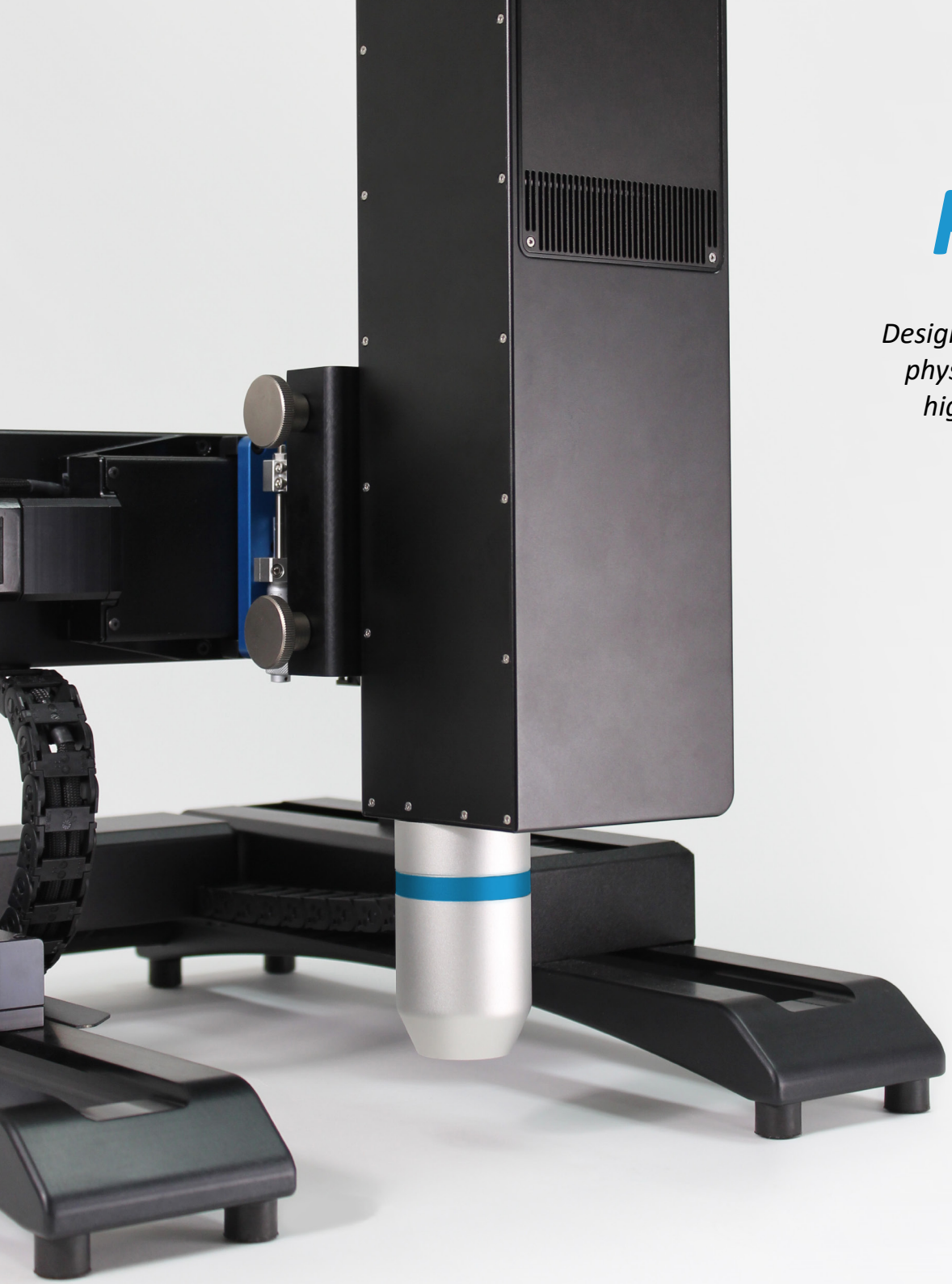
NANOVEA
JR100

HIGH-SPEED PORTABLE
OPTICAL PROFILER

NANOVEA.COM



SUPREME PROFILOMETRY

Designed with Chromatic Light technology that measures physical wavelengths, the JR100 Profilometer offers the highest accuracy on any roughness, form, or material. Transparent or opaque.

LAB QUALITY RESULTS

ANY PLACE, ANY TIME

100 mm CONTINUOUS SCAN

STITCHING FREE

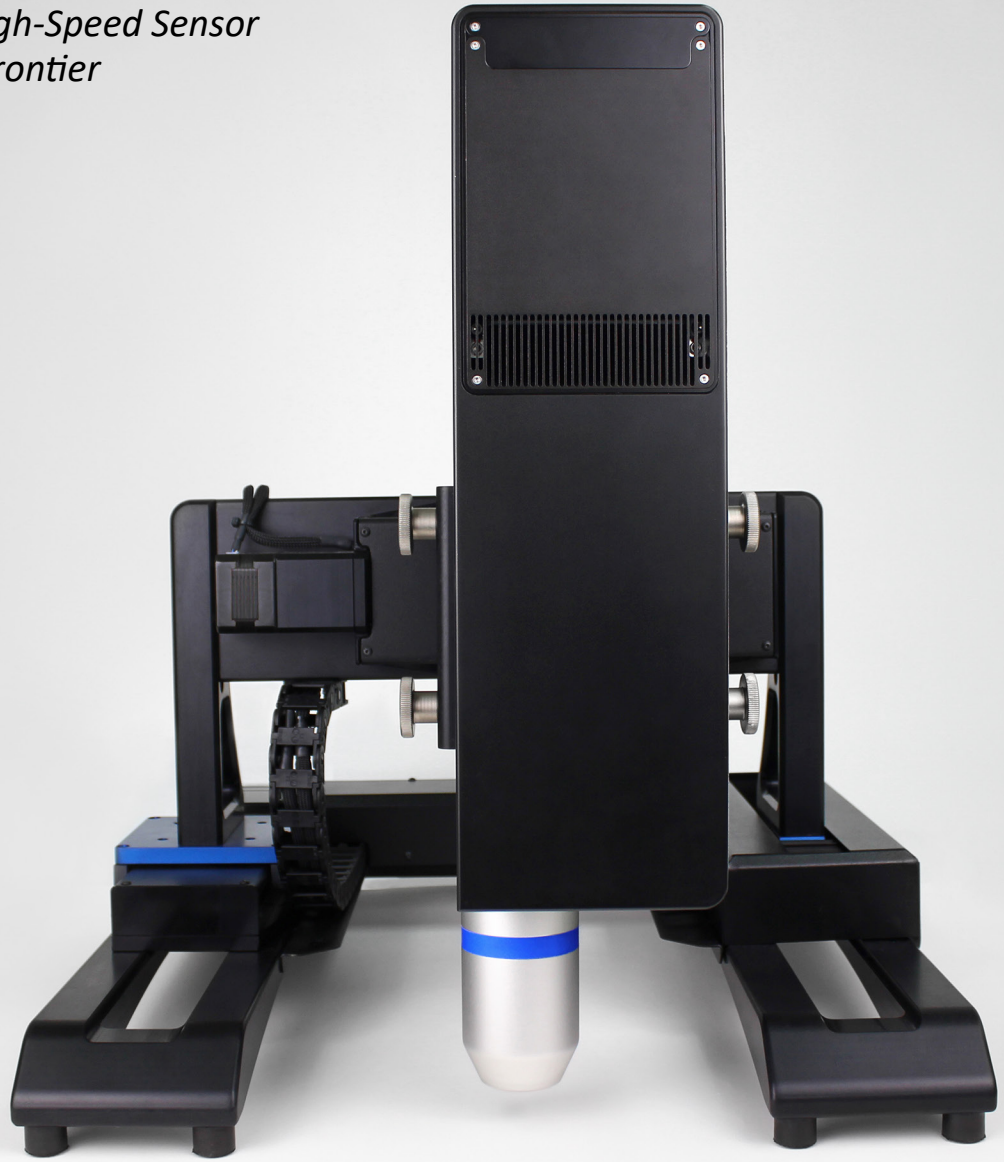
UNMATCHED SPEED

384,000 POINTS/SEC

EASILY TRANSPORTABLE

SMART COMPACT DESIGN

A portable system with High-Speed Sensor truly is a gateway to the frontier of profilometry.



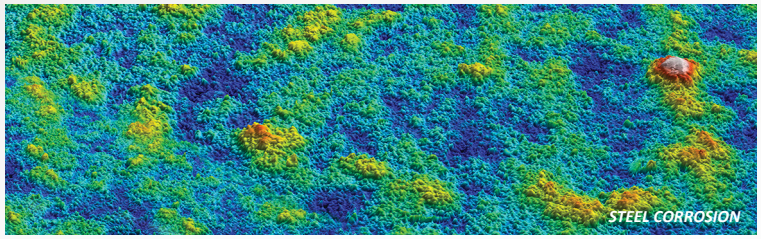
X-Y	Z	X-Y
STAGE TRAVEL	AXIS	MAX SPEED
100 x 100 mm	25 mm Manual	20 mm/s

THE POWER OF
CHROMATIC LIGHT

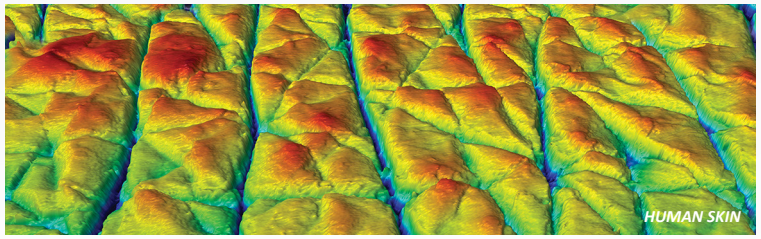
***NANOVEA** Non-Contact Optical Profilers are the ideal upgrade from traditional contact stylus and laser profilometers.*

2D & 3D NON-CONTACT

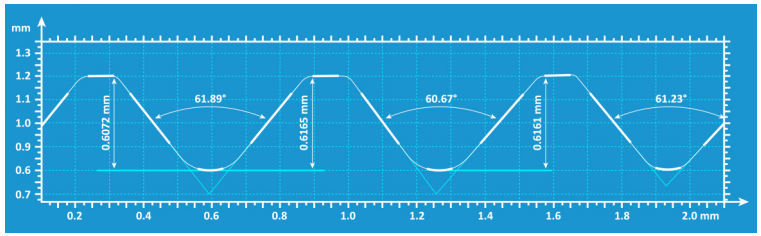
SURFACE MEASUREMENTS



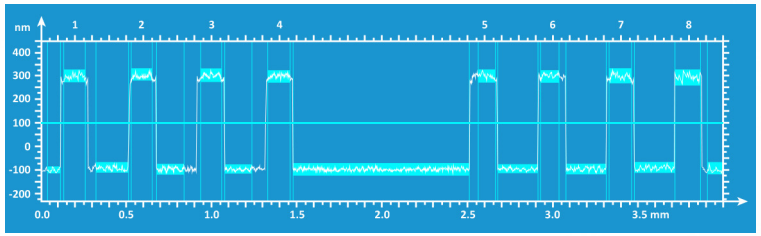
ROUGHNESS & FINISH



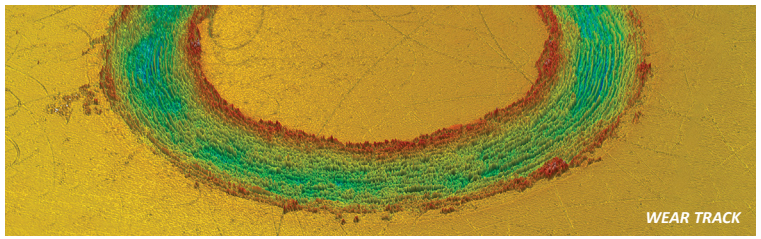
TEXTURE & GRAIN



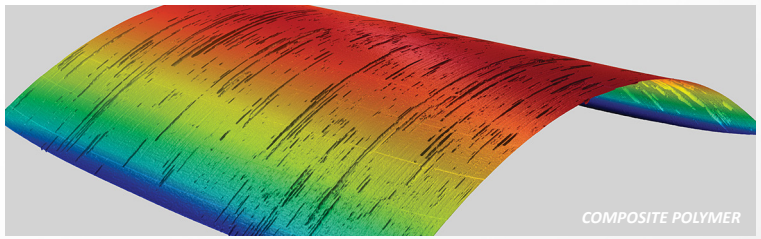
GEOMETRY & SHAPE



STEP HEIGHT & THICKNESS



VOLUME & AREA



FLATNESS & WARPAGE

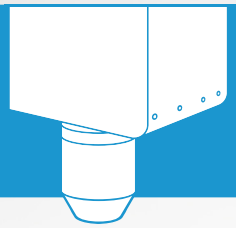
STANDARDS ISO 4287 / ISO 13565 / ISO 12085 / ISO 12780 / ISO 12181 / ISO 25178 & other ISO & ASME standards

ANY MATERIAL.

TRANSPARENT, REFLECTIVE OR DARK

1 nm MAX VERTICAL RESOLUTION

up to 87° MAX SURFACE ANGLE



HIGH-SPEED SENSOR

192 POINTS

	LS1	LS2	LS3
MAX HEIGHT RANGE	200 µm	0.95 mm	3.9 mm
WORKING DISTANCE	5.3 mm	18.5 mm	41 mm
HEIGHT REPEATABILITY Ra *	14 nm	21 nm	70 nm
LINE WIDTH	0.96 mm	1.91 mm	4.78 mm
PITCH	5 µm	10 µm	25 µm
LATERAL ACCURACY OF EACH POINT	1 µm	2 µm	5 µm
ACQUISITION RATE (points per second)	384 KHz	384 KHz	384 KHz

STANDARD SENSOR

SINGLE POINT

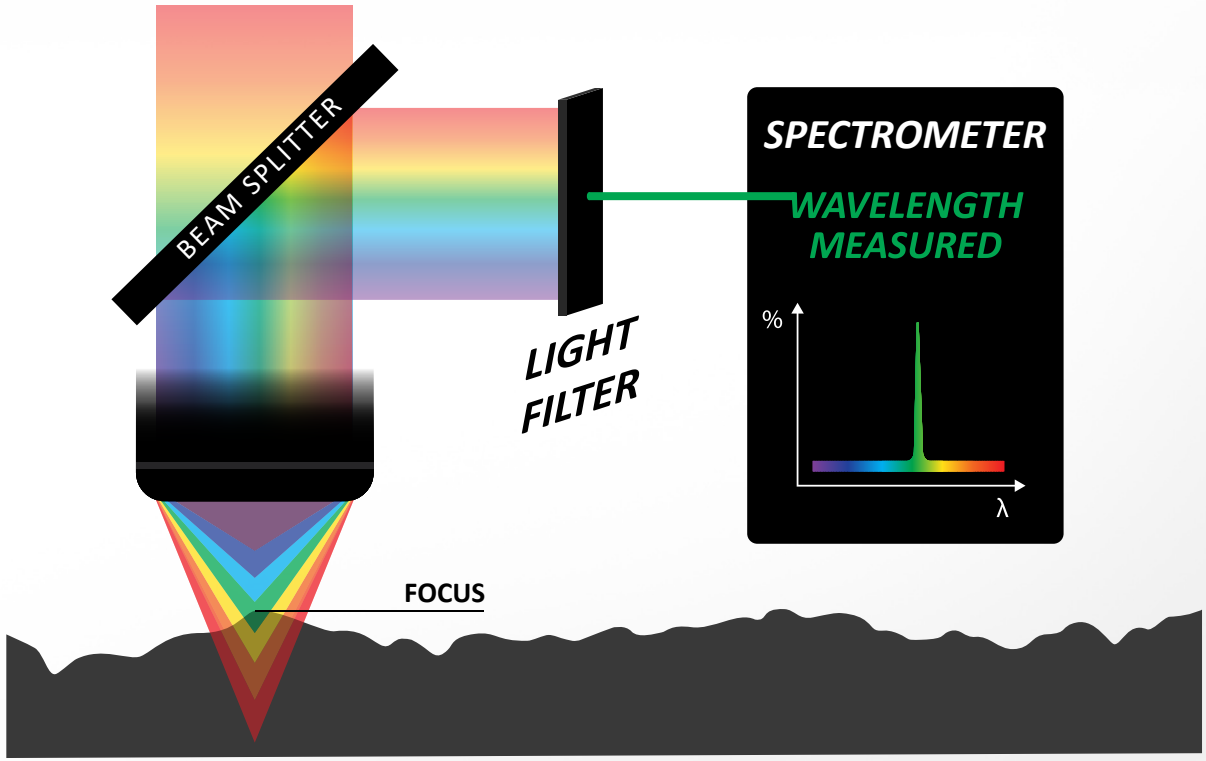
	PS1	PS2	PS3	PS4	PS5	PS6
MAX HEIGHT RANGE	110 µm	300 µm	1.1 mm	3.5 mm	10 mm	24 mm
WORKING DISTANCE	3.3 mm	10.8 mm	12.2 mm	16.5 mm	26.6 mm	20 mm
LATERAL X-Y ACCURACY	0.8 µm	1.7 µm	2.6 µm	4.6 µm	11.0 µm	11.0 µm
HEIGHT REPEATABILITY *	1.9 nm	5.4 nm	15.8 nm	31.6 nm	117.0 nm	237.2 nm

* Fixed point measurement on glass. Ra average height variation for 1,200 points (100 samplings).

HOW IT WORKS

Chromatic Light Technology works by using white light and a set of sphero-chromatic lenses to split the light into individual wavelengths, each with its unique vertical focal point or height. All wavelengths, with their corresponding heights, make up the height range measurement scale of a sensor.

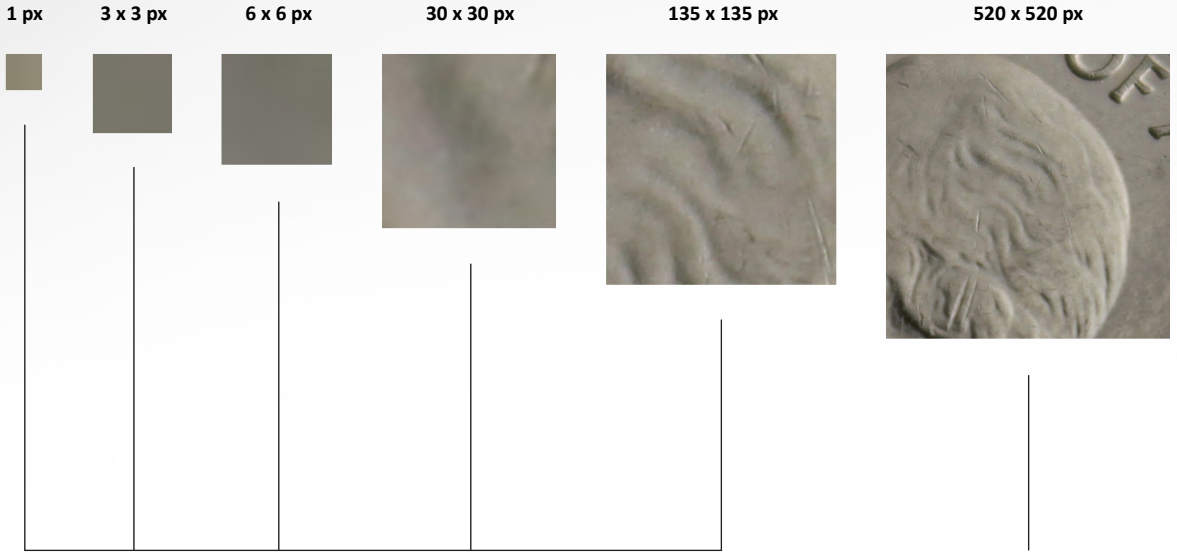
The spectrometer detects the wavelength with the highest intensity and processes its associated height measurement. During a full raster scan, this process takes only a fraction of a second and produces an accurate height map of the surface of interest.



NO COMPLEX ALGORITHMS • NO LEVELING REQUIRED • NO X-Y DATA STITCHING

THE PROBLEM WITH OTHER TECHNIQUES

LATERAL RESOLUTION vs LATERAL ACCURACY



NOT ENOUGH DATA TO CALCULATE FOCUS
NO PRACTICAL USE

PIXEL SIZE RESOLUTION: 2nm

FOCUS CAN BE CALCULATED
THE SMALLEST INCREMENT
FOR ANY PRACTICAL USE

EFFECTIVE ACCURACY: 1040 nm

THEM

To impress clients, companies often choose to define ***Display Resolution*** or ***Camera Pixel Size*** as lateral resolution. However, instruments that rely on camera pixel-based technology require complex algorithms to determine the focal point, which is problematic for analyzing complex surfaces.

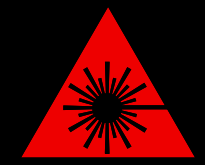
US

Chromatic Light provides lateral **accuracy** which is determined by the physics and is directly related to the spot size of the chromatic light source of the optical sensor.

LASER SCANNING CONFOCAL MICROSCOPE

VS

CHROMATIC LIGHT OPTICAL SENSOR



HEALTH HAZARD
Exposure to laser light reflectivity

SAFE WHITE LIGHT
No need for protective wear

INCONSISTENT LASER LIGHT WAVELENGTH
Inconsistencies in wavelength during scanning affect accuracy of results

UNIFORM & BROAD WHITE LIGHT SPECTRUM
Changes in wavelength are the data being collected

DECEPTIVE 'DISPLAY RESOLUTION'
Lateral & height accuracy are fixed by the objective lens making 'Display Resolution' insignificant

INDEPENDENT LATERAL & HEIGHT ACCURACY
Lateral & height accuracy can be mixed and matched to meet a broad range of scanning requirements

COMPLEX ALGORITHMS
Alpha blending algorithms stitch collected data layer by layer, grounding accuracy on complex calculations

NO ALGORITHMS
Physical wavelength reflected from the surface is measured directly for an accurate representative height map

STITCHING REQUIRED
Objective lenses have limited fixed fields of view
Stitching of larger areas compromises accuracy of the scan

NO STITCHING
Data points are collected continuously providing the same level of accuracy for both small and large areas

50x SLOWER
Data acquisition speed up to 7.9 KHz

50x FASTER
Data acquisition speed up to 384 KHz

LASER MICROSCOPE

OPTICAL SENSOR

LATERAL ACCURACY

For 50x objective (370 x 277 µm)

± 2% of measuring value
± 2% x 370 µm
≈ 15 µm

w/ stitching algorithms >> 15 µm

Step size:
= 5 µm

3x BETTER LATERAL ACCURACY

HEIGHT ACCURACY

≈ 0.2 + L/100 µm
≈ 0.2 + 950/100 µm
≈ 9.7 µm

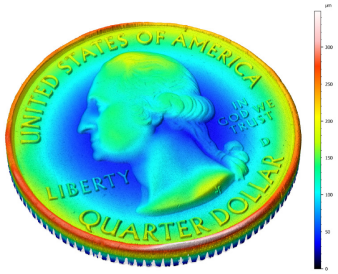
950 µm range
≈ 0.6 µm

16x BETTER HEIGHT ACCURACY

AREA TESTED

STITCHING REQUIRED

scans (25 x 25 mm)
25 000 µm / 370 µm x 25 000 µm / 277 µm
68 x 91
= 6188 scans

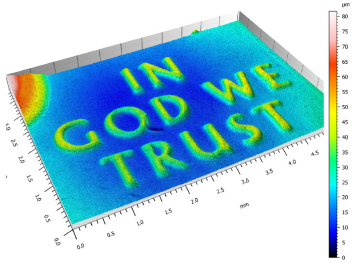


NO STITCHING
Consistent accuracy across any measurement size

1 SCAN

TEST TIME

6 sec per scan
+ 4 sec displacement & stitching
= 10 sec/scan x 6188 scans
= 61860 seconds (≈ 17 hours)



Scan time (25 x 25 mm)
= 29.6 seconds

2090x FASTER

NANOVEA

JR100

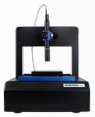
OPTICAL PROFILER

For pricing information,
please contact **sales@nanovea.com**

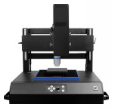
Also available in other configurations

PORTABLE
COMPACT

PORTABLE
STANDARD



COMPACT
STANDARD



MODULAR
STANDARD

MODULAR
LARGE AREA

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