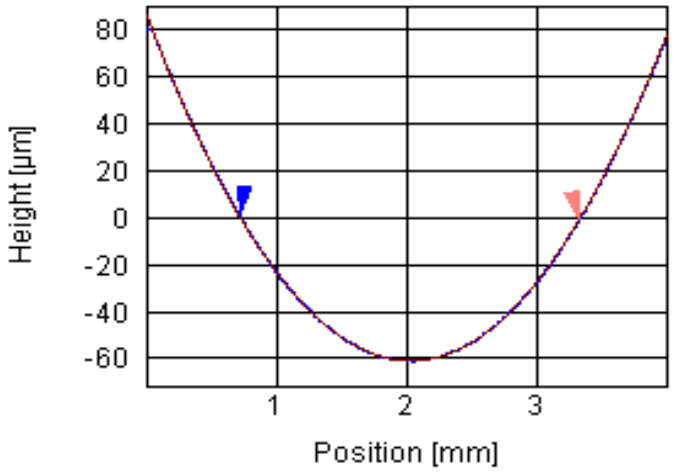
Measurements on spherical hip joints (concave surface)





Intensity measurement

Altitude measurement

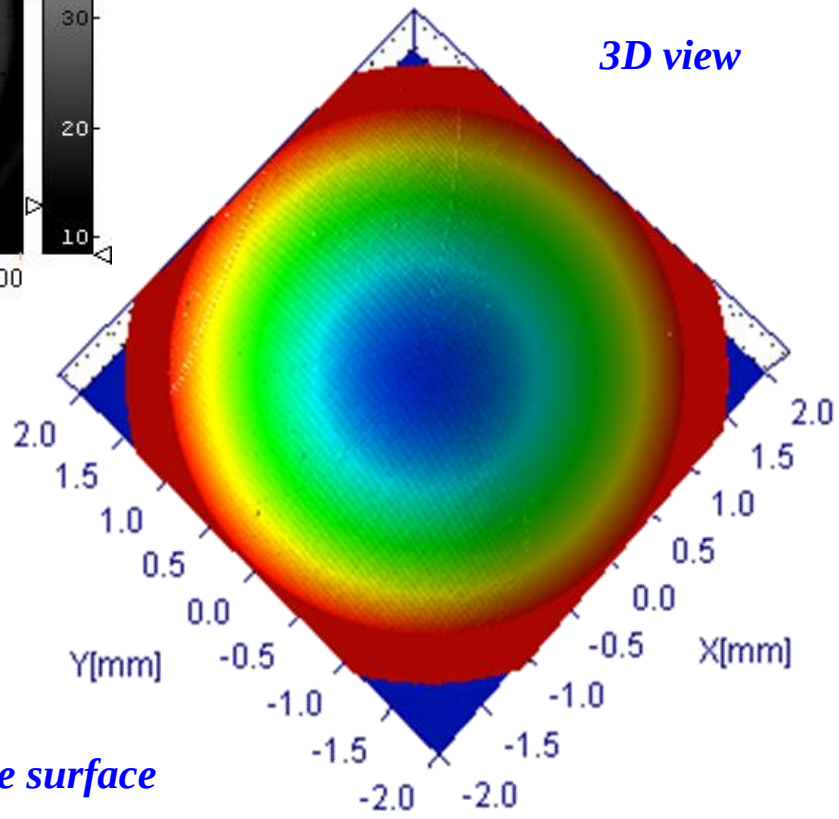


	X[mm]	Y[µm]
M1	0.71200	0.7721
M2	3.3280	-0.8997
M2-M1	2.6160	-1.672

dy/dx -0.000639 ~ -0.036
Mean 1-2: -40.618 µm
Physical Image Coord:
-1.288,0.004, 772.1
Radius of Curvature:
14.07 mm

Extracted profile from the surface

3D view



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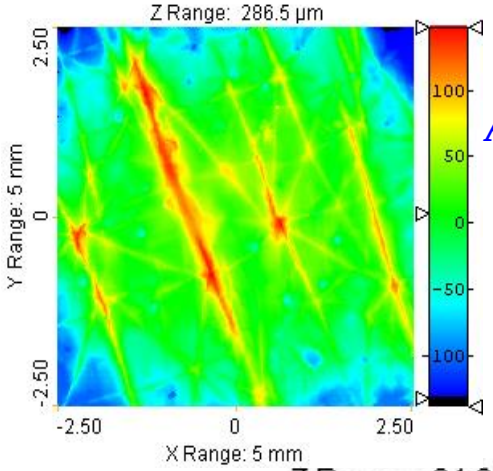
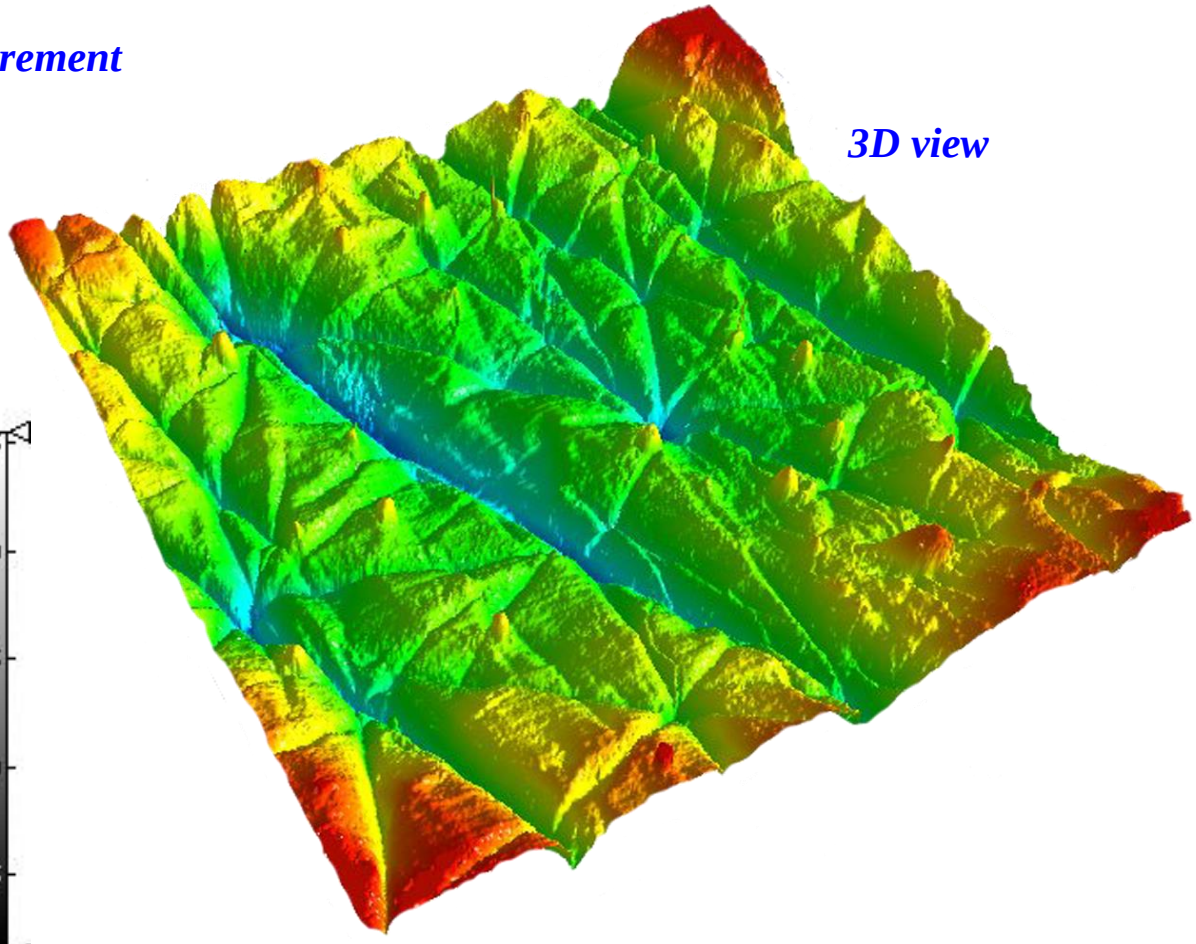
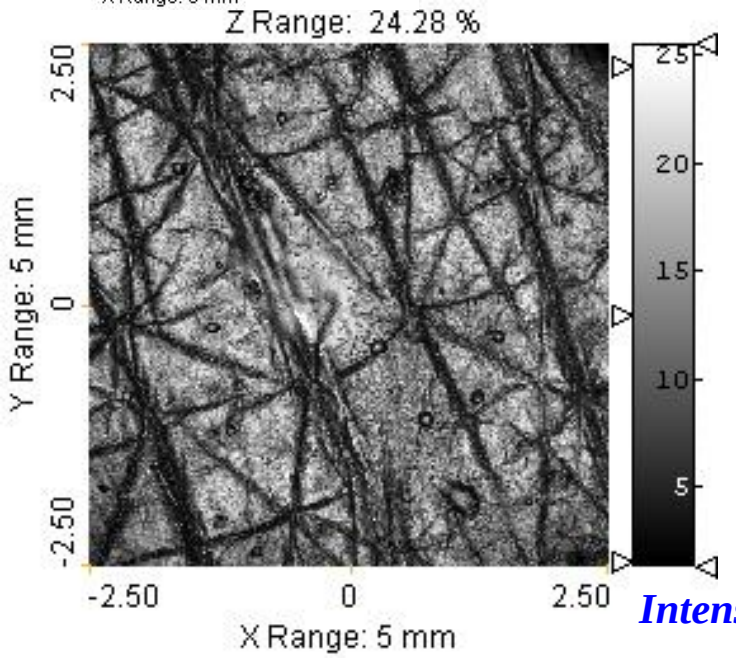
Human Skin measurement



Altitude measurement



3D view



Intensity measurement

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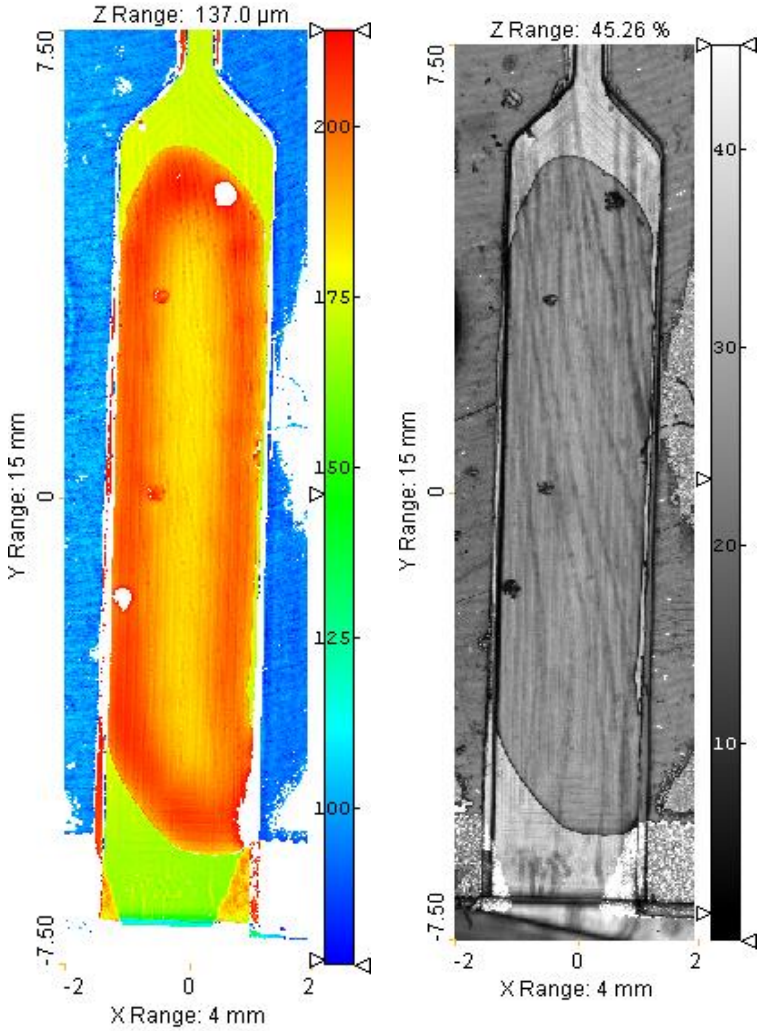
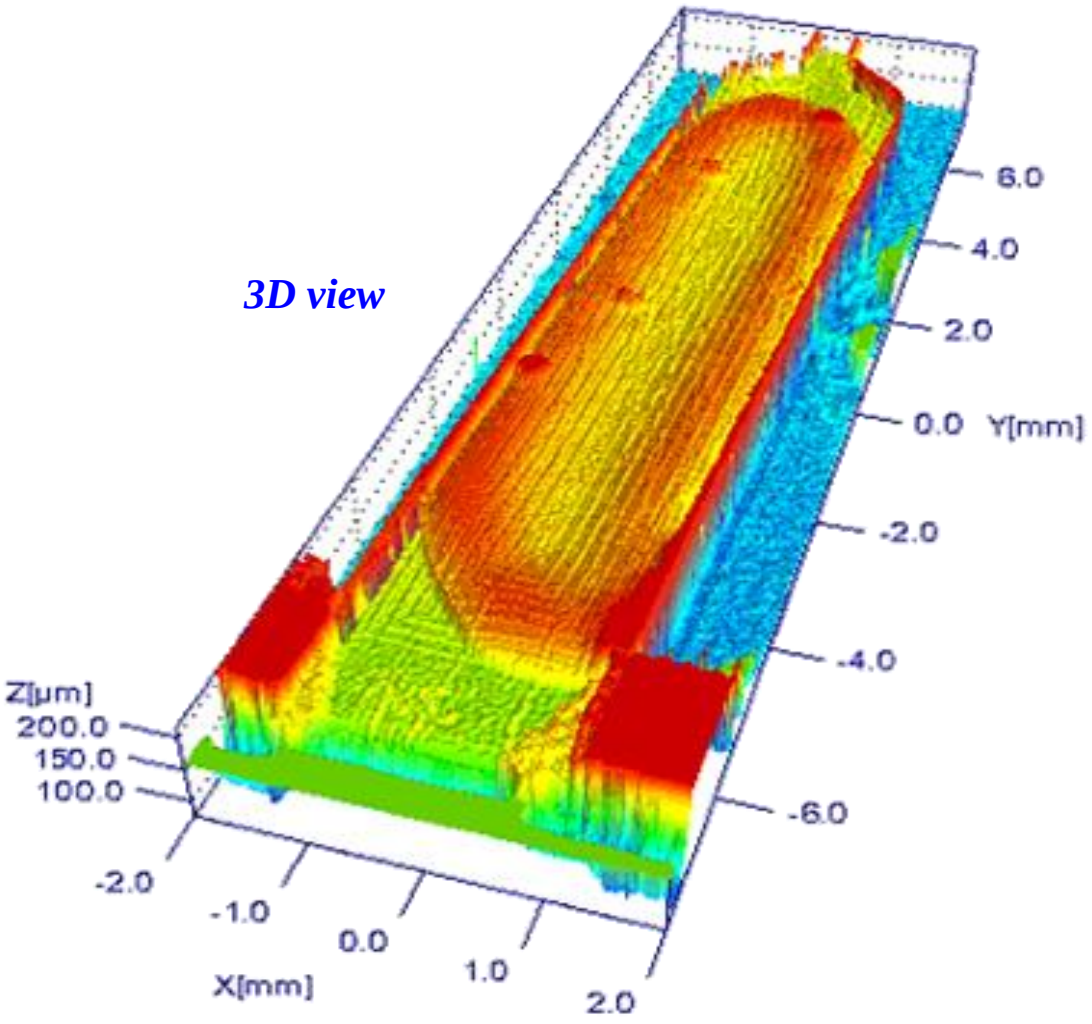
Gel in embedded channel: measurement through plastic film



Altitude and Intensity measurements



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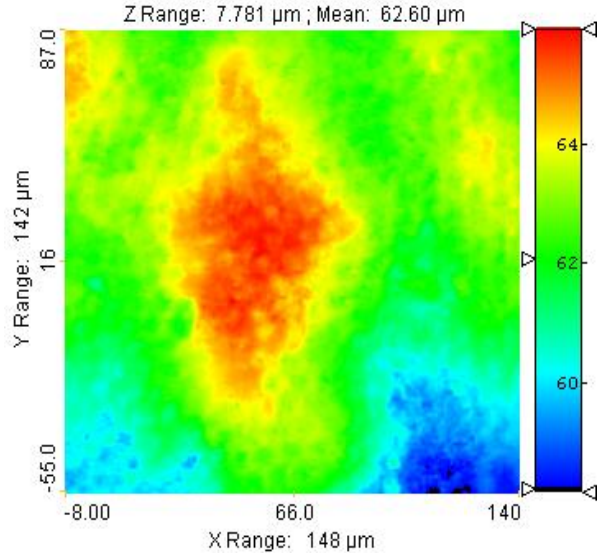
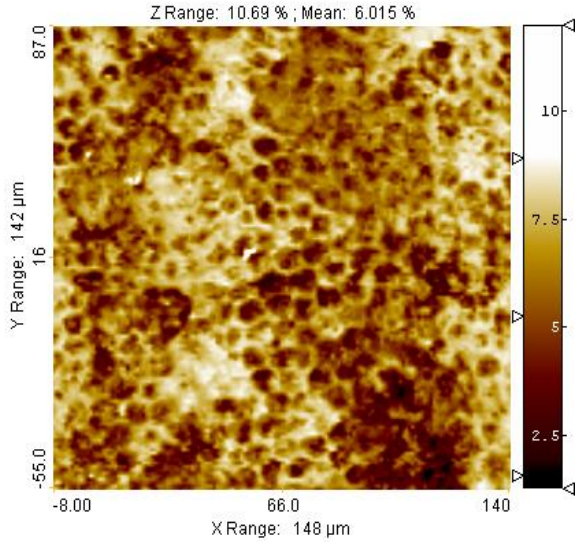
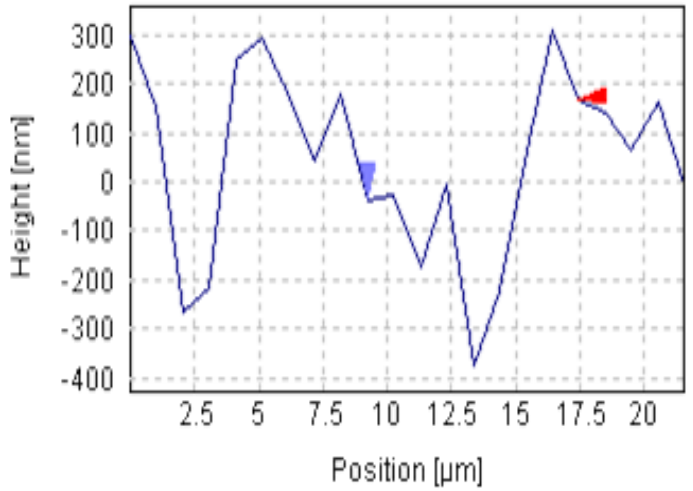
Dental microtopography



Altitude measurement



Intensity measurement



	X[µm]	Y[nm]
M1	9.2317	-39.76
M2	17.438	168.0
M2-M1	8.2060	207.8

dy/dx 0.0253 ~ 1.450°
Mean 1-2: -36.040 nm
Physical Image Coord:
-5.458, 42.21, 168.0

Extracted profile from the surface

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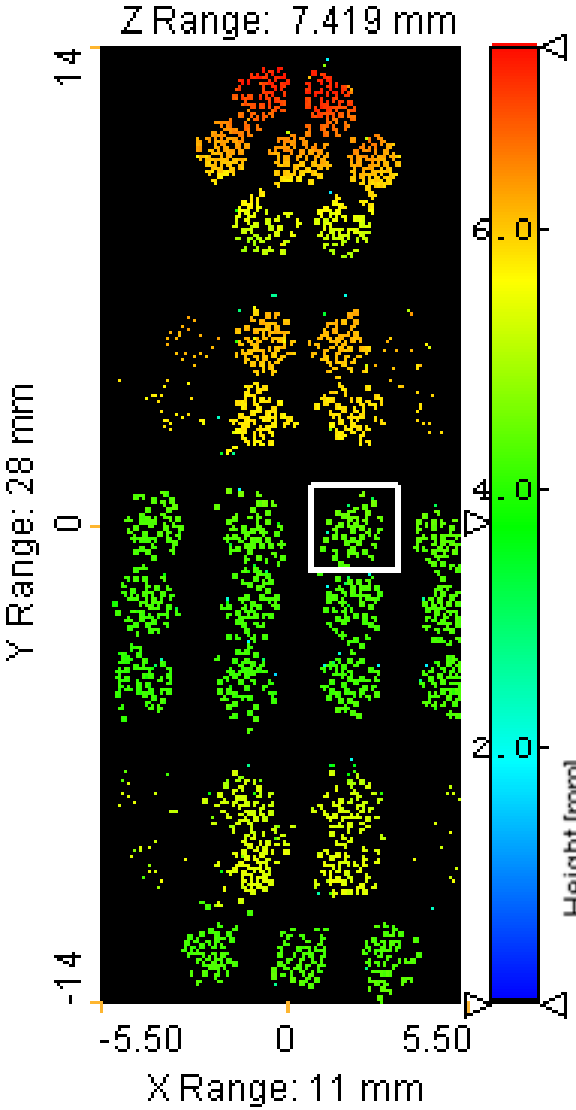
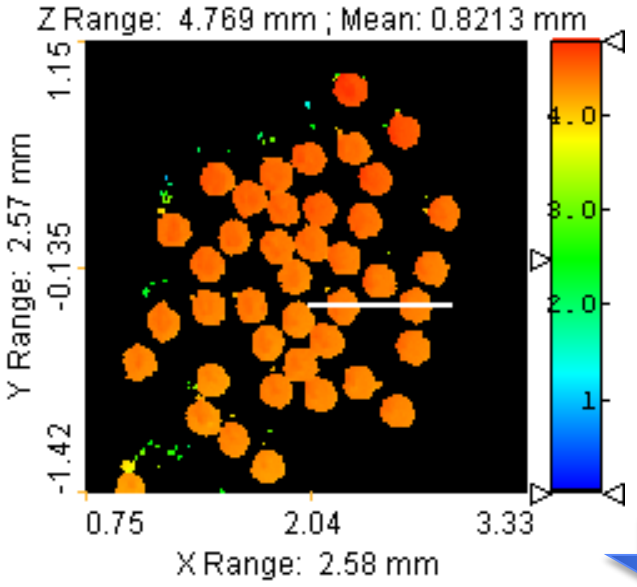
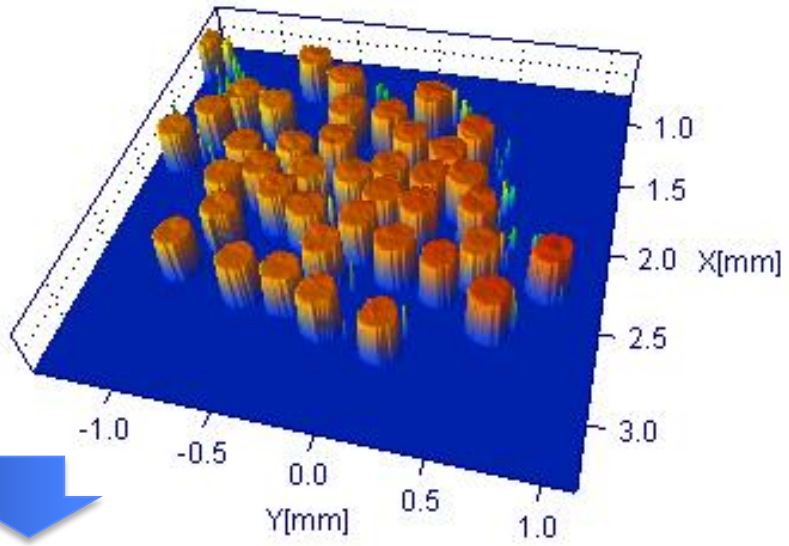
Toothbrush

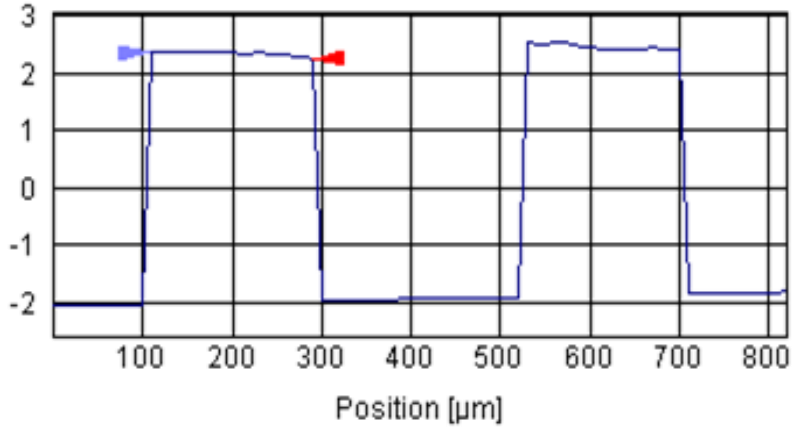


Altitude measurement



3D view





	X[µm]	Y[mm]
M1	110.01	2.355
M2	290.02	2.243
M2-M1	180.01	-0.1115

dy/dx -0.619 ~ -31.77°
Mean 1-2: 2.3387 mm
Physical Image Coord:
2320, 83.54, 2.243E+6

Extracted profile from the surface

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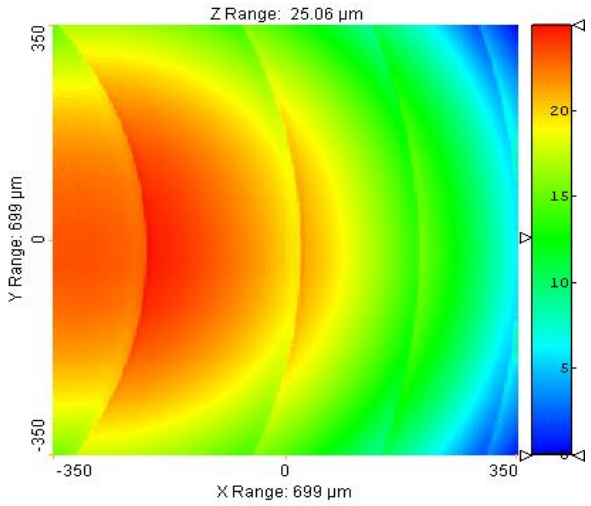
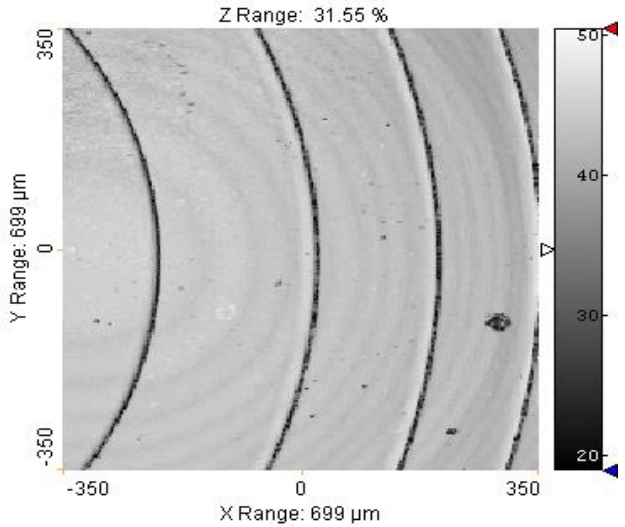
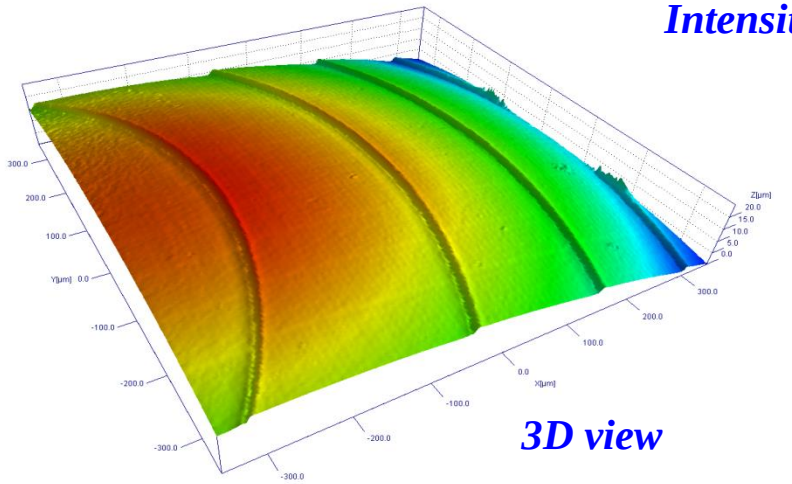
Ocular implant



Altitude measurement



Intensity measurement



3D view

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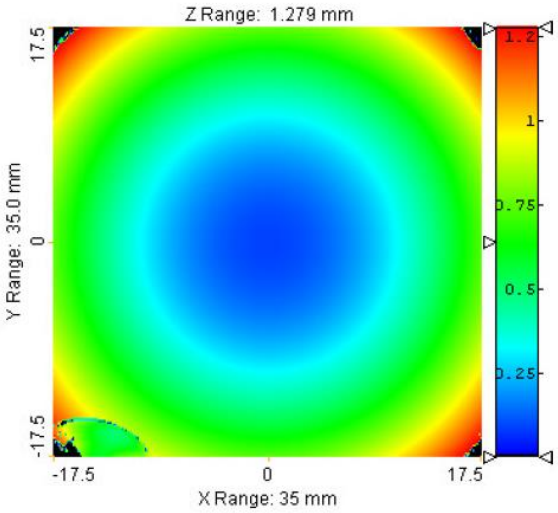
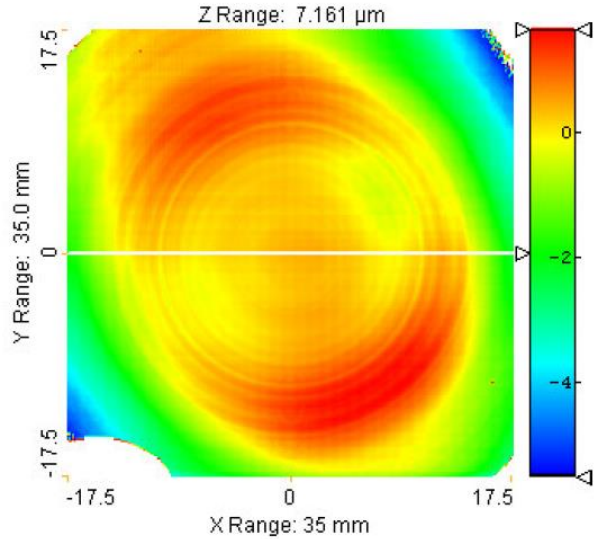
Silicon Mirror



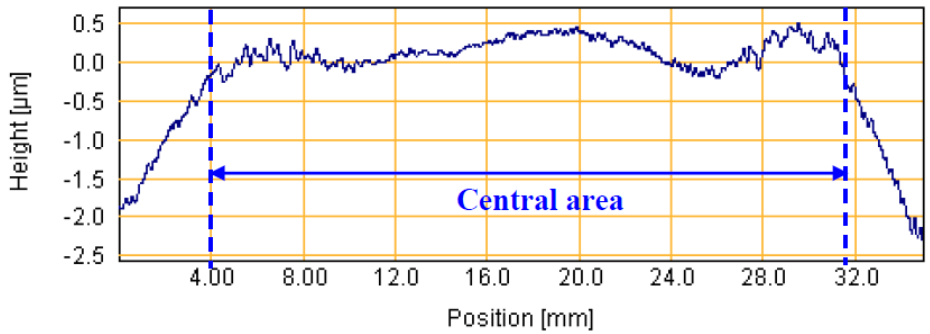
Altitude measurement



Microtopography after sphere removing

Repeatabilty test results:

R=232.544 +/-0.02mm (DR/R=10^{-4})



Extracted profile

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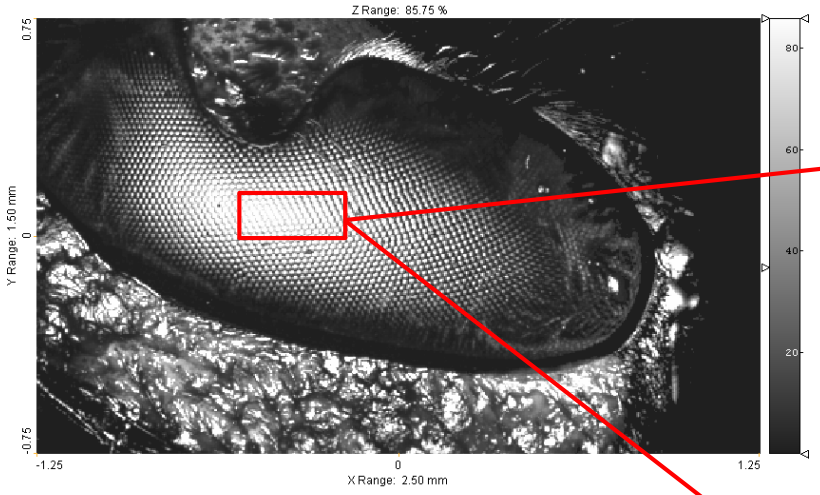
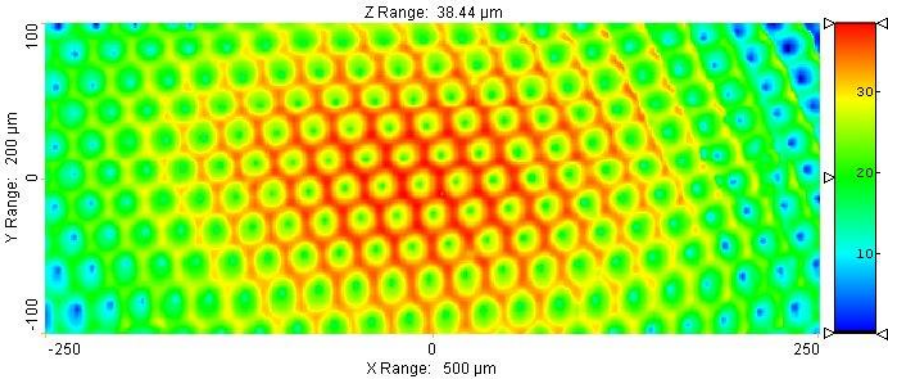
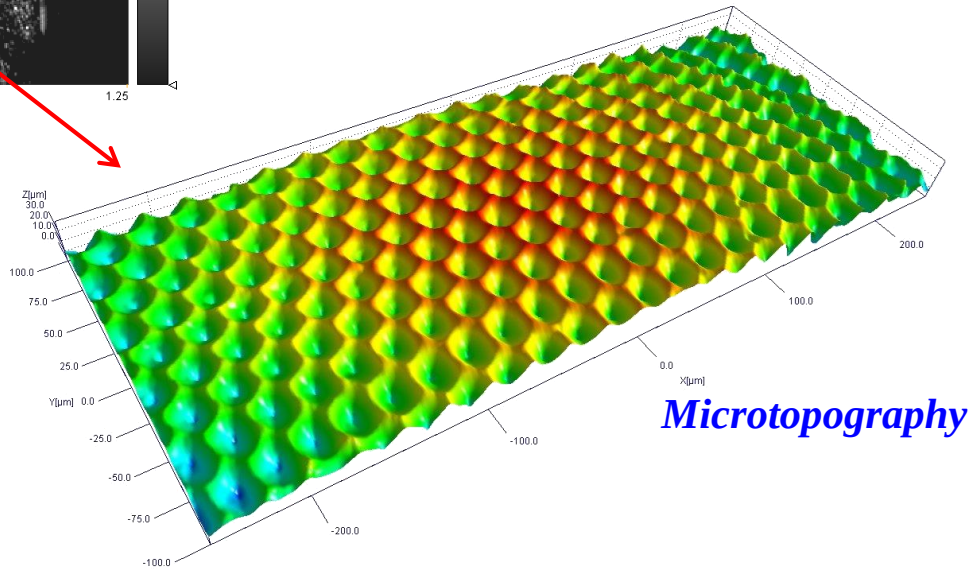
Wasp eyes surface topography



Intensity image



Microtopography



Microtopography 3D view

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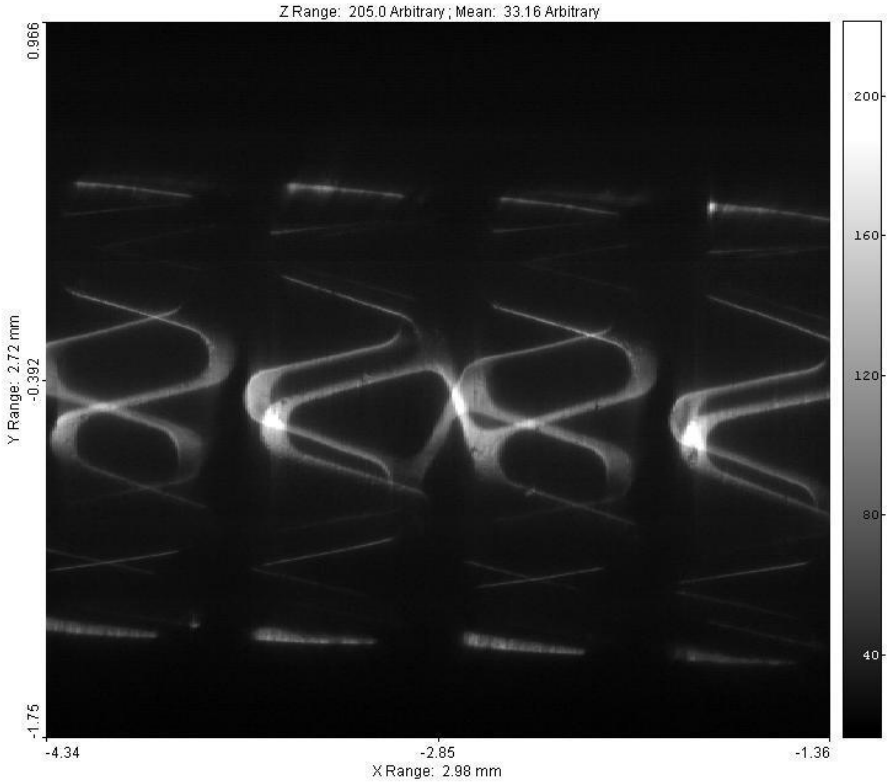
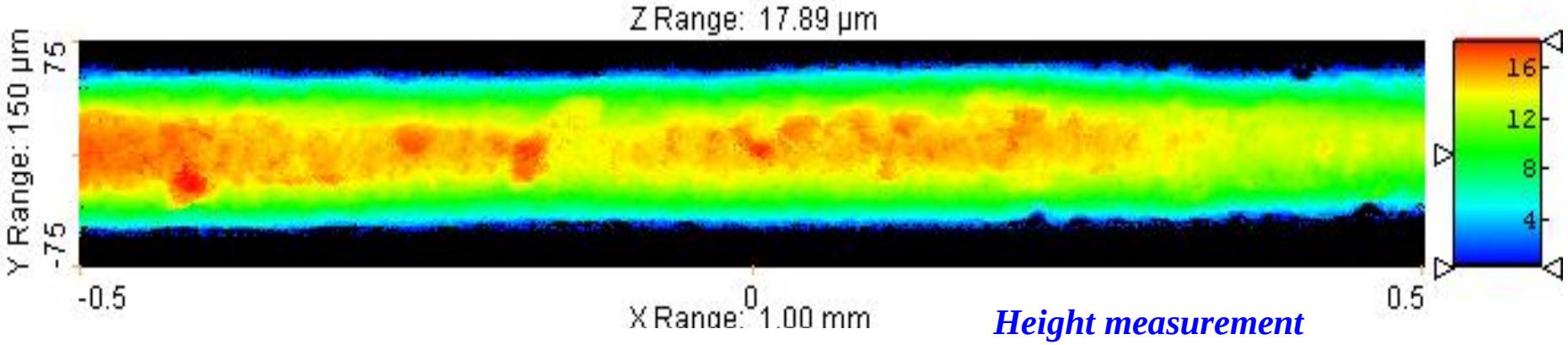
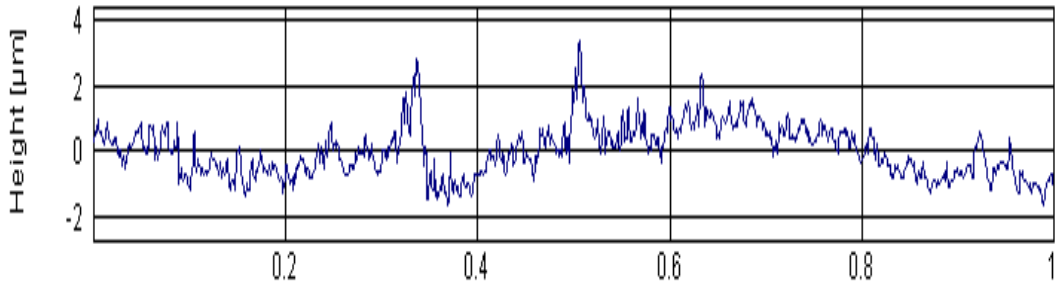
Stents measurements



Used violin string

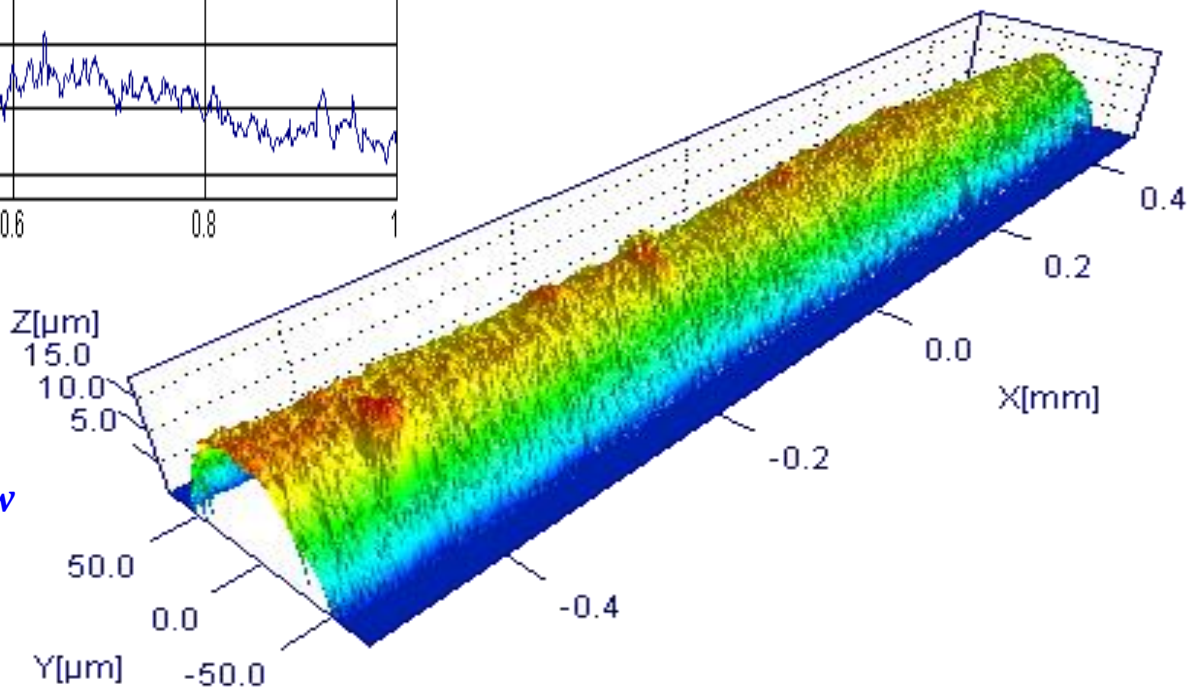


Height measurement



Extracted profile from the surface

3D view



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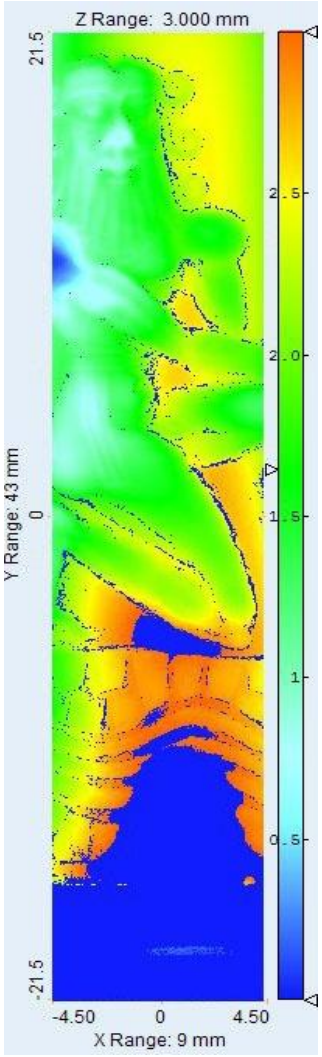
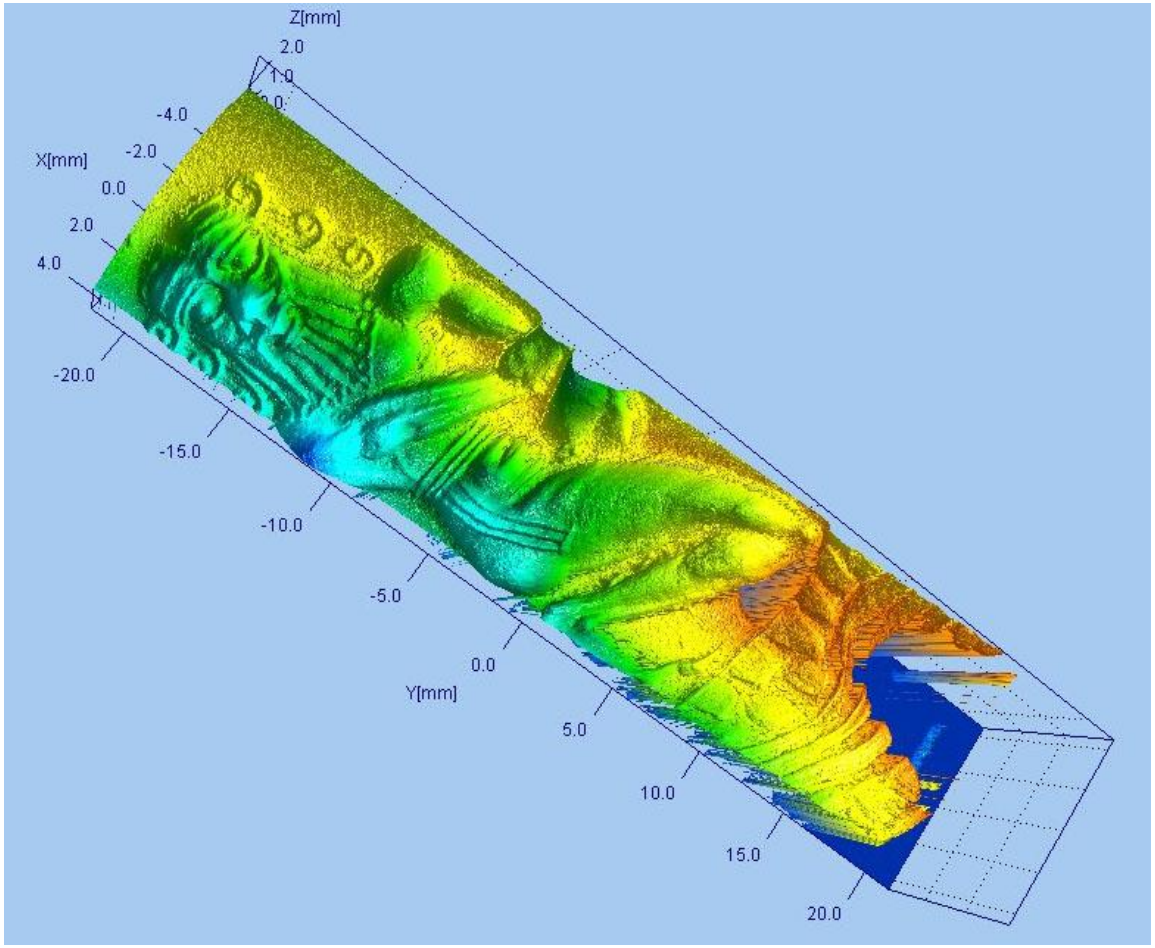
Seal topography

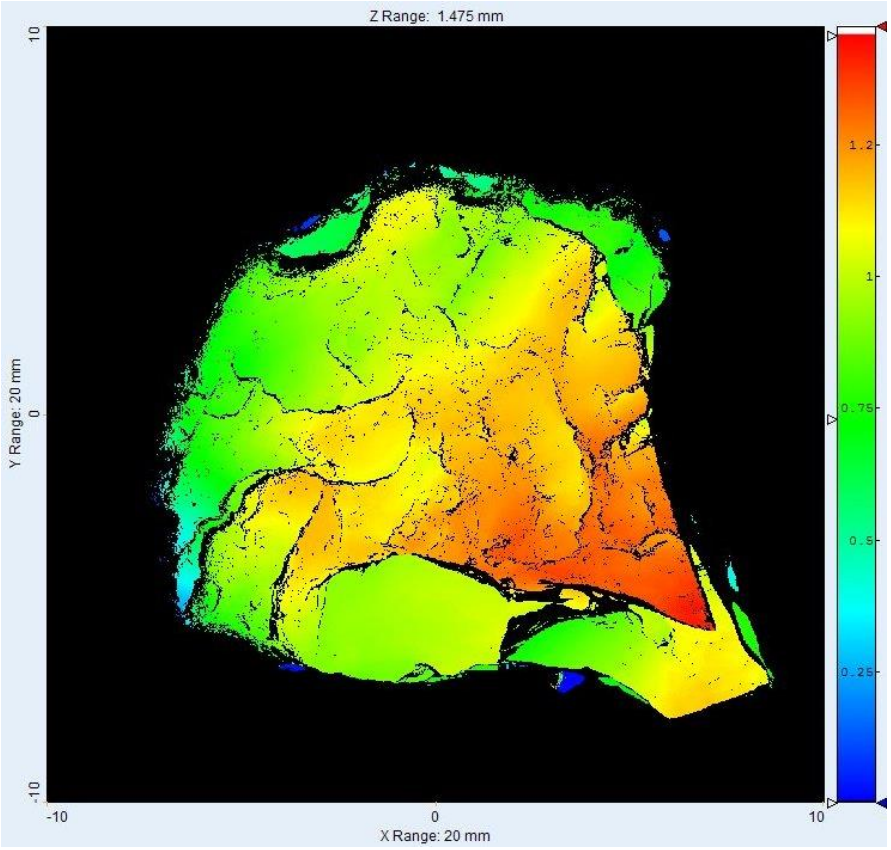


Height measurement

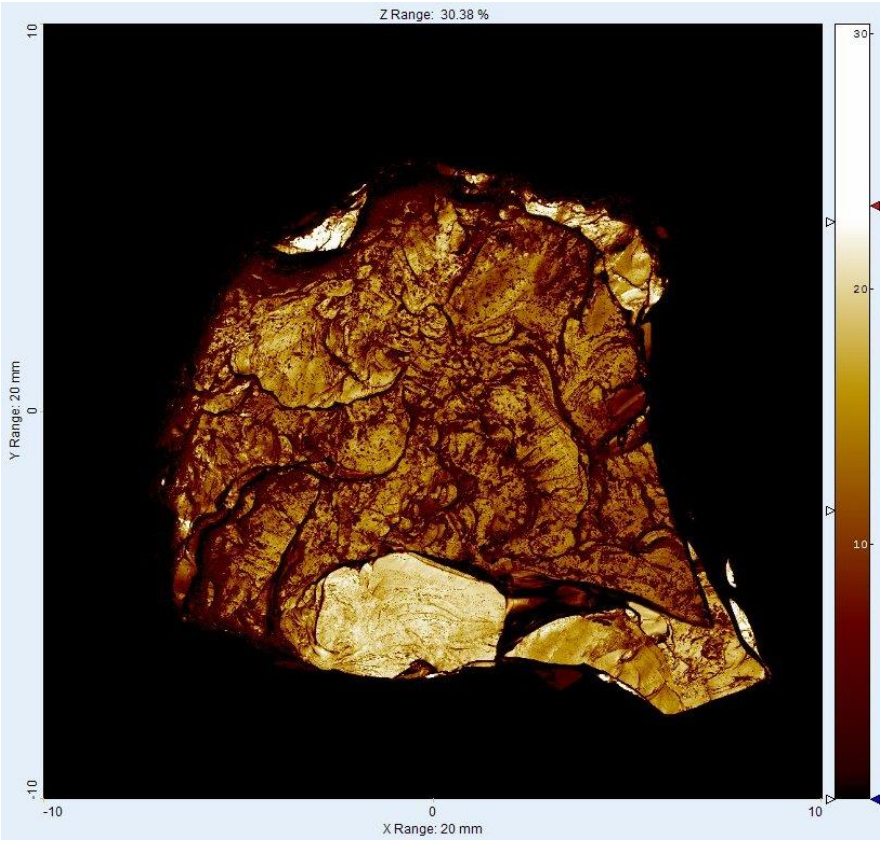


Measurement 3D view

Aquamarine microtopography



Height measurement



Intensity measurement

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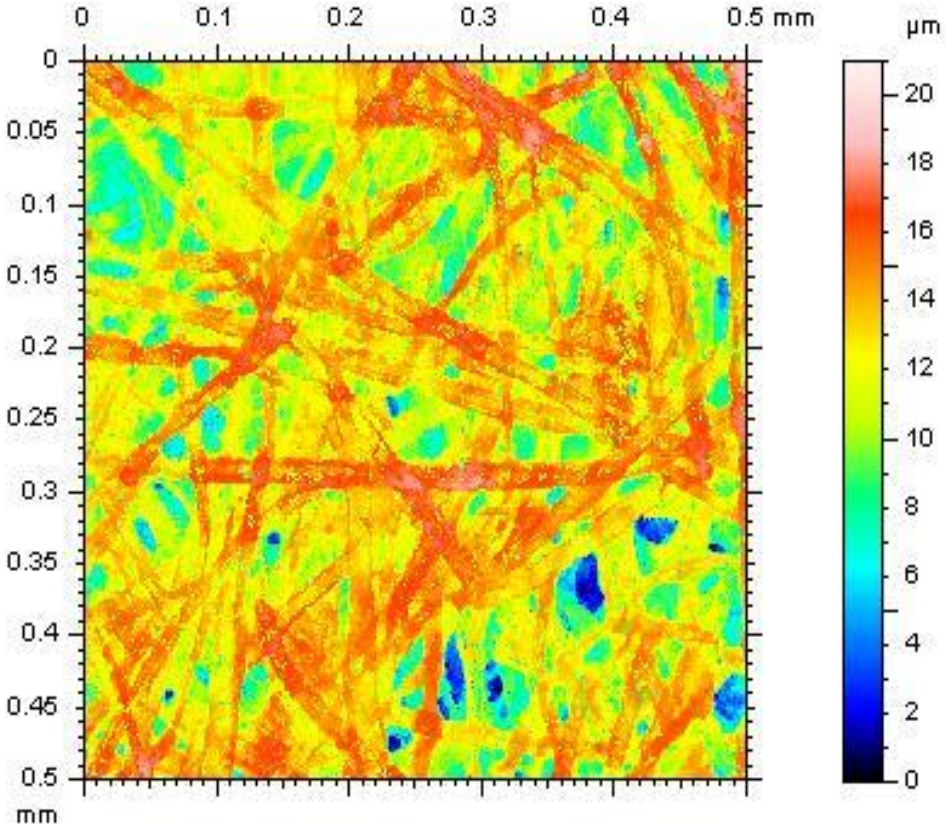
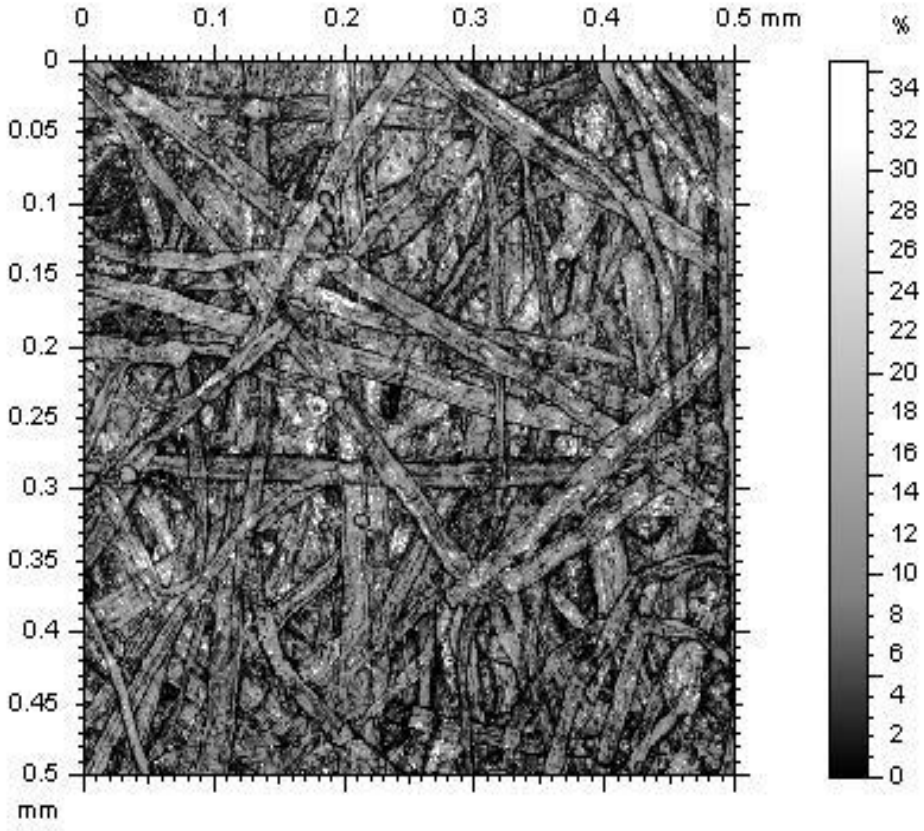
Measurement on drawing paper



Height measurement



Intensity measurement

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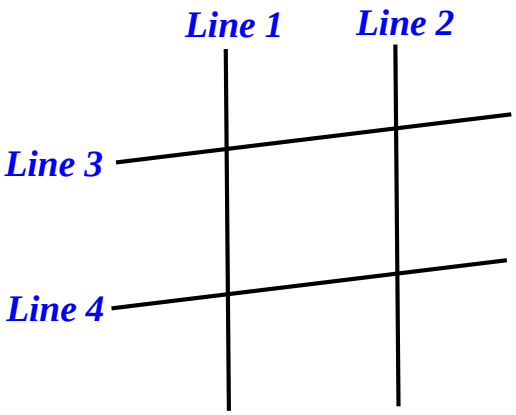
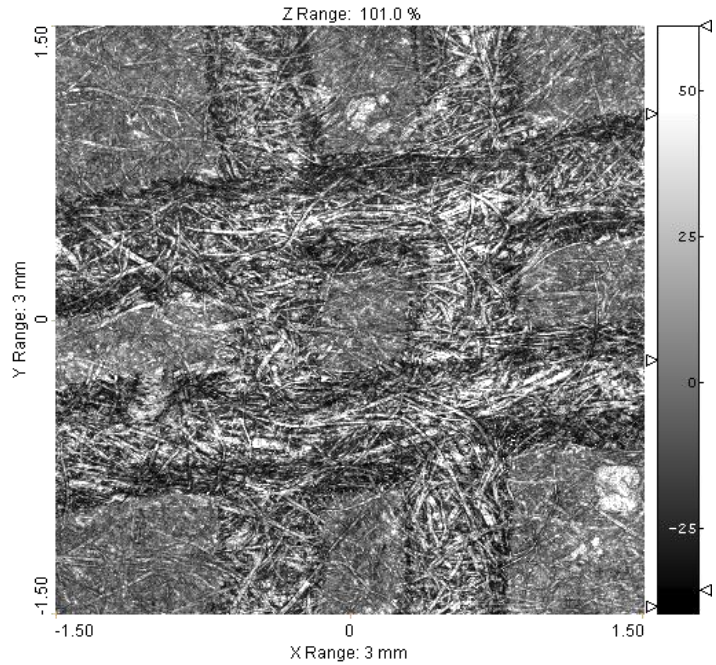
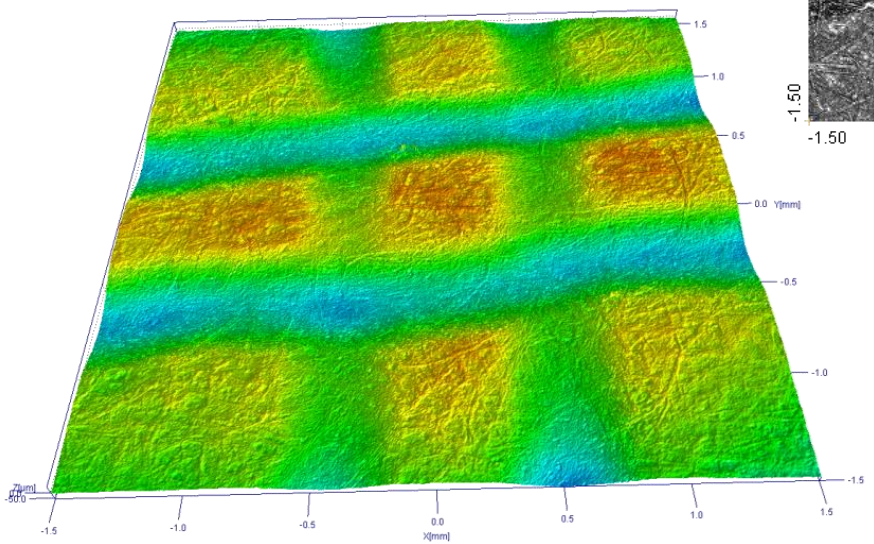
Writting pen marks on paper



Sample description



Intensity image



Microtopography

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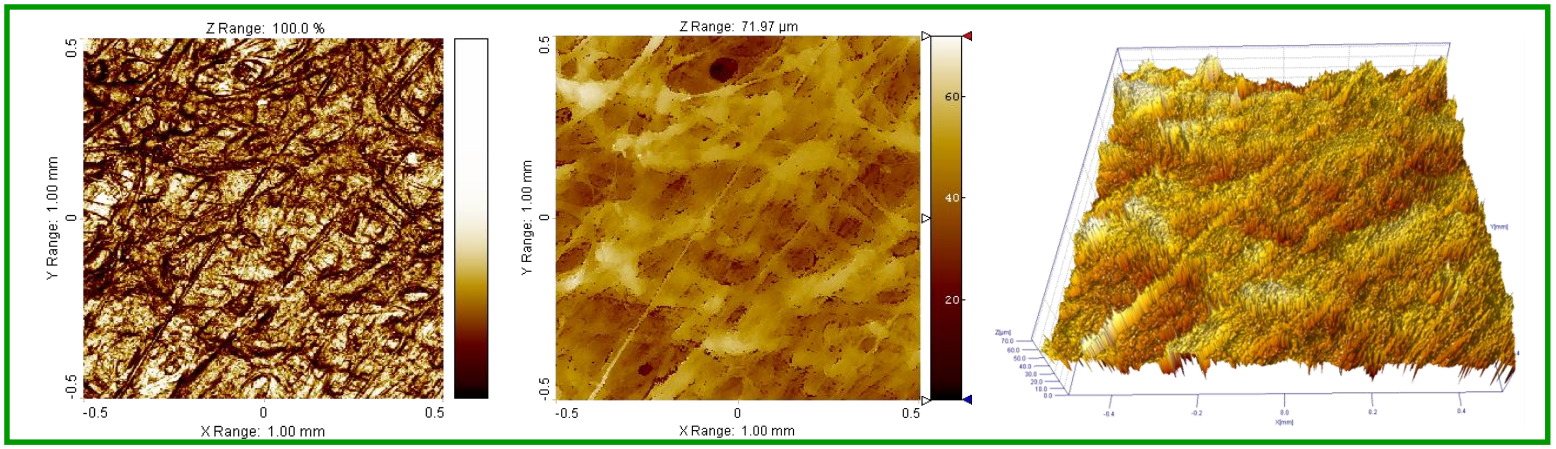
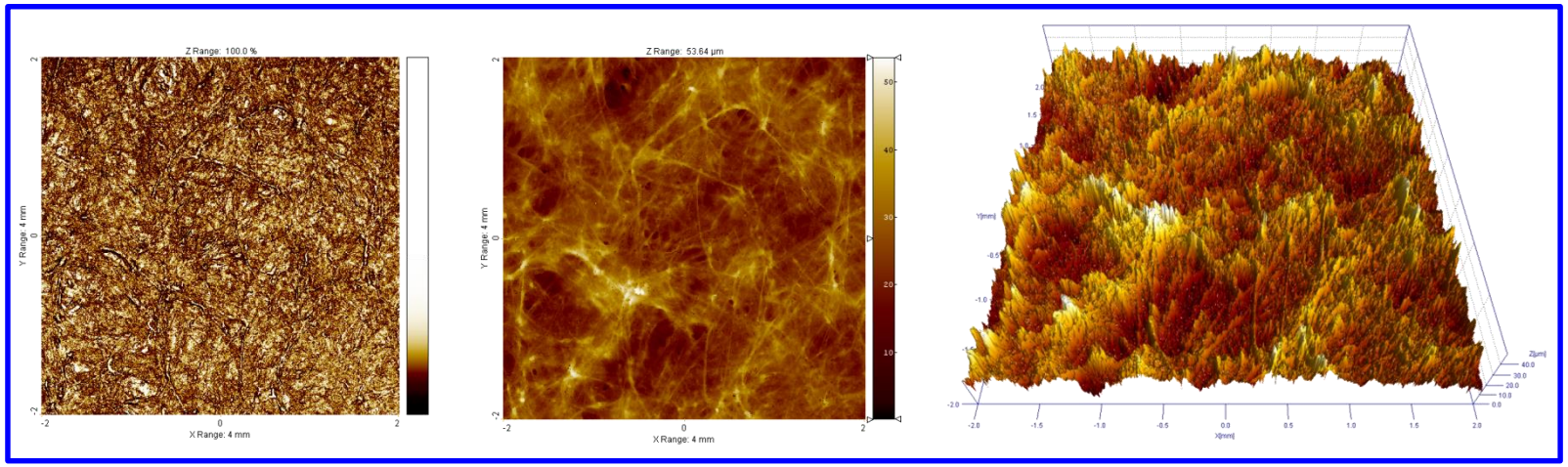
Dead Sea Scrolls Surface

Modular optical pen type : CL2+MG140

CALF



Intensity image ***Microtopography*** ***Microtopography 3D view***



SHEEP

2009-09-10 – 200 Hz – 2 µm x 2 µm sampling

ThinkFocus

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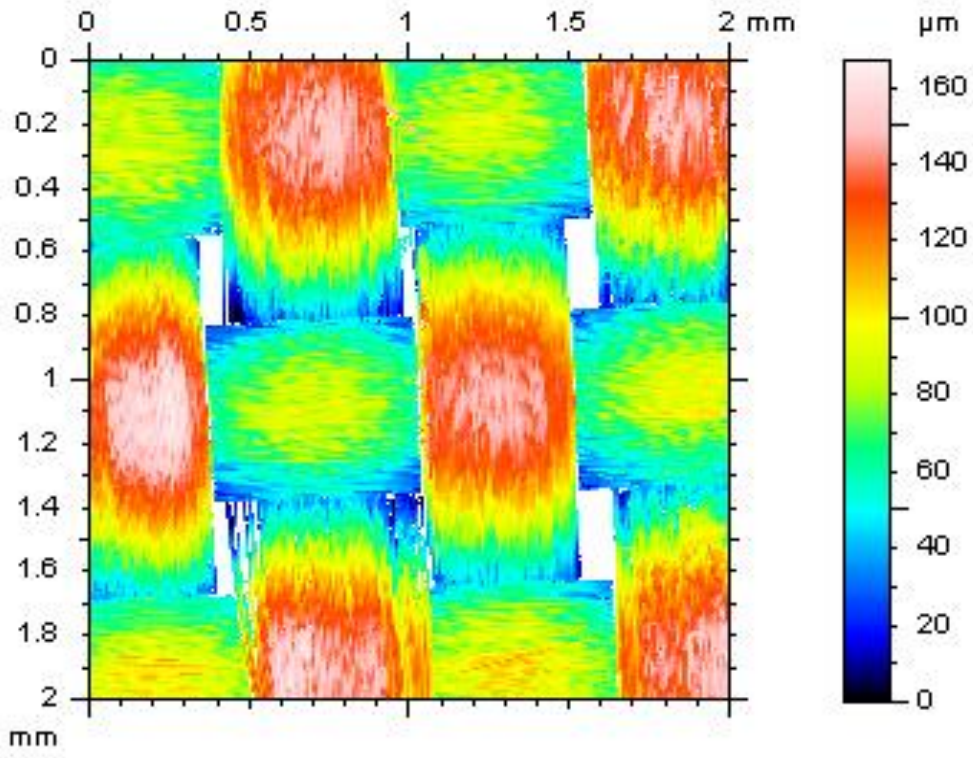
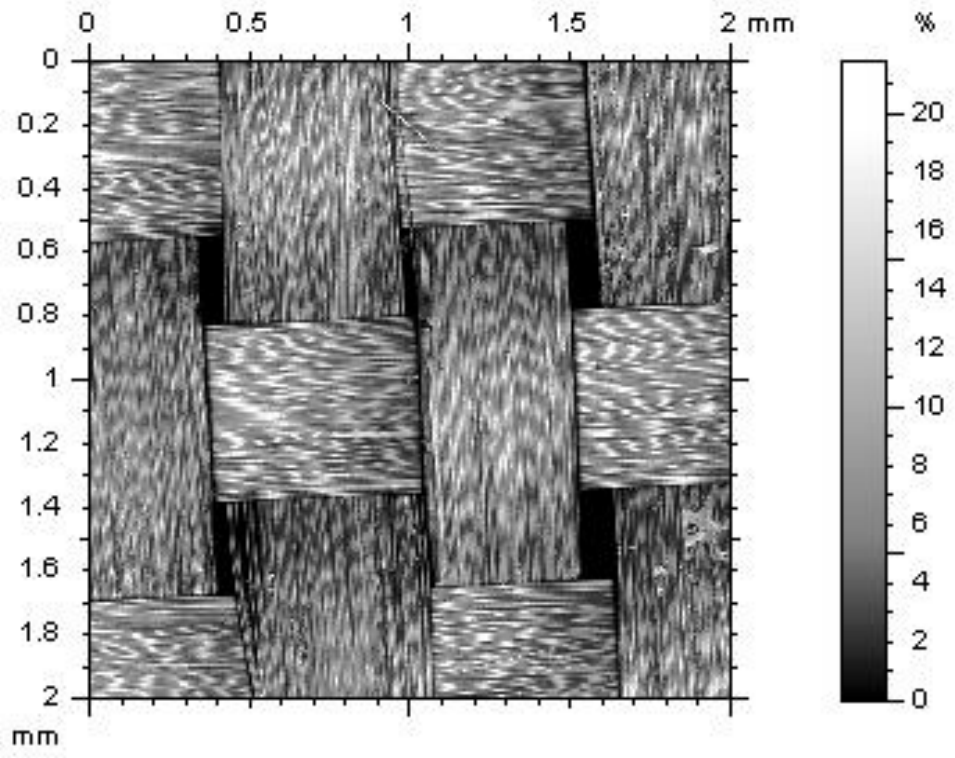
Glass Fiber Fabrics



Height measurement



Intensity measurement

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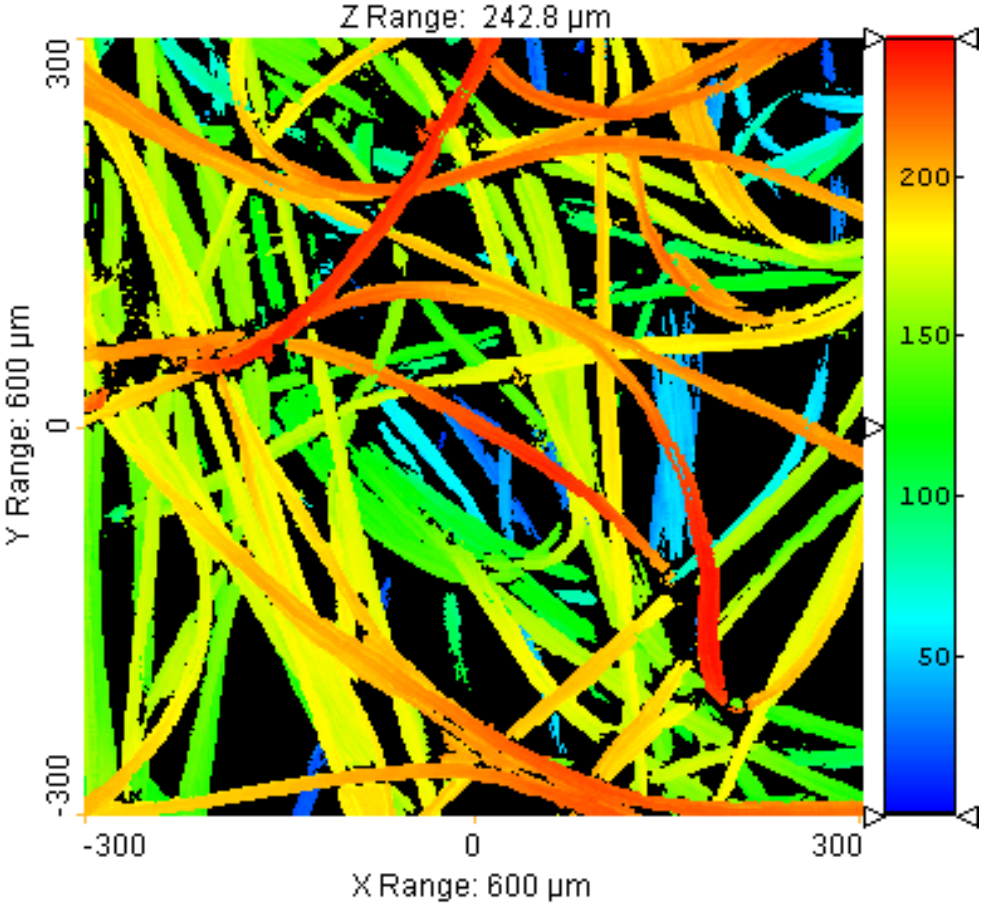
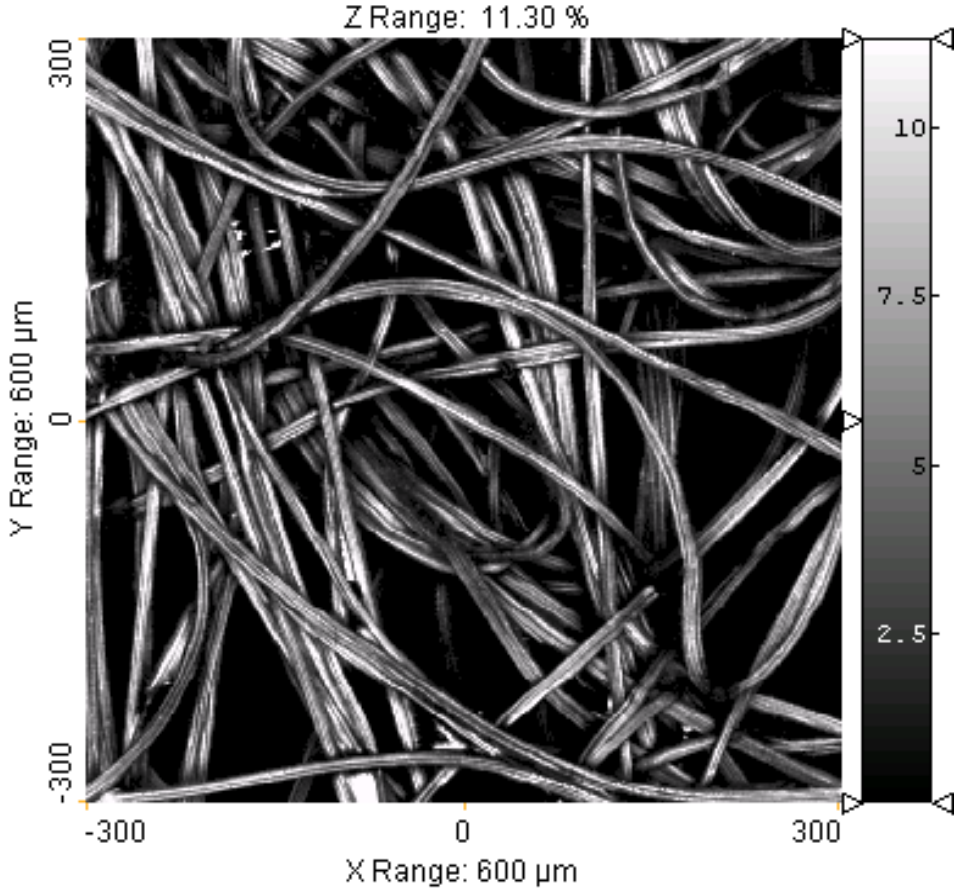
Clean room wipers



Height measurement



Intensity measurement

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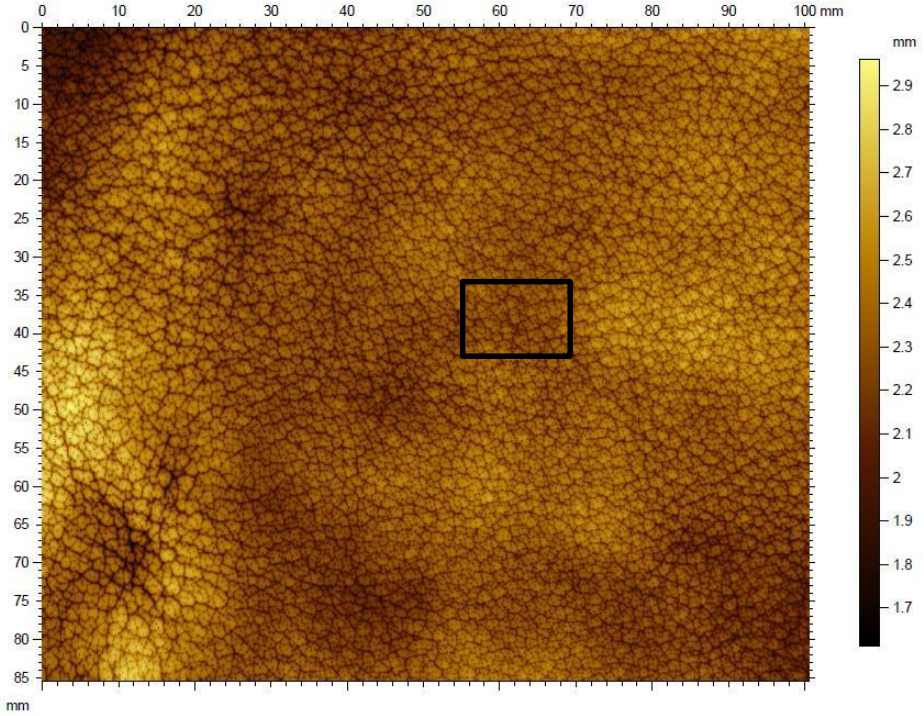
Leather HD measurement



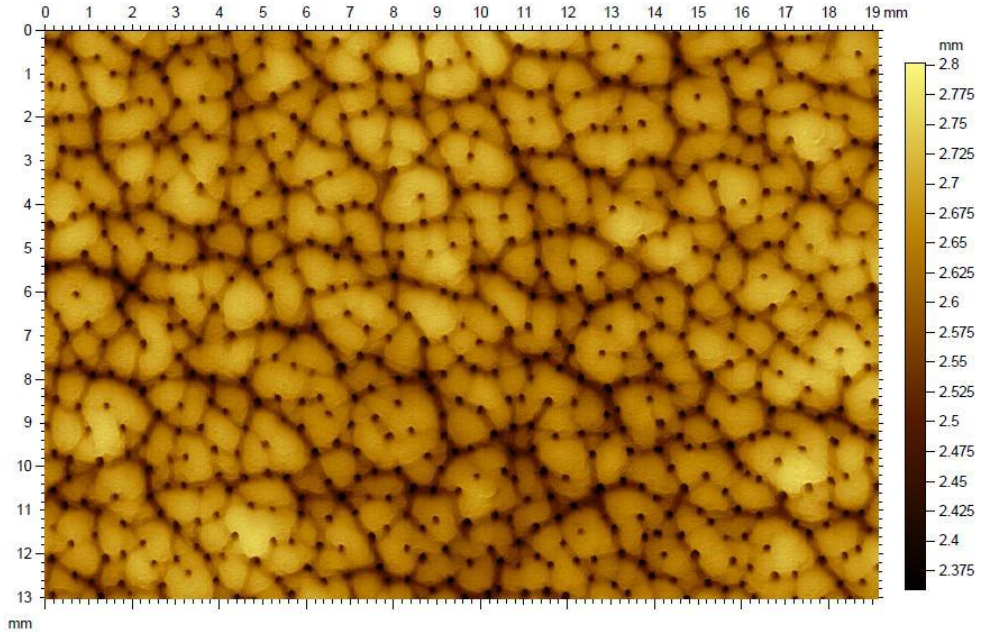


Image size : 10365 x 4500 pixels

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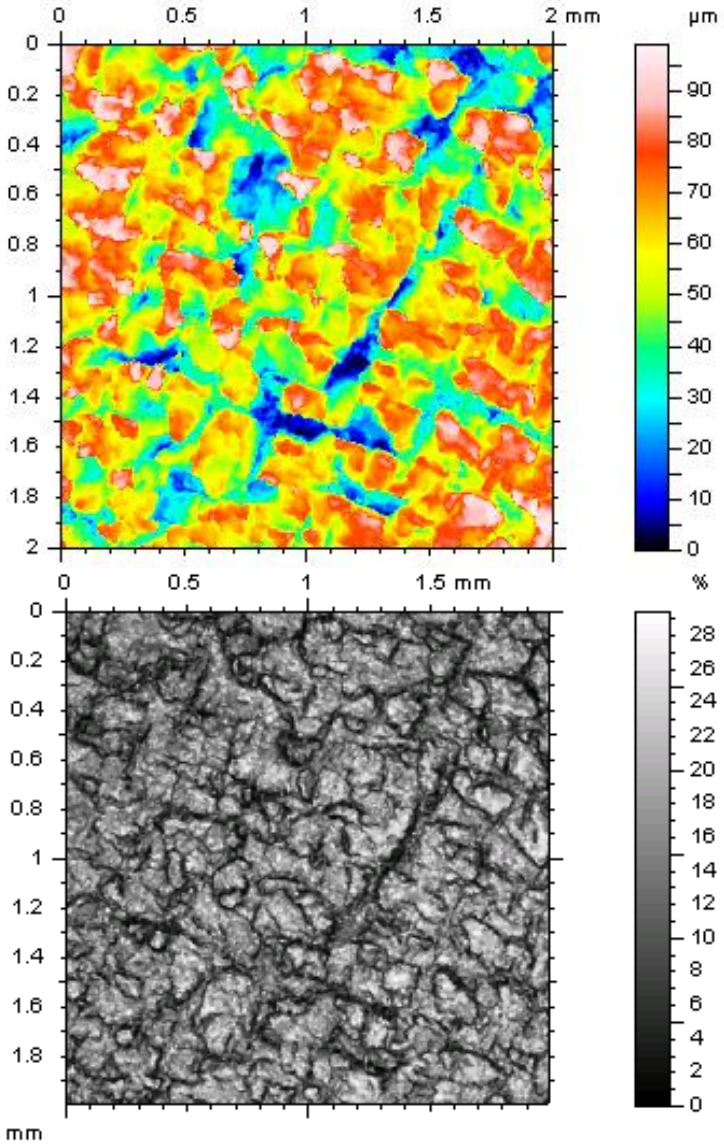
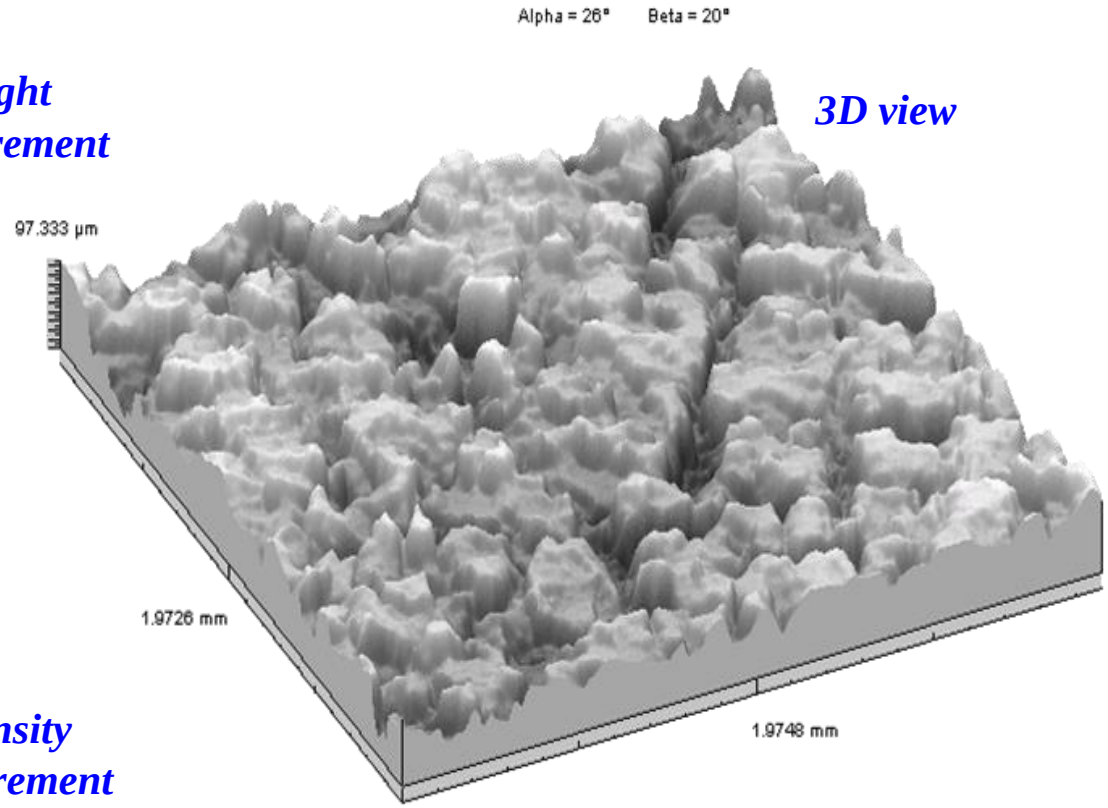
Measurement on a used tyre



Height measurement

Intensity measurement

3D view



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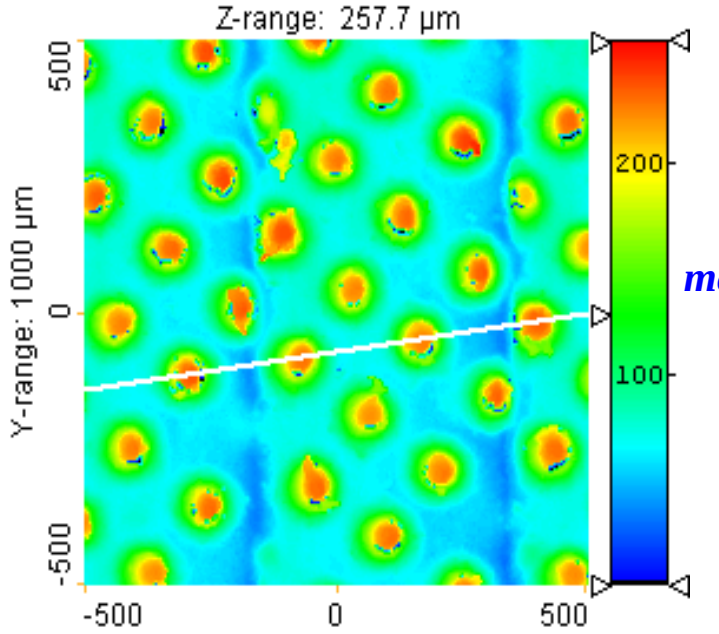
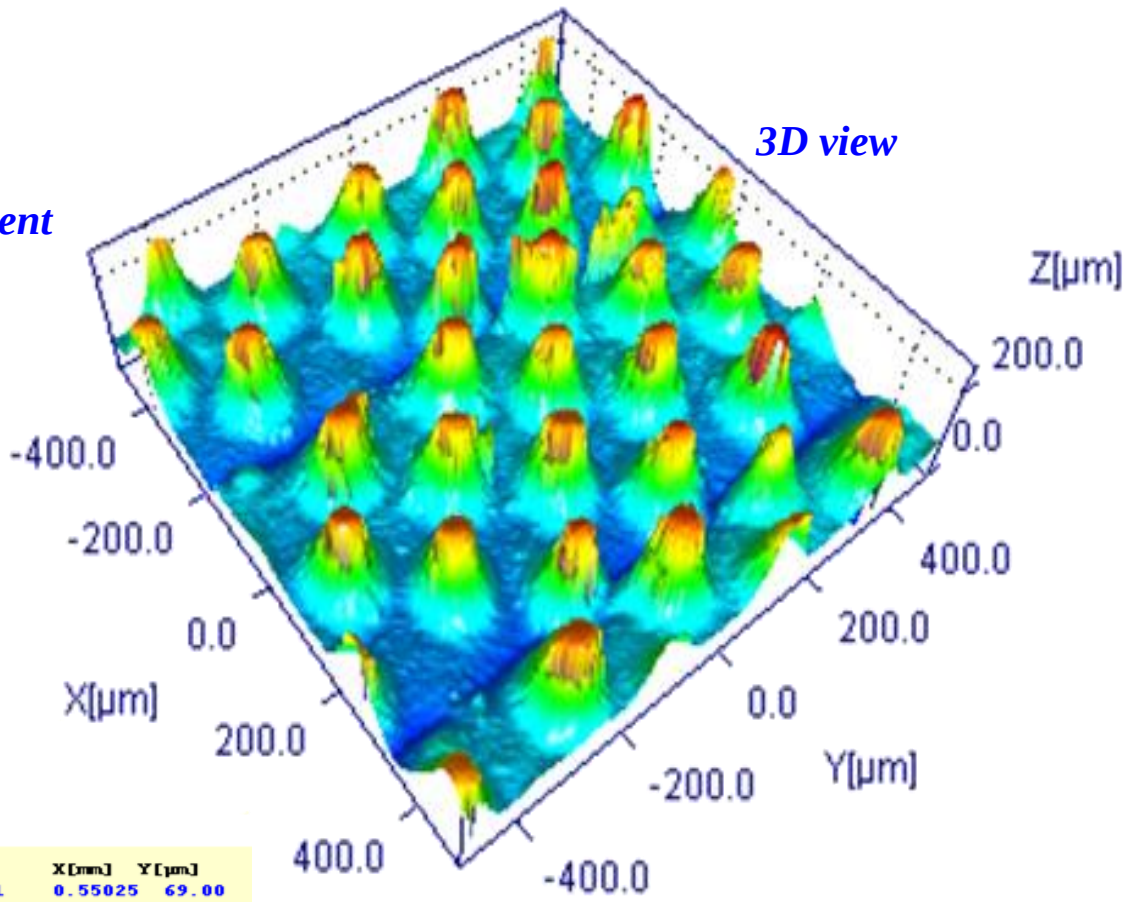
Rubber master for the printing industry



Height measurement



	X[mm]	Y[µm]
M1	0.55025	69.00
M2	0.67531	221.7
M2-M1	0.12506	152.72
dy/dx	1.22 ~	50.69°
Mean 1-2:	127.02 µm	
Phys Image Coord:		
0.04455,0.06604,6.9E+4		

Extracted profile from the surface

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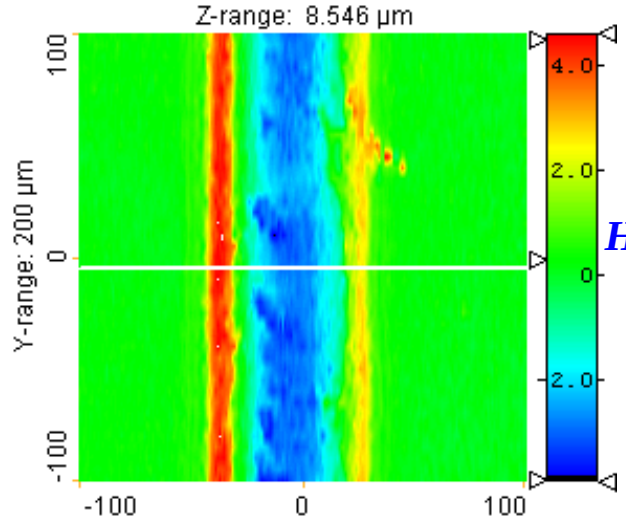
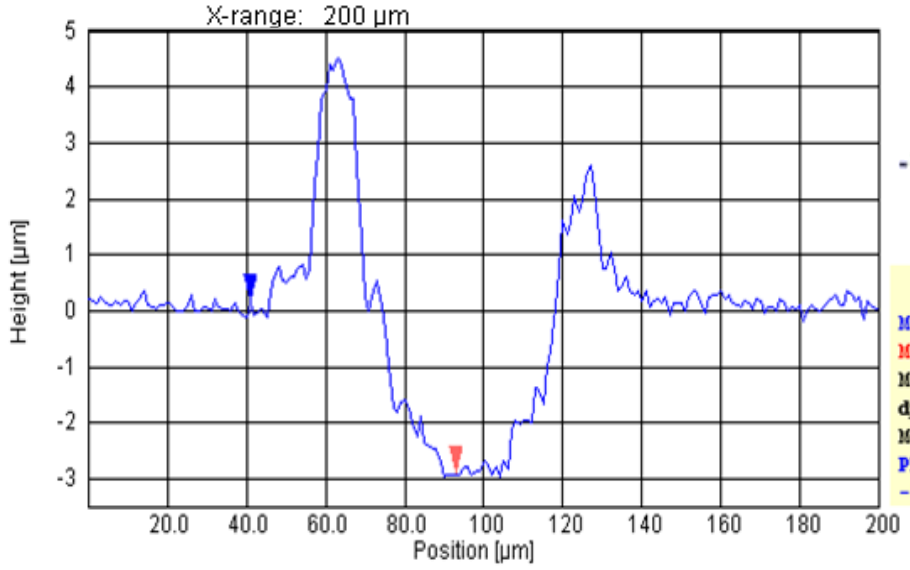
Scratch test on a photographic film



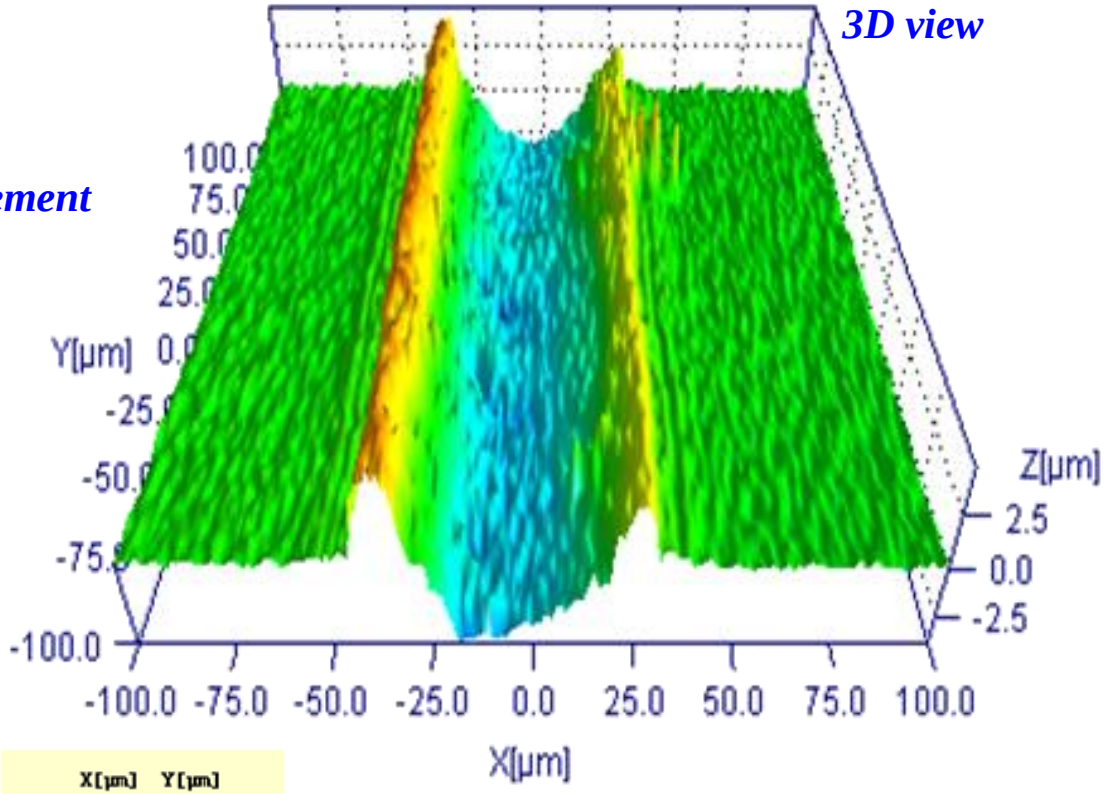
Height measurement



	X[µm]	Y[µm]
M1	41.000	0.1268
M2	93.000	-2.937
M2-M1	52.000	-3.0633

dy/dx -0.0589 ~ -3.371°
Mean 1-2: 0.26191 µm
Phys Image Coord:
-59.00, 5.000, 126.8

3D view



Extracted profile from the surface

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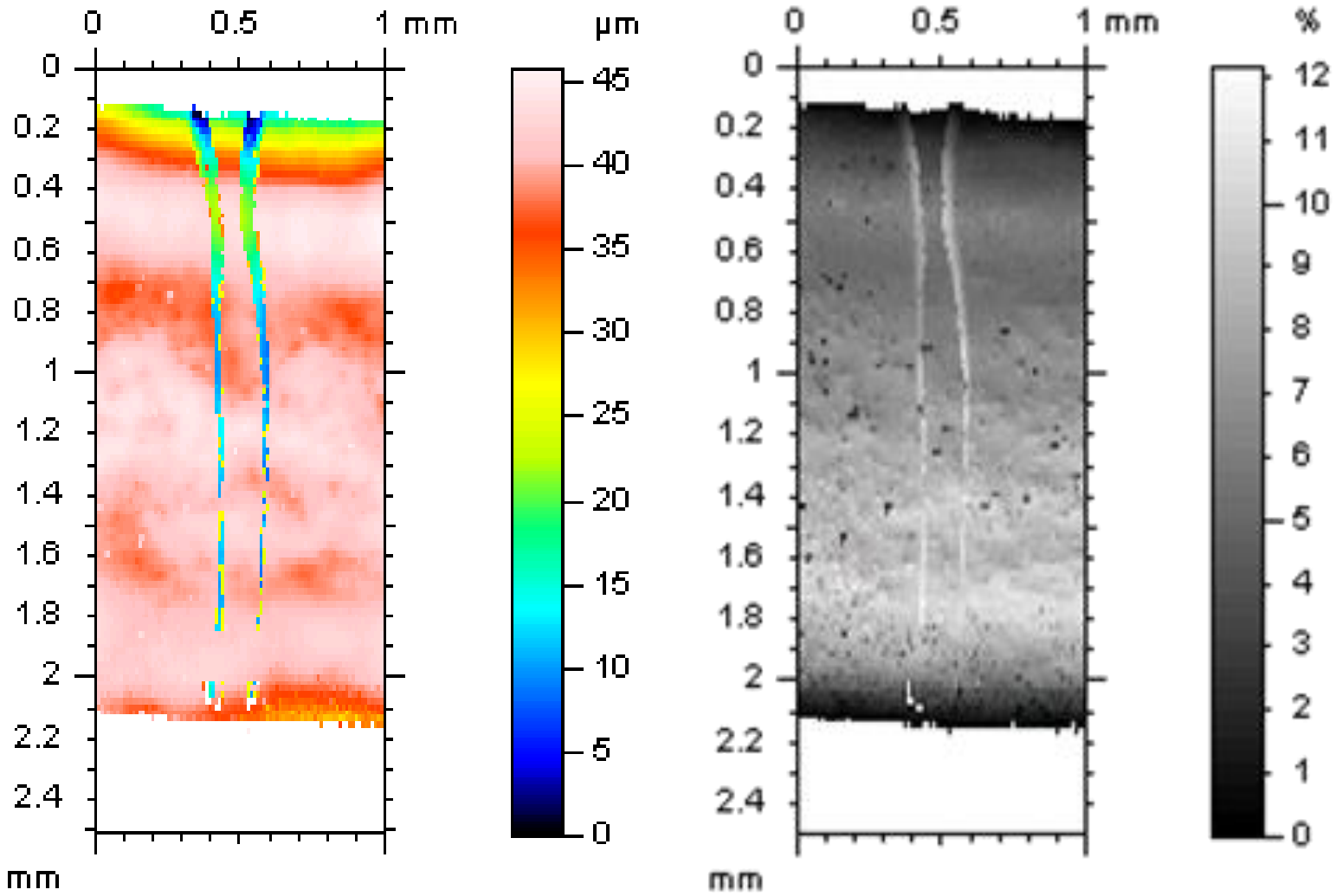
Glass bottle neck



Height measurement

Intensity measurement

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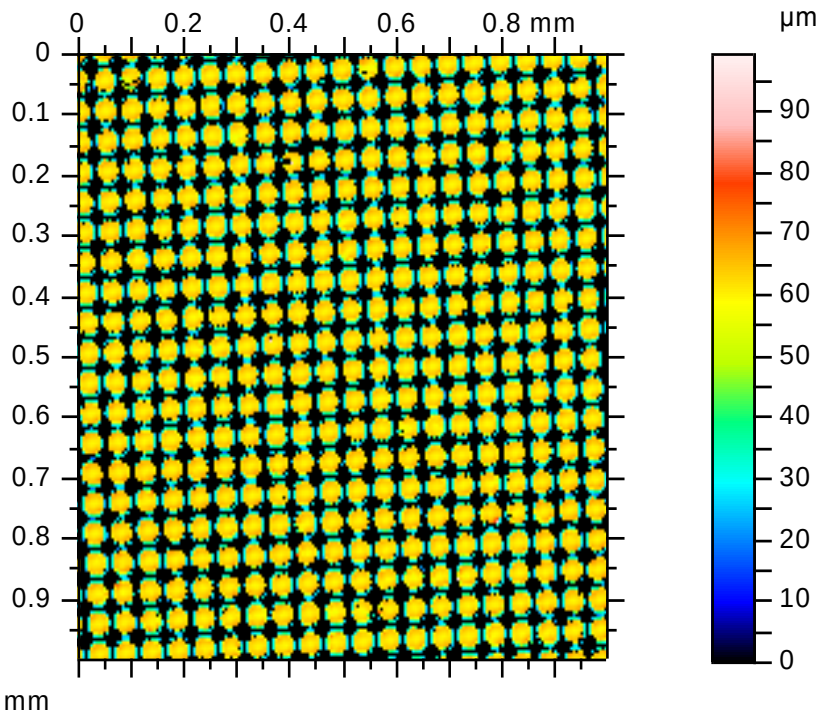
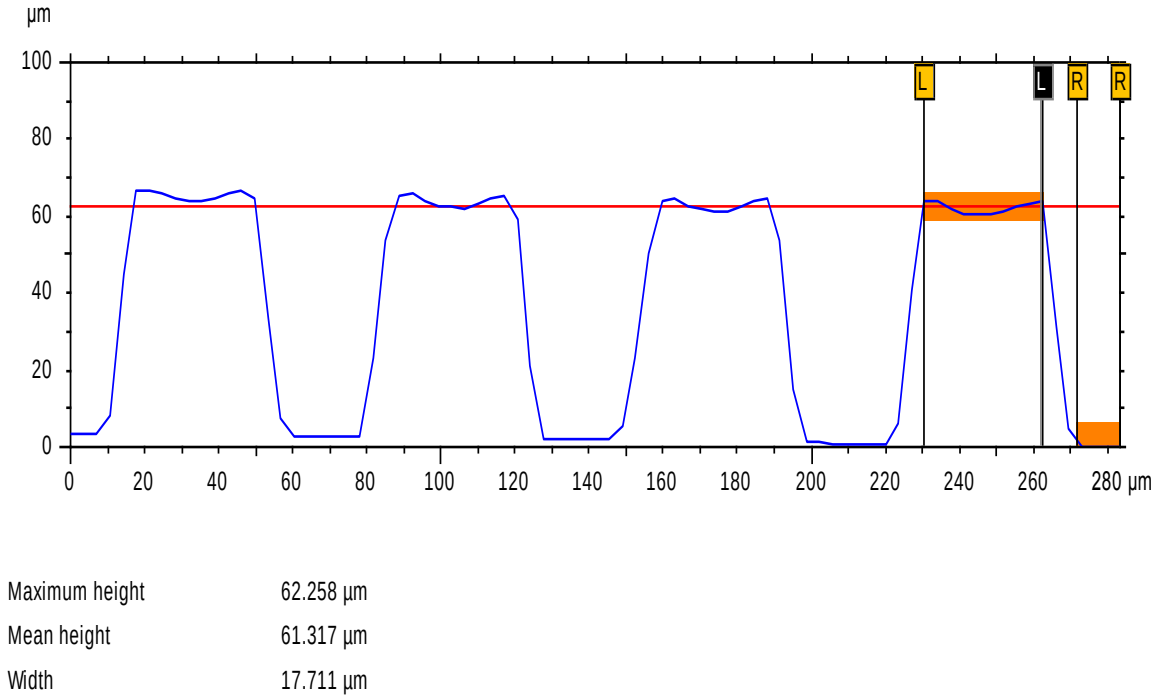
Thickness of photoresist (thickness mode)



Height measurement



Maximum height	62.258 µm
Mean height	61.317 µm
Width	17.711 µm

Extracted profile from the surface

2006-03-08 – 300Hz – 5 µm x 5 µm

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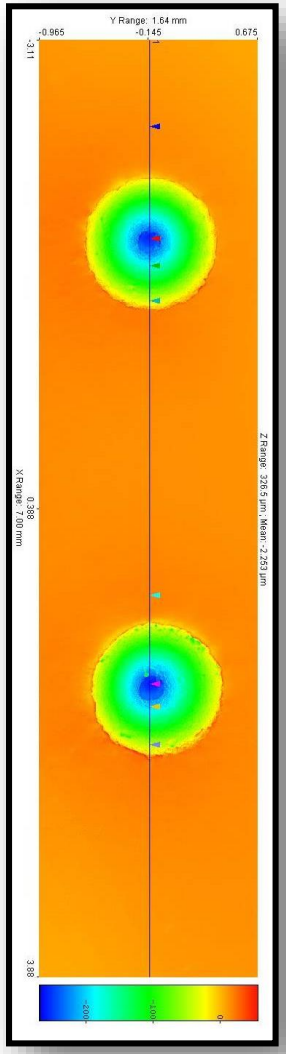
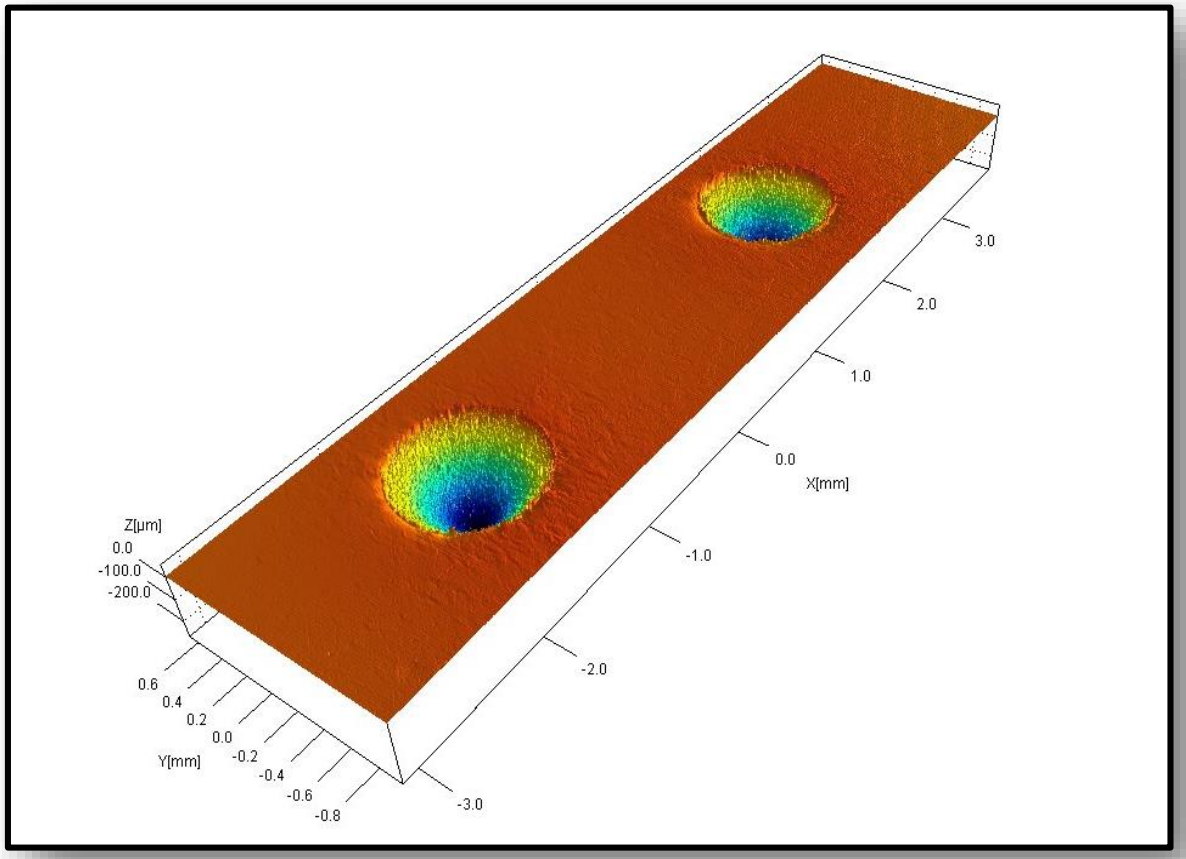
Micro-Form Characterization

Modular optical pen type : CL2+MG70



- ***Height Measurement***



- ***3D View***

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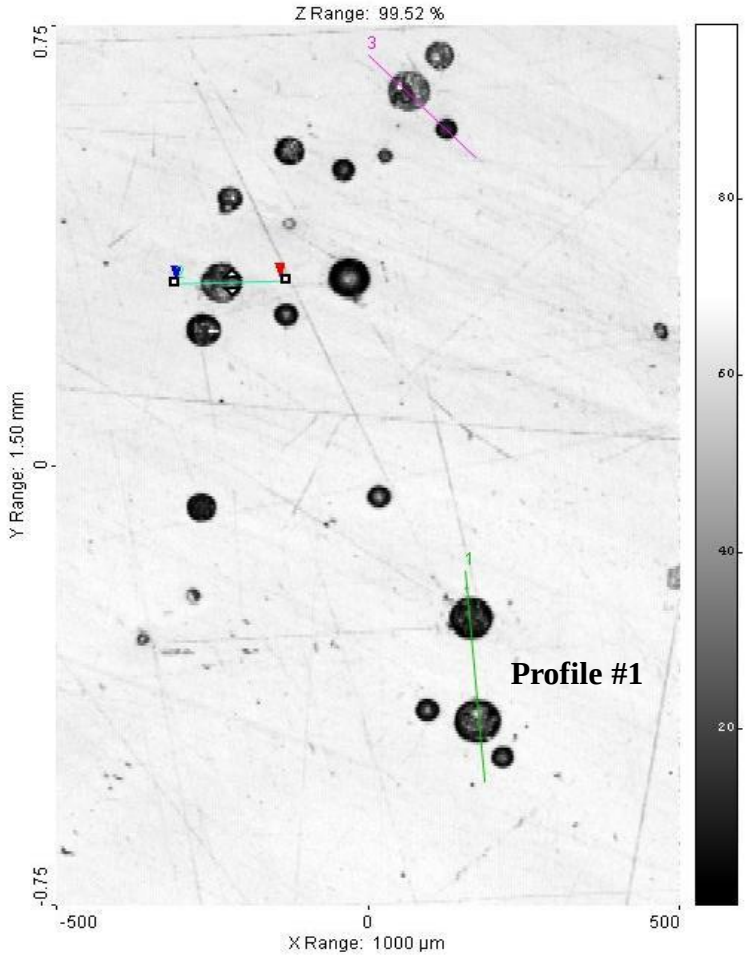
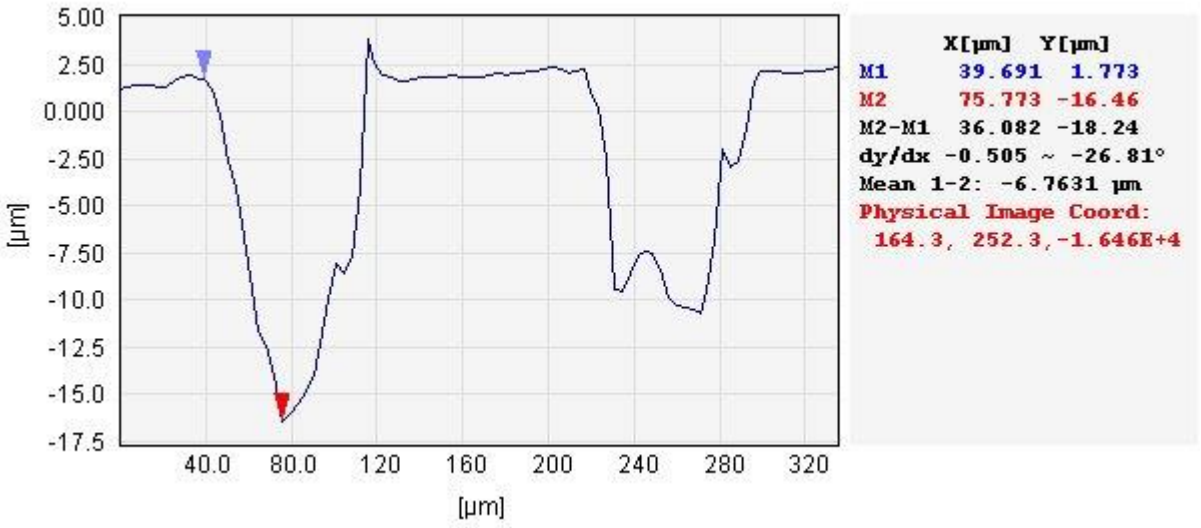
Wood Panel Topography

Modular optical pen type : CL2+MG70



- ***Intensity view***



- ***Z-measurement (profile#1)***

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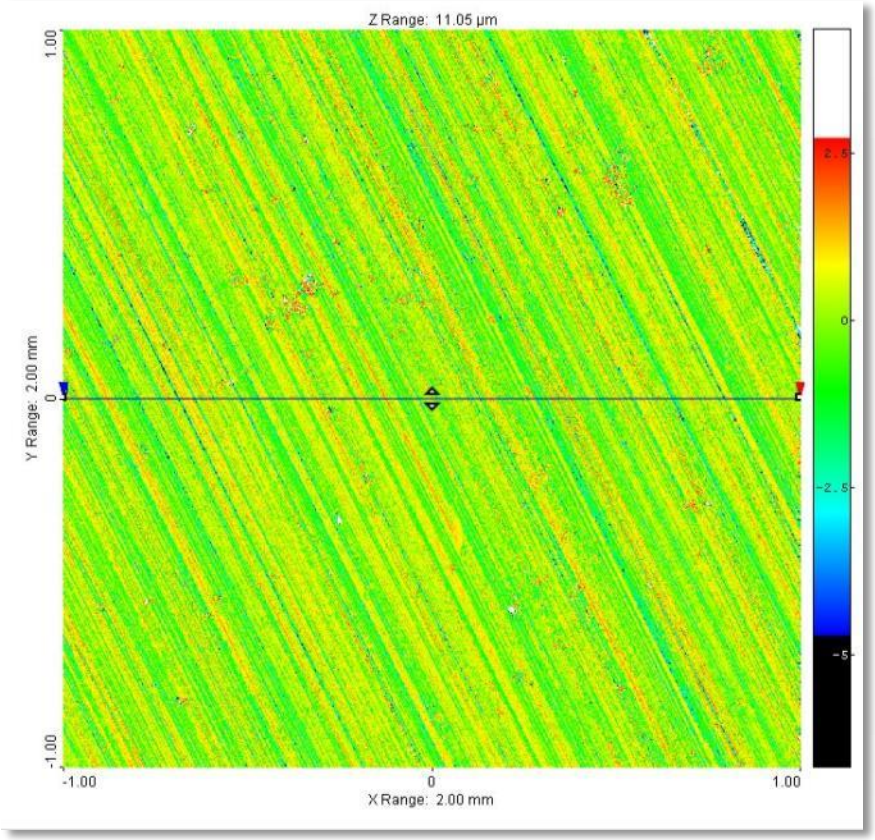
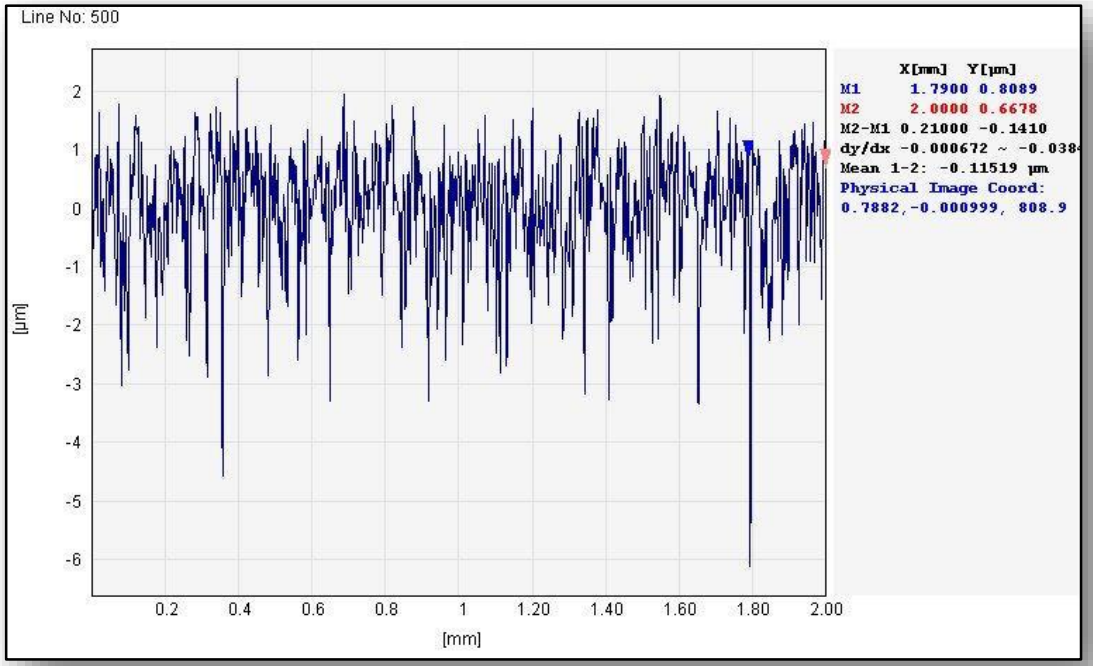
Metal Roughness Measurements

Modular optical pen type : CL3+MG140



- ***Altitude view***



- ***Extracted Profile***

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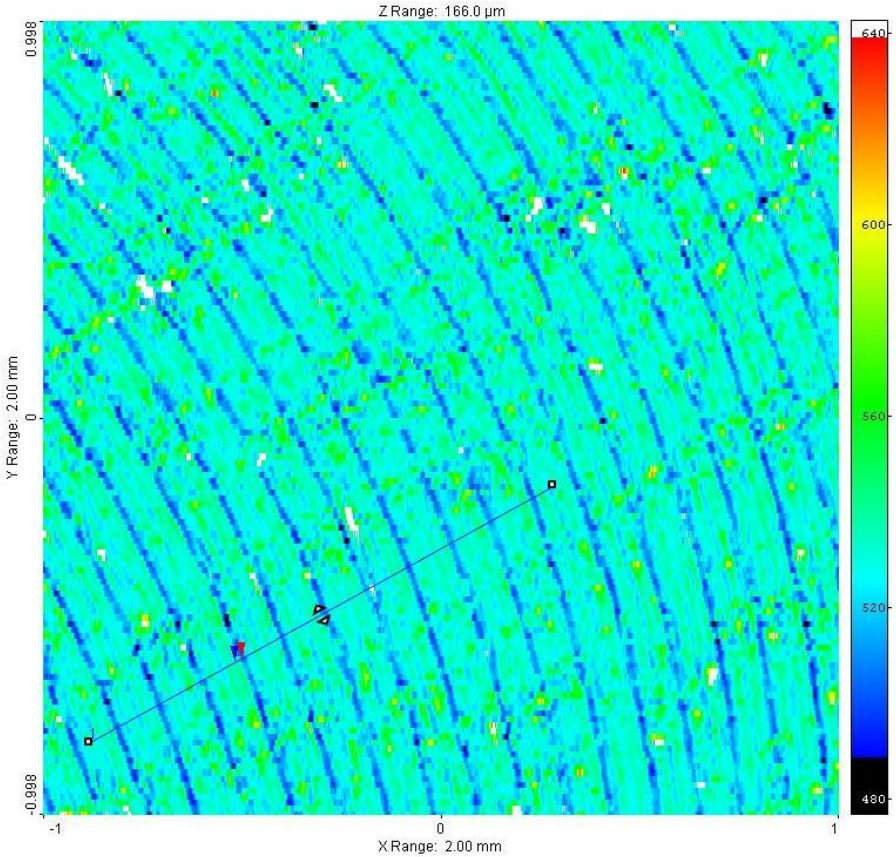
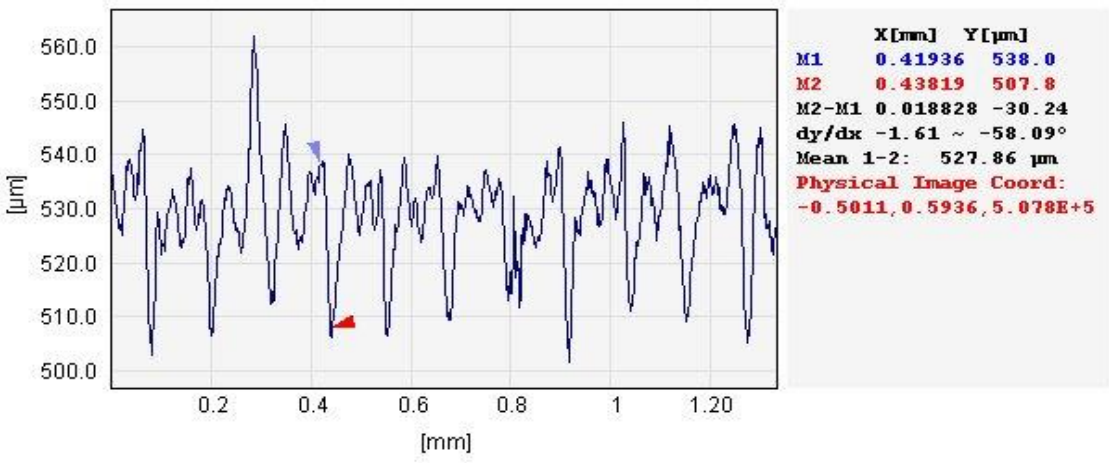
Metal Roughness Measurements

Endoscopic optical pen type : ENDO 2.0



- ***Altitude view***



- ***Extracted Profile***

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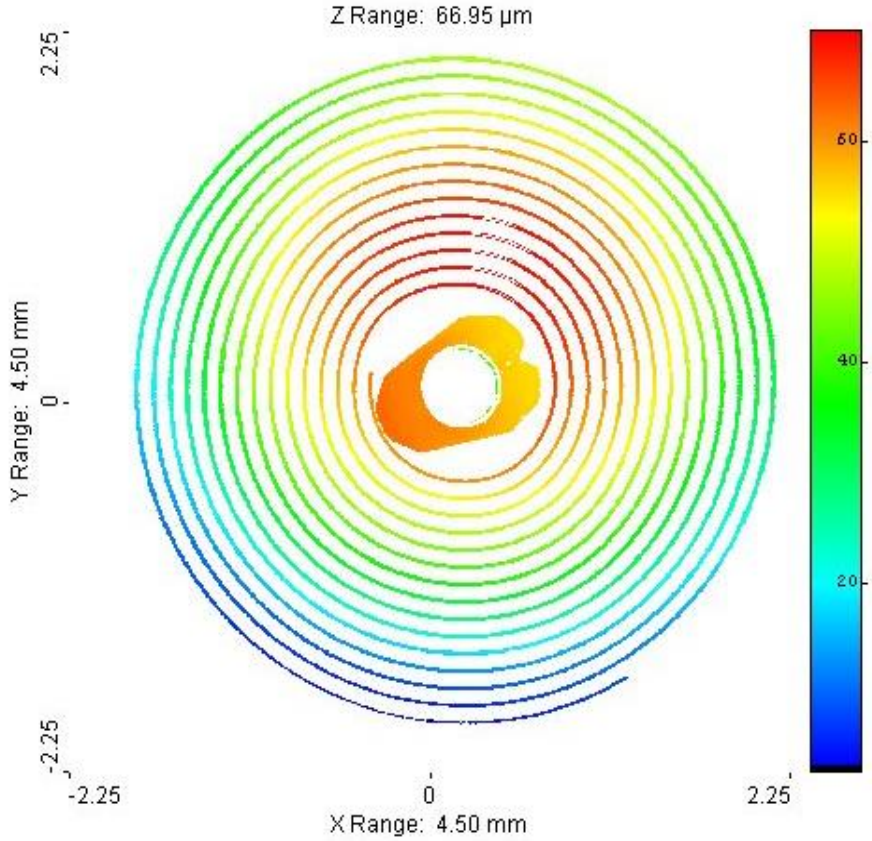
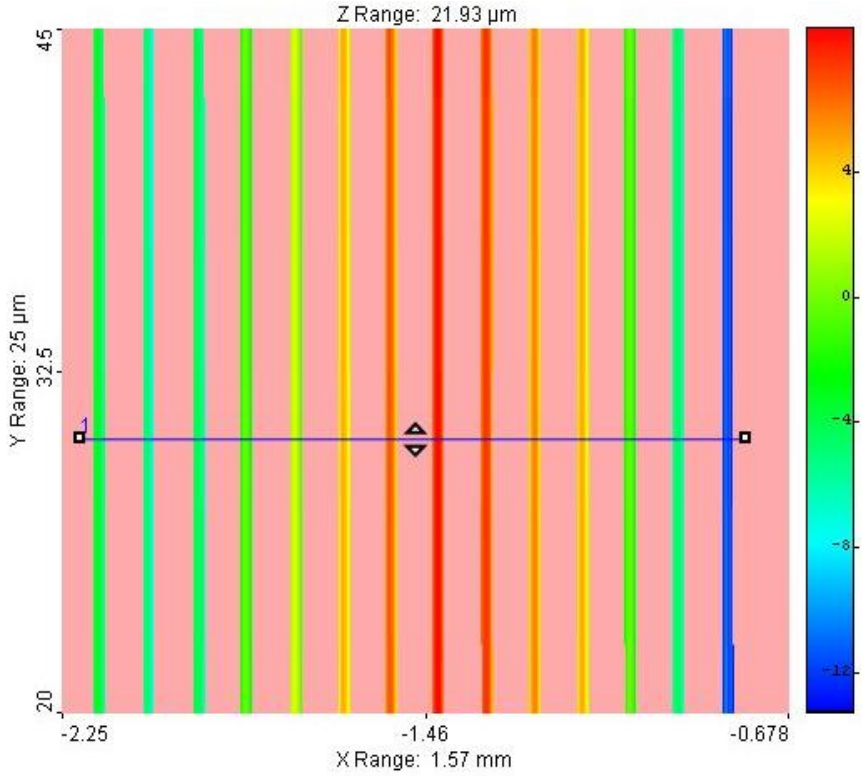
Metallic Spiral Measurements

Modular optical pen type : CL0+MG210



- ***Altitude view***



- ***Detailed Altitude view***

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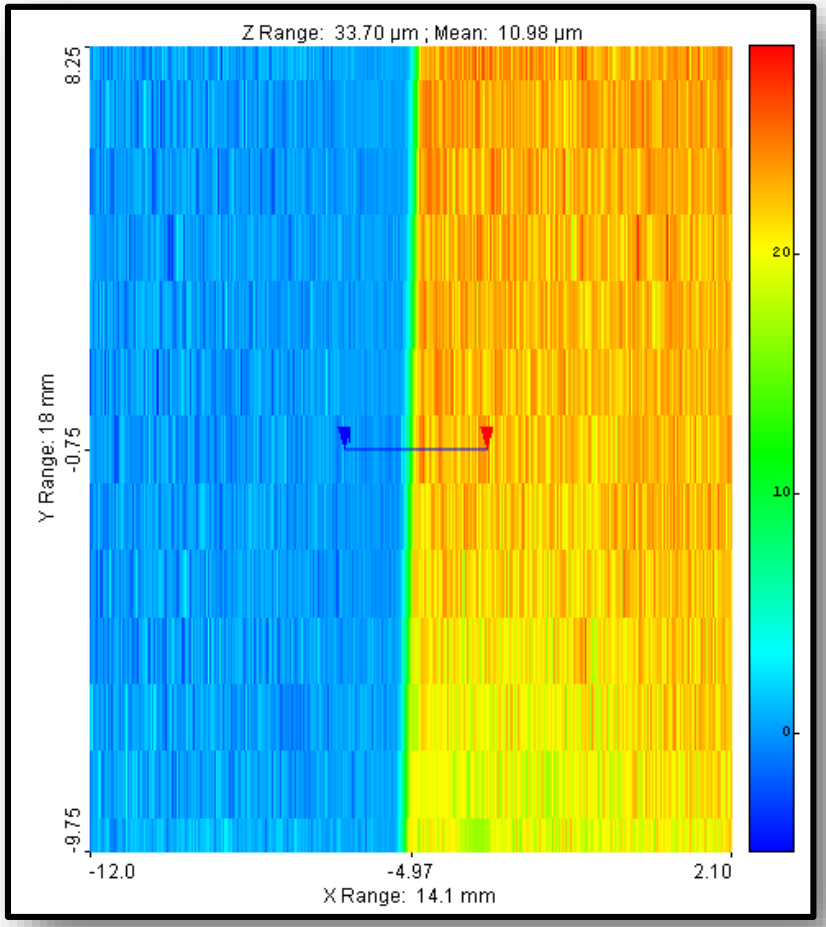
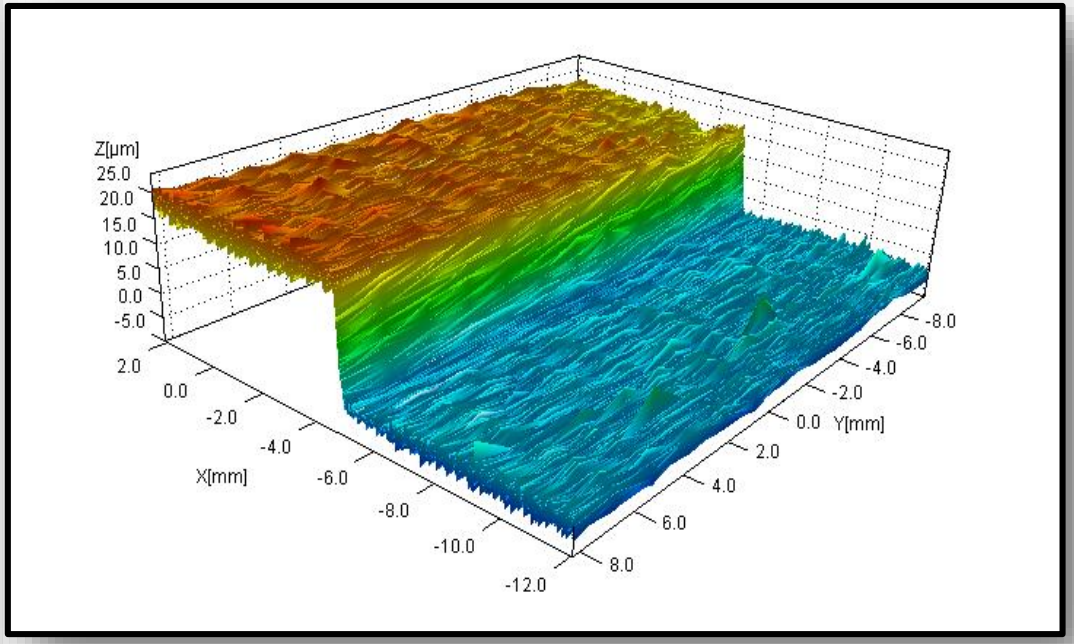
Metallic piece topography

Modular optical pen type : CL2+MG140



- ***Altitude view***



Step Height : 20µm

- ***3D view***

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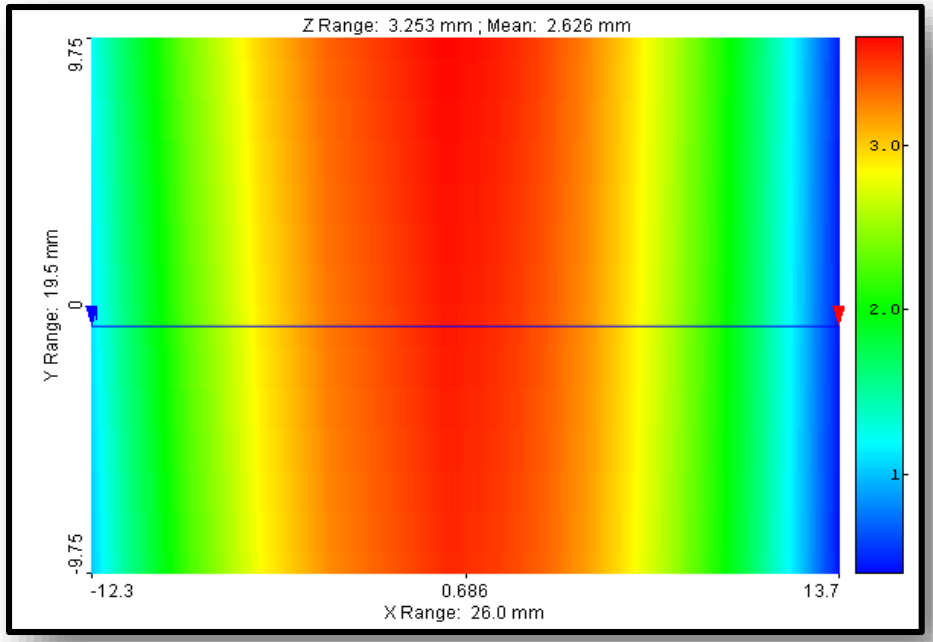
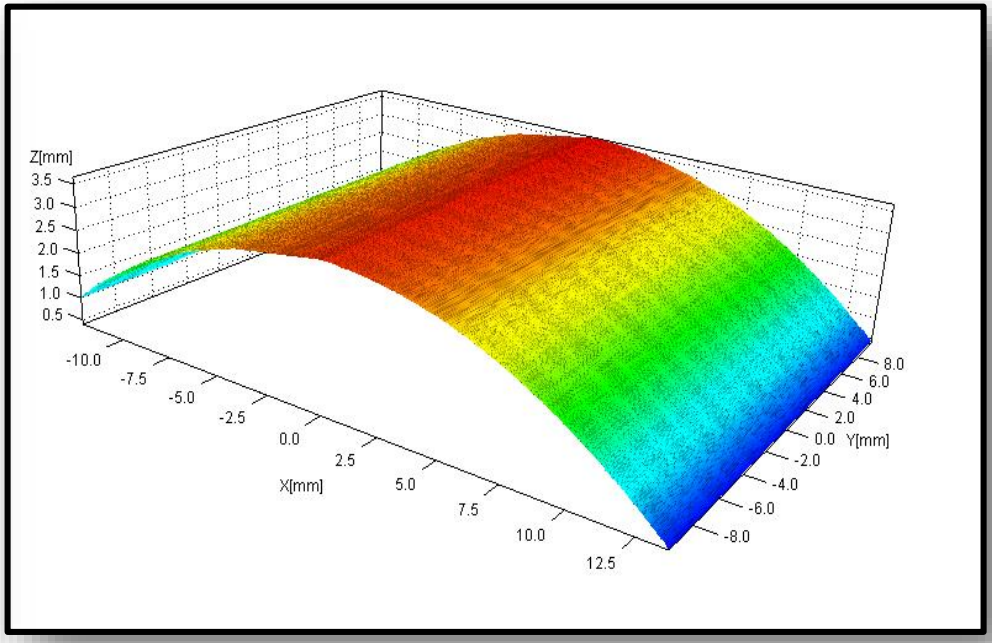
Metallic piece topography

Modular optical pen type : CL2+MG140





- ***Altitude view***

- ***3D view***

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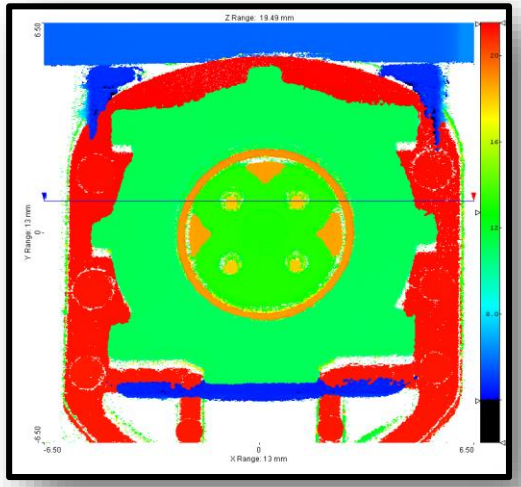
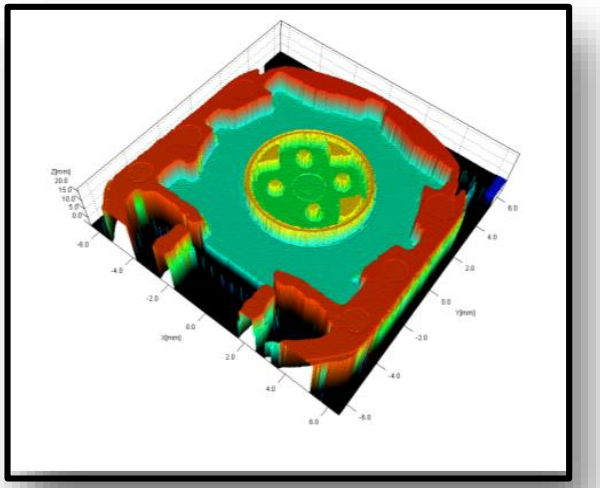
Plastic connector measurements

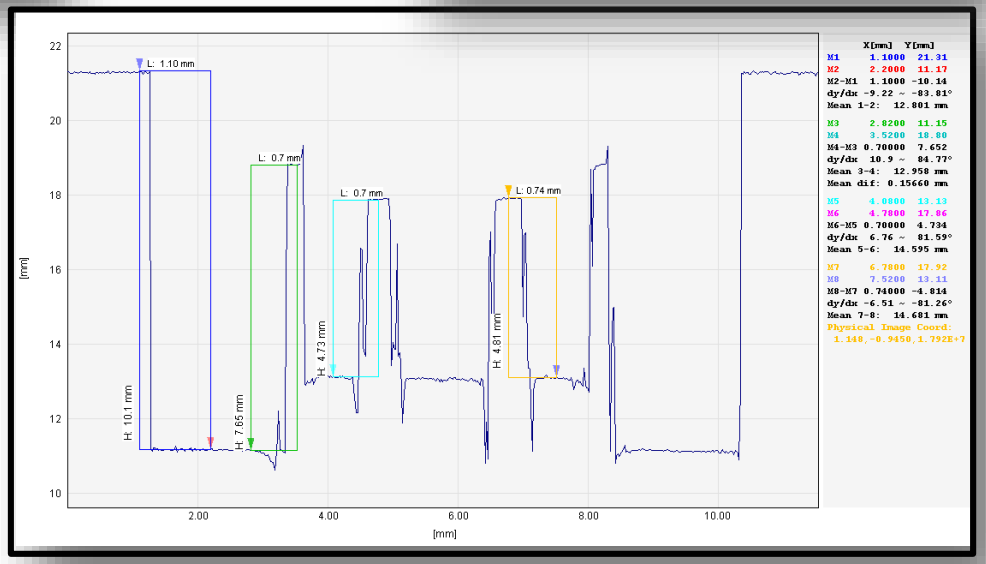
Modular optical pen type : CL6+MG20



- ***Altitude view***



- ***3D view***



- ***Extracted Profile***

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