NANOVEA
Jr25

PORTABLE NON-CONTACT
3D OPTICAL PROFILER

microworld®

NANOVEA.COM

ULTIMATE VERSATILITY

Designed with Chromatic Light technology, which measures physical wavelength, Jr25 Profiler provides the highest accuracy on any roughness, any form, any material. Transparent or opaque.

FIRST TRULY PORTABLE
NON-CONTACT PROFILER

LAB QUALITY RESULTS
ON THE GO

DIFFICULT ANGLES
POSE NO PROBLEM

UNDER 5.5 kg
WEIGHT

With a fully rotational scanning head, compact design and complete portability, no surface is out of reach.

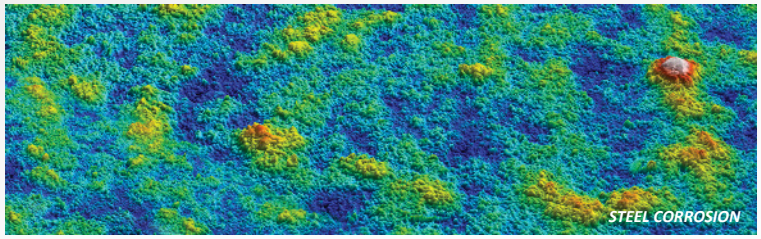
X-Y	Z	X-Y
STAGE TRAVEL	AXIS	MAX SPEED
25 x 25 mm	30 mm Manual	20 mm/s

THE POWER OF
CHROMATIC LIGHT

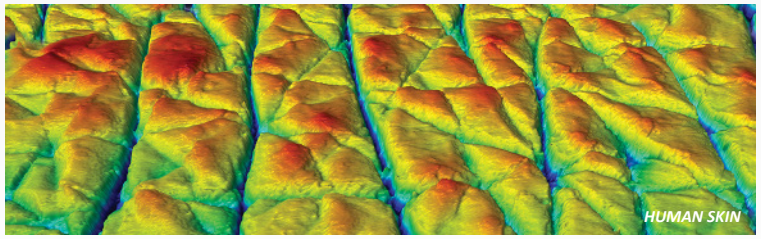
***NANOVEA**'s Non-Contact Optical Profilers are the ideal upgrade from traditional contact stylus and laser profilometers.*

2D & 3D NON-CONTACT

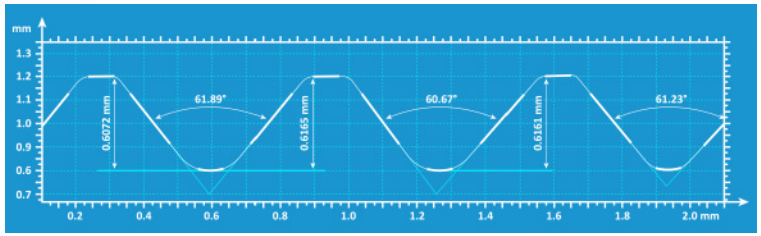
SURFACE MEASUREMENTS



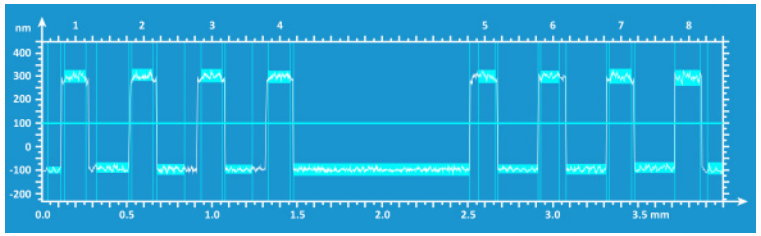
ROUGHNESS & FINISH



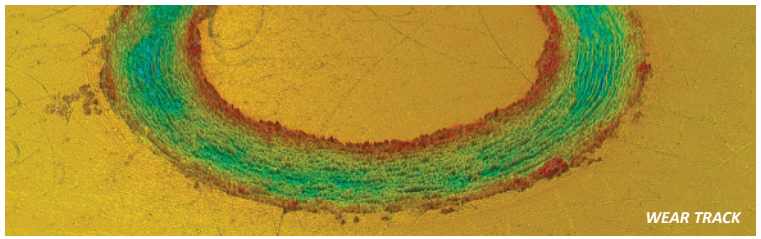
TEXTURE



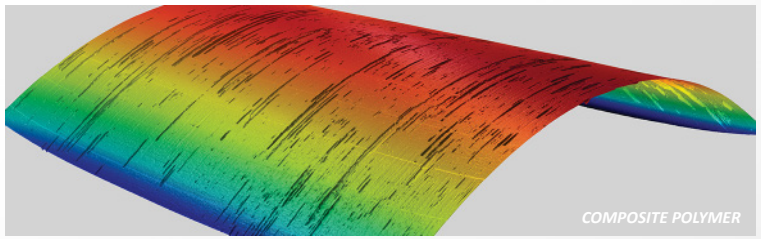
GEOMETRY & SHAPE



STEP HEIGHT & THICKNESS



VOLUME & AREA



FLATNESS & WARPAGE

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

ANY MATERIAL. TRANSPARENT, REFLECTIVE OR DARK

STANDARD SENSOR

SINGLE POINT

	PS1	PS2	PS3	PS4	PS5	PS6
MAX HEIGHT RANGE	110µm	300µm	1.1mm	3.5mm	10mm	24mm
WORKING DISTANCE	3.35mm	10.8mm	12.0mm	16.2mm	25.9mm	20mm
LATERAL X-Y ACCURACY	0.9µm	1.2µm	2.0µm	3.0µm	7.0µm	8.0µm
HEIGHT REPEATABILITY*	1.2nm	2.2nm	3.4nm	17nm	31nm	41nm

1 nm

max vertical resolution

up to 87°

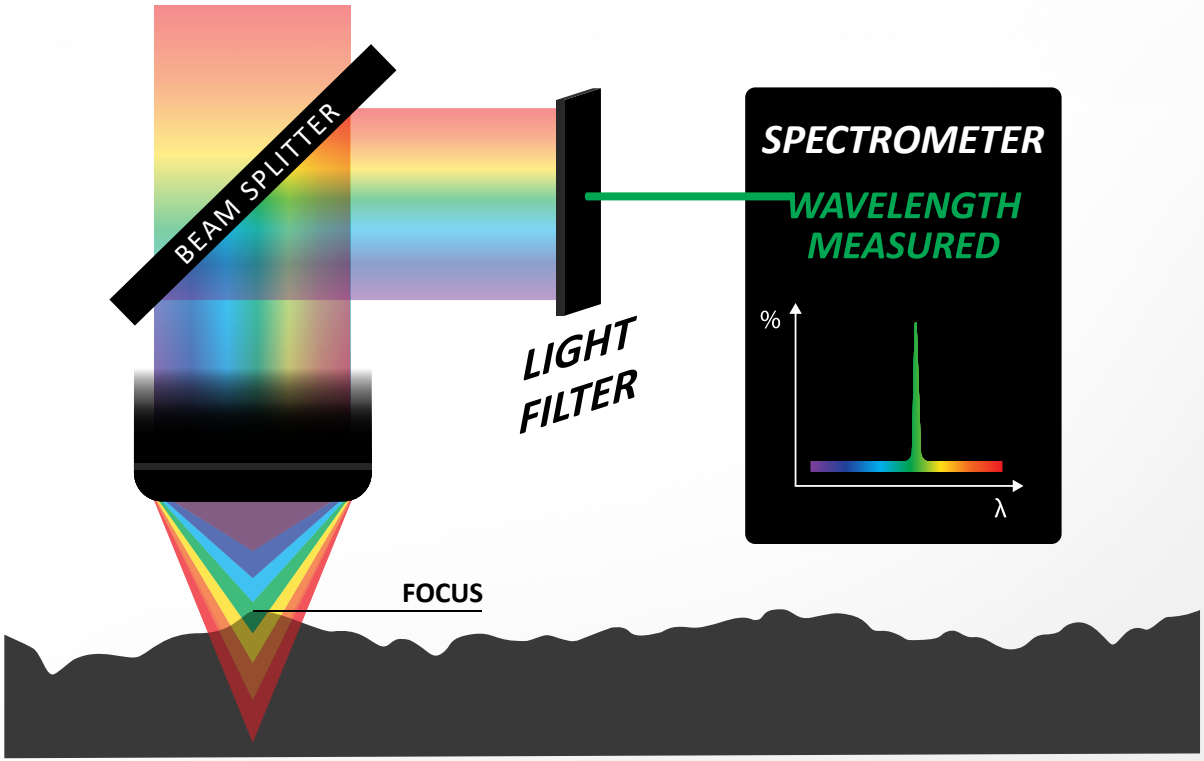
max surface angle

* 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.

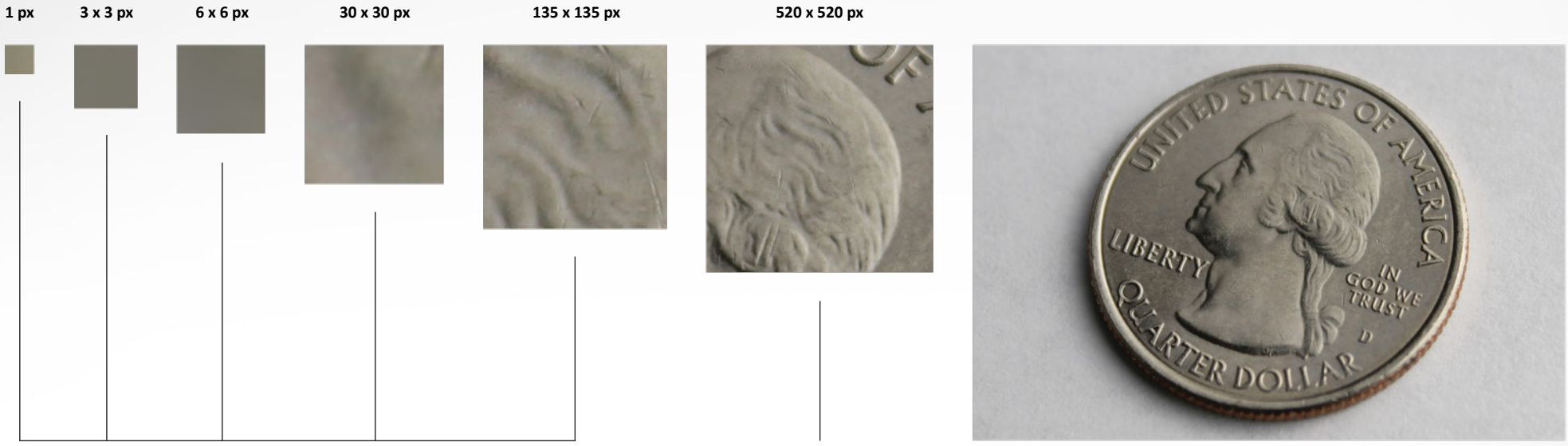


NO COMPLEX ALGORITHMS

NO DATA STITCHING WITHIN X-Y STAGE TRAVEL

THE PROBLEM WITH OTHER TECHNIQUES

LATERAL RESOLUTION vs LATERAL ACCURACY



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

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.

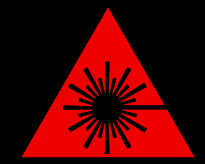
US

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

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

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

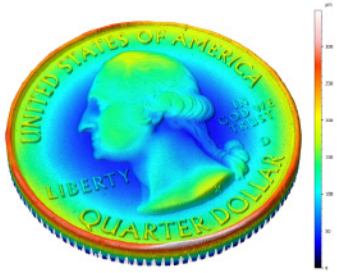
950 µm range
≈ 0.6 µm

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

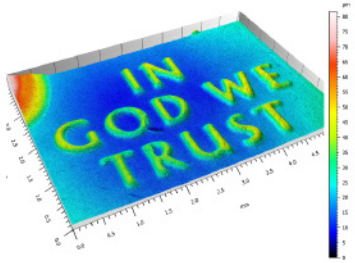


NO STITCHING
Consistent accuracy across any measurement size

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

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OPTICAL PROFILER

microworld®

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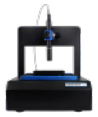
Also available in other configurations



COMPACT

HIGH SPEED

STANDARD

LARGE AREA

ZERO NOISE