

NANOVEA Jr100

***ULTRAFAST PORTABLE
OPTICAL PROFILER***



microworld®



SUPREME PROFILOMETRY

*Designed with Chromatic Light technology, Jr100 optical profiler
measures physical wavelengths and provides the highest accuracy
on any surface roughness, form and material.
Transparent or opaque.*

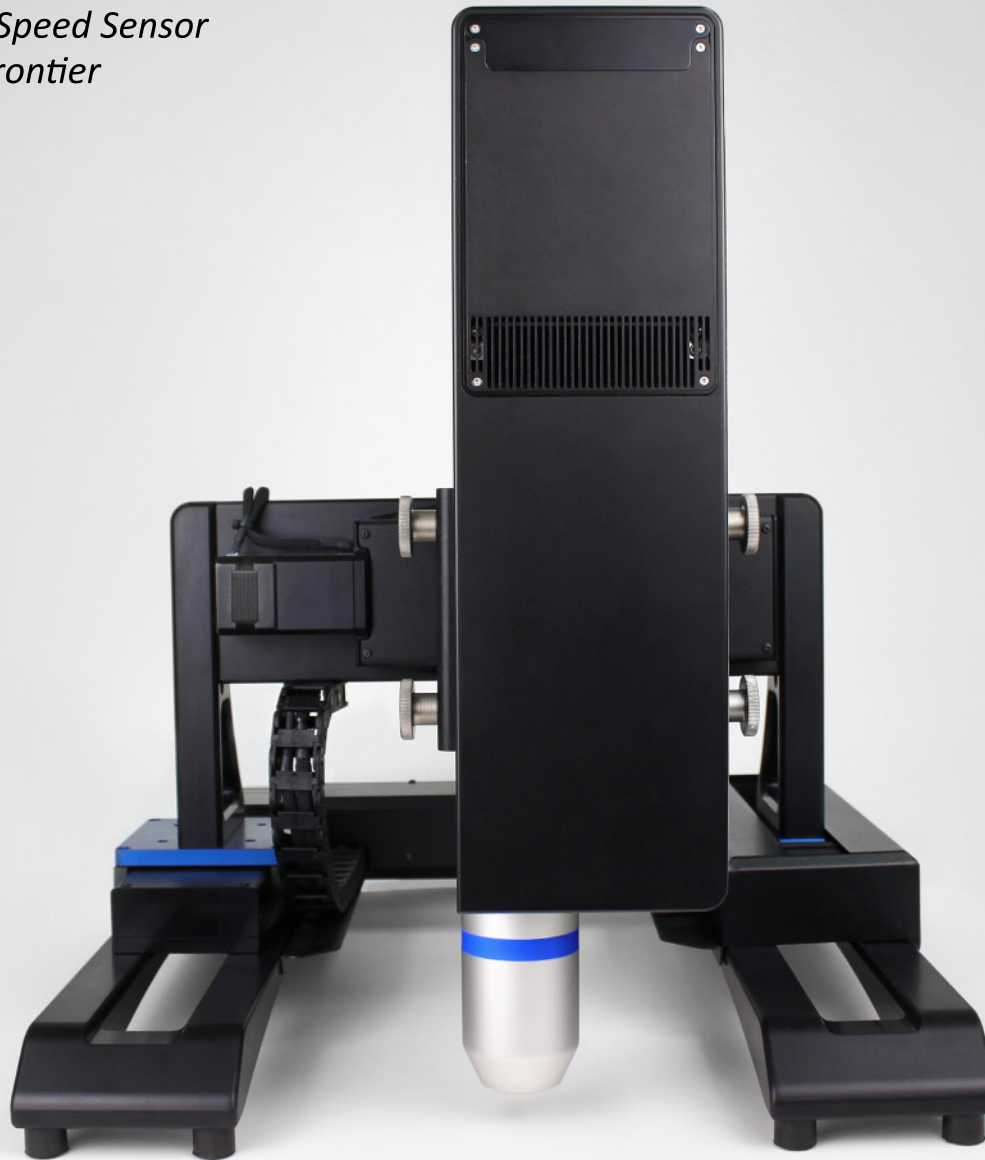
LAB QUALITY RESULTS
ANY PLACE, ANY TIME

100 mm CONTINUOUS SCAN
STITCHING FREE

UNMATCHED SPEED
384,000 POINTS/SEC

EASILY TRANSPORTABLE
SMART COMPACT DESIGN

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



X-Y
STAGE TRAVEL
100 x 100 mm

Z
AXIS
25 mm Manual

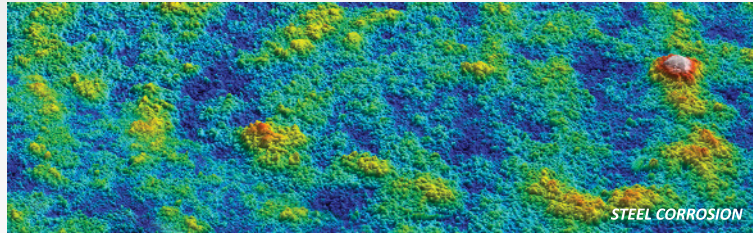
X-Y
MAX SPEED
20 mm/s

THE POWER OF CHROMATIC LIGHT

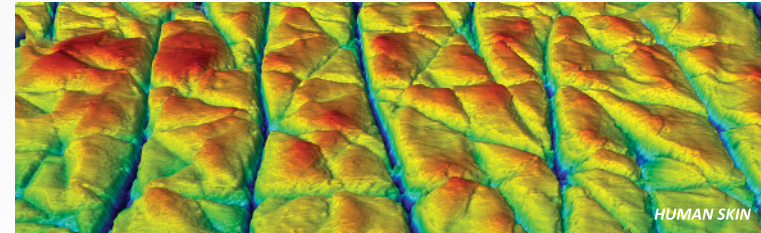
*NANOVEA's Non-Contact Optical Profilometers are the ideal upgrade
from traditional contact stylus and laser profilometers.*



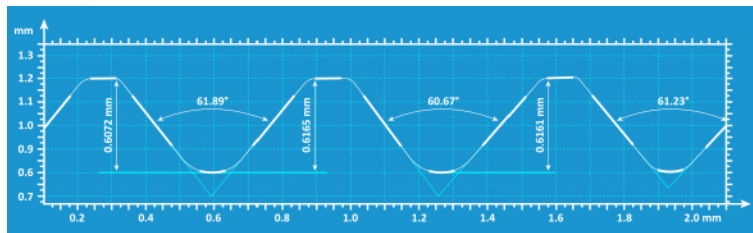
2D & 3D NON-CONTACT SURFACE MEASUREMENTS



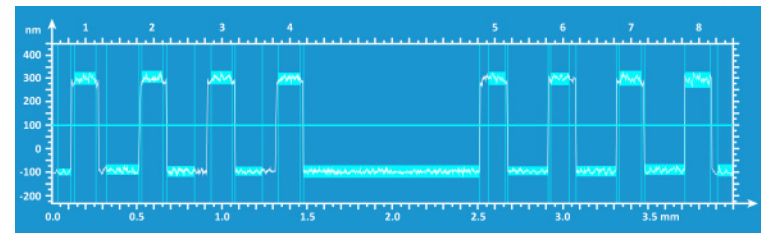
ROUGHNESS & FINISH



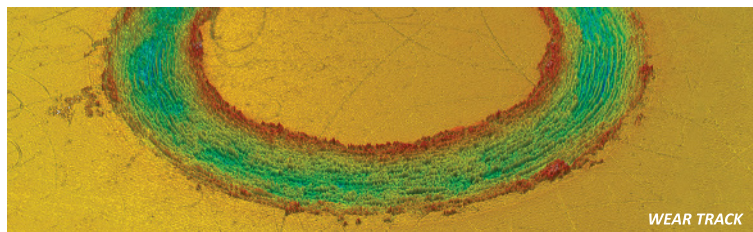
TEXTURE



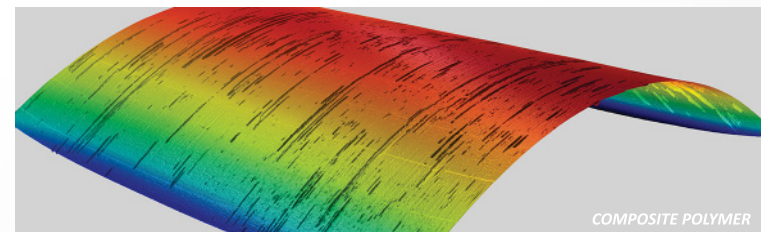
GEOMETRY & SHAPE



STEP HEIGHT & THICKNESS



VOLUME & AREA



FLATNESS & WARPAGE

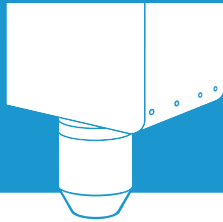
ANY MATERIAL. TRANSPARENT, REFLECTIVE OR DARK

1 nm

max vertical resolution

up to 87°

max surface angle



HIGH SPEED SENSOR

192 POINTS

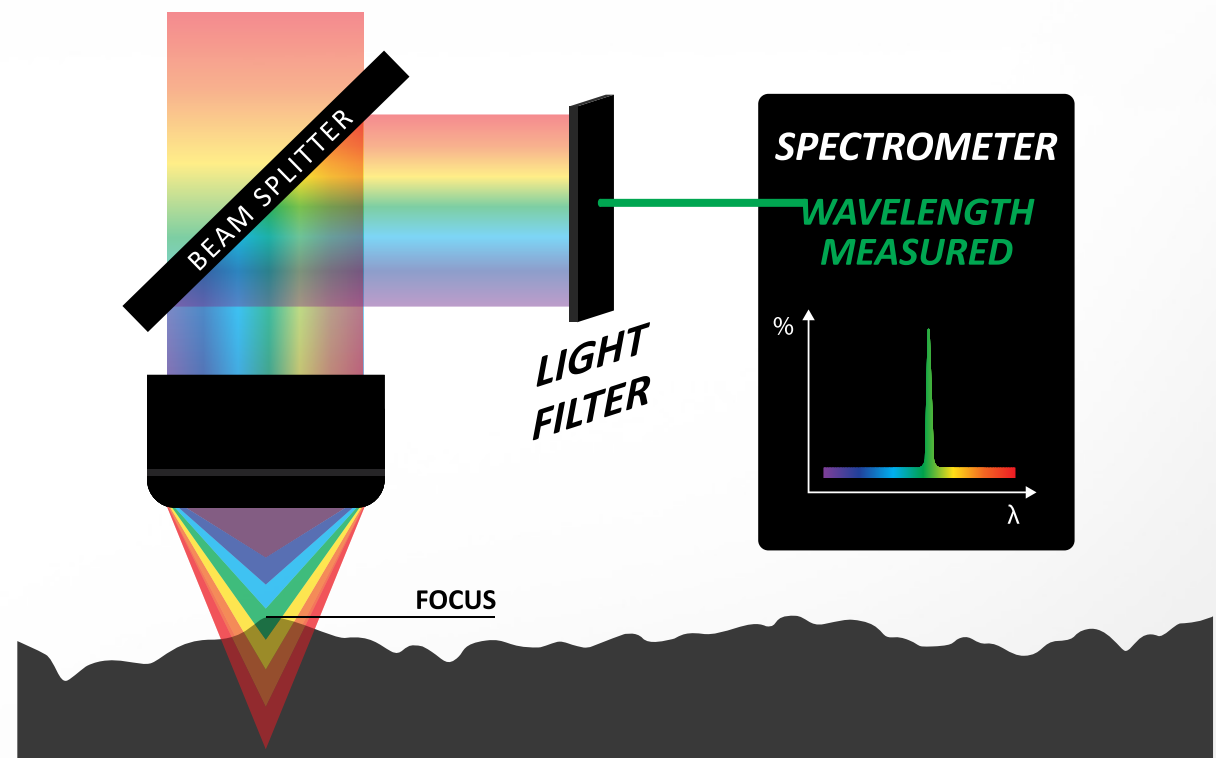
	<i>LS1</i>	<i>LS2</i>	<i>LS3</i>
MAX HEIGHT RANGE	200µm	0.95mm	3.9mm
WORKING DISTANCE	5.3mm	18.5mm	41mm
HEIGHT REPEATABILITY Ra*	14nm	21nm	70nm
LINE WIDTH	0.96mm	1.91mm	4.78mm
PITCH	5µm	10µm	25µm
LATERAL ACCURACY OF EACH POINT	1µm	2µm	5µm
ACQUISITION RATE (points per second)	384KHz	384KHz	384KHz

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

HOW IT WORKS

Chromatic Light Technology operates via a process that utilizes white light and a series of spherochromatic lenses. The spherochromatic lenses split the white light into individual wavelengths with unique vertical focal points (vertical distance from surface or height). All wavelengths and their corresponding heights make up the height range measurement scale of a sensor.

The wavelength with the highest intensity will be detected by the spectrometer which processes the wavelength's associated height. During a full raster scan, this process takes a fraction of a second and produces an accurate height map of the surface of interest.

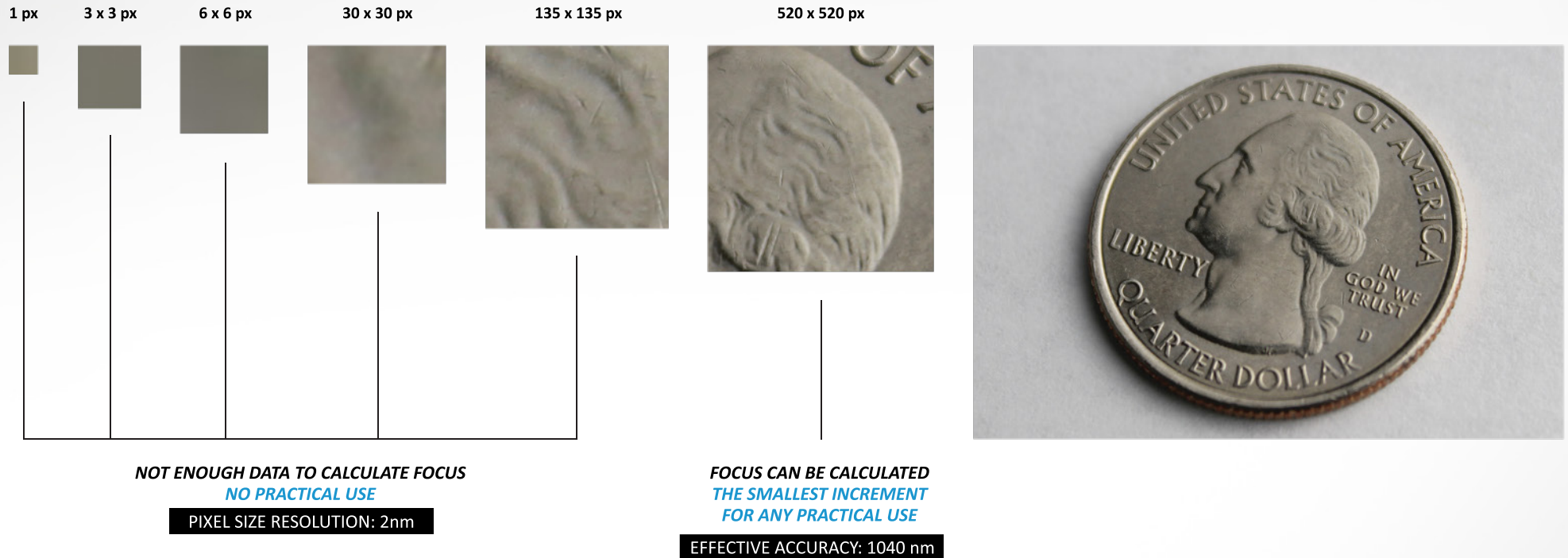


NO COMPLEX ALGORITHMS

NO DATA STITCHING WITHIN X-Y STAGE TRAVEL

THE PROBLEM WITH OTHER TECHNIQUES

LATERAL RESOLUTION vs LATERAL ACCURACY



THEM

Camera Pixel Size or **Display Resolution** is often defined as **lateral resolution** to impress clients. Instruments that use camera pixel-based technology require complex algorithms to determine the focal point of the instrument which is problematic for complex surfaces.

US

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

LASER SCANNING CONFOCAL MICROSCOPE



HEALTH HAZARD

Exposure to laser light reflectivity

INCONSISTENT LASER LIGHT WAVELENGTH

Inconsistencies in wavelength during scanning
affect accuracy of results

DECEPTIVE 'DISPLAY RESOLUTION'

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

COMPLEX ALGORITHMS

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

STITCHING REQUIRED

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

50x SLOWER

Data acquisition speed up to 7.9 KHz

VS

CHROMATIC LIGHT OPTICAL SENSOR

SAFE WHITE LIGHT

No need for protective wear

UNIFORM & BROAD WHITE LIGHT SPECTRUM

Changes in wavelength are the data being collected

INDEPENDENT LATERAL & HEIGHT ACCURACY

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

NO ALGORITHMS

Physical wavelength reflected from the surface
is measured directly for an accurate representative height map

NO STITCHING

Data points are collected continuously providing
the same level of accuracy for both small and large areas

50x FASTER

Data acquisition speed up to 384 KHz

LATERAL ACCURACY

For 50x objective (370 x 277 μm)

$\pm 2\%$ of measuring value

$\pm 2\% \times 370 \mu\text{m}$

$\approx 15 \mu\text{m}$

w/ stitching algorithms $\gg 15 \mu\text{m}$



Step size:

= $5 \mu\text{m}$

3x BETTER LATERAL ACCURACY

HEIGHT ACCURACY

$\approx 0.2 + L/100 \mu\text{m}$

$\approx 0.2 + 950/100 \mu\text{m}$

$\approx 9.7 \mu\text{m}$



950 μm range

$\approx 0.6 \mu\text{m}$

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

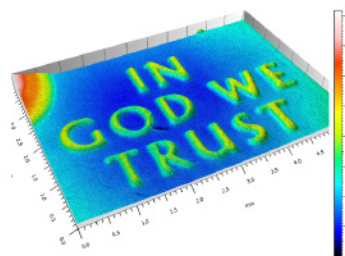
TEST TIME

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



microworld®

GRENOBLE - FRANCE

Tel : +33 (0)4 76 56 16 17

Email : contact@microworld.eu

www.microworld.eu

Also available in other configurations



PORTABLE



COMPACT



STANDARD



LARGE AREA



ZERO NOISE

