

**Industry optical testing boosted
by LIFT wavefront sensing**

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WAVEFRONT
SENSORS

DEFORMABLE
MIRRORS

METROLOGY
SYSTEMS

ADAPTIVE OPTICS
SOLUTIONS

About Imagine Optic



- + Founded in 1996
Independent privately owned company
- + Sales 7,2M €
- + Employees ~ 60
- + Patent applications 30+

> 2 000 sensors deployed !!



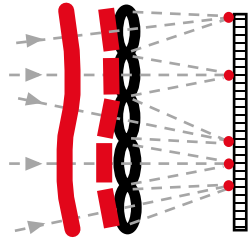
Member of:



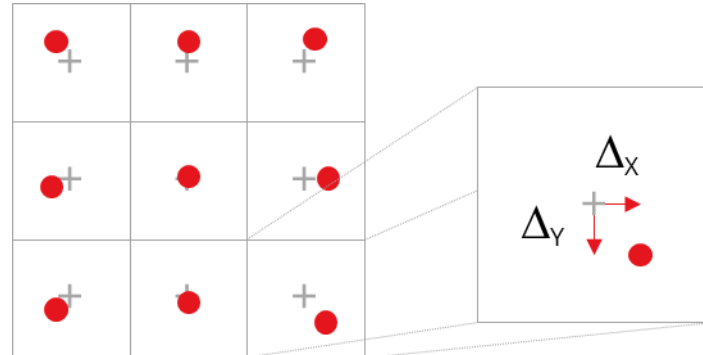
Certification:



Introduction



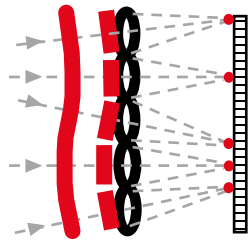
Std SH WFS



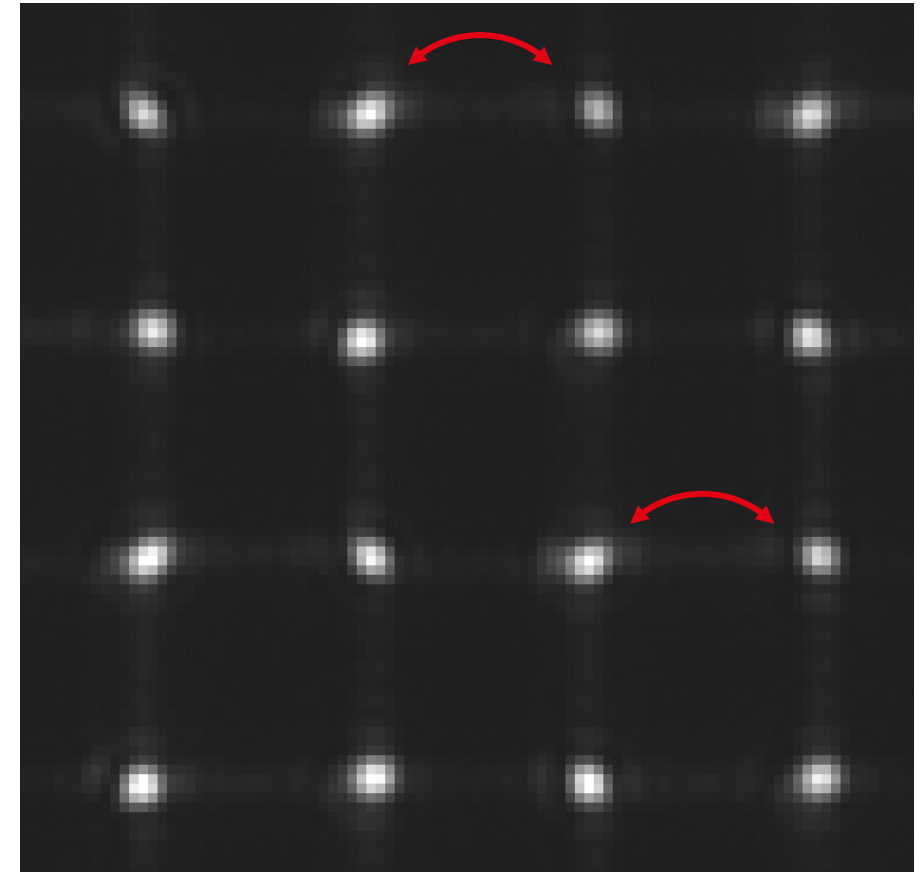
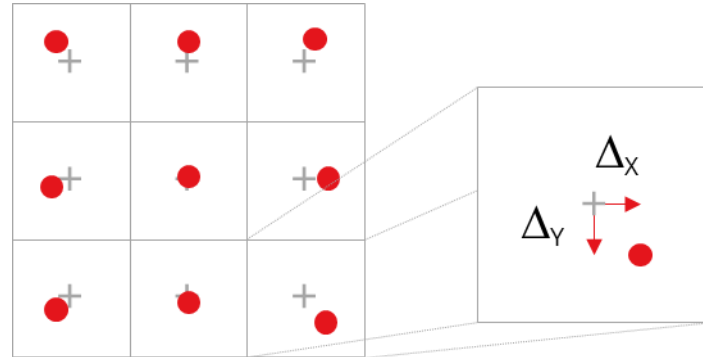
2 modes per μL

Slope X
Slope Y

Introduction

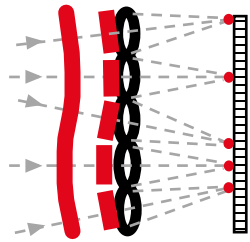


Std SH WFS

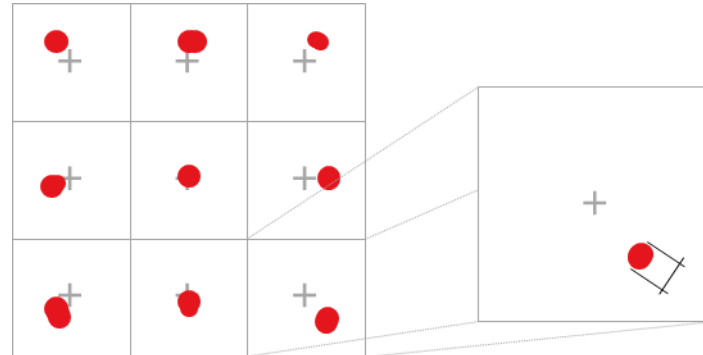


IS THERE ANYTHING MORE WE CAN DO ?

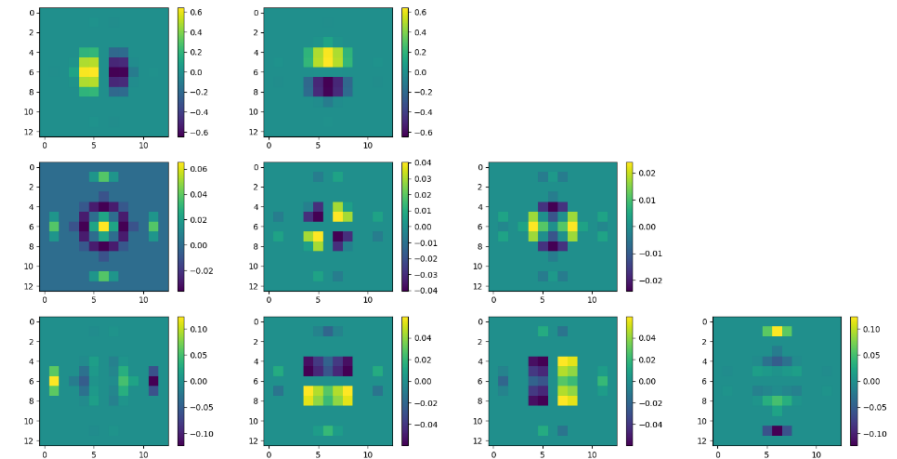
LIFT concept



LIFT WFS



9 modes per μL



WE CAN RECONSTRUCT COMPLEX PHASES AT THE MICROLENGTH LEVEL !

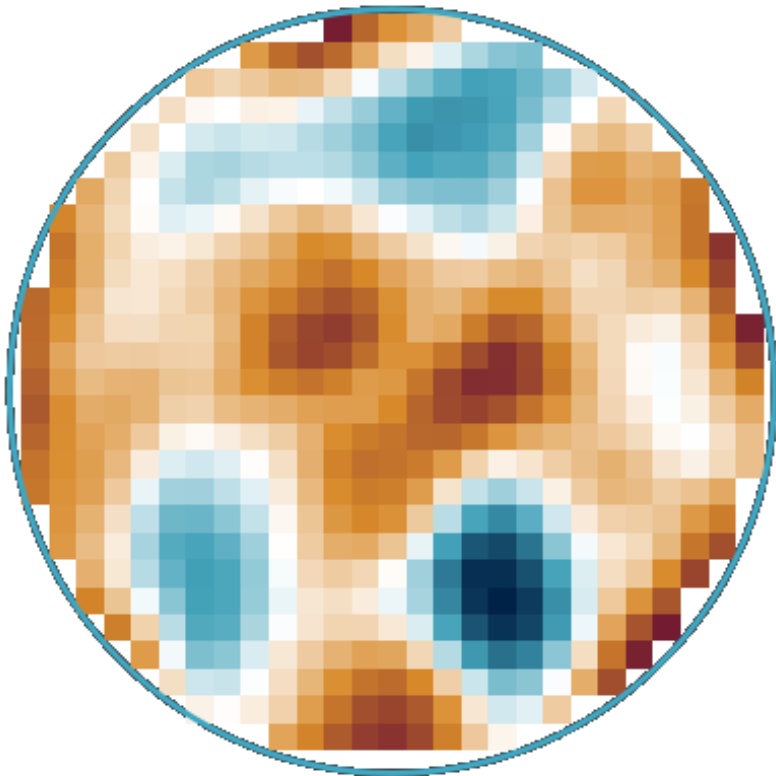
¹ S. Meimon and al ONERA, "Sensing more modes with fewer sub-apertures: the LIFTed Shack-Hartmann wavefront sensor", May 15, 2014 / Vol. 39, No. 10 / OPTICS LETTERS

² C. Plantet, and al, "Experimental validation of LIFT for estimation of low-order modes in low-flux wavefront sensing", 15 July 2013 | Vol. 21, No. 14, OSA

³ R. Gonsalves, "Small-phase solution to the phase-retrieval problem", Opt. Lett., Vol. 26, No 10, pp. 684-685 (2001)

LIFT performance evaluation

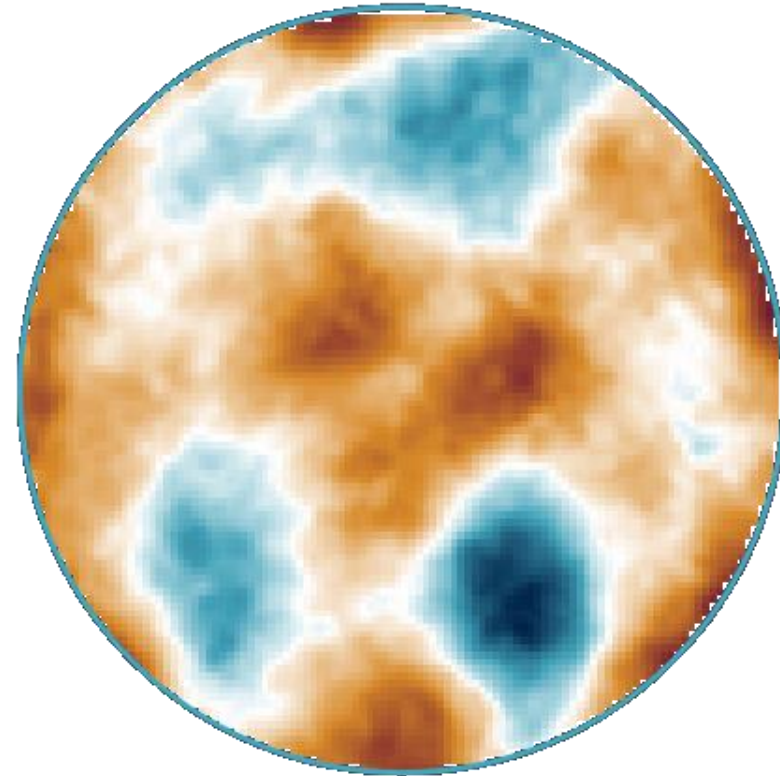
Std HASO SWIR



Resolution = 28 x 28
PV = 2.350 μm , RMS = 0.444 μm



HASO SWIR LIFT



Resolution = 112 x 112
PV = 2.552 μm , RMS = 0.452 μm

LIFT implementation



HASO LIFT

Wavefront sensor
Ultra High Resolution



The OEC®

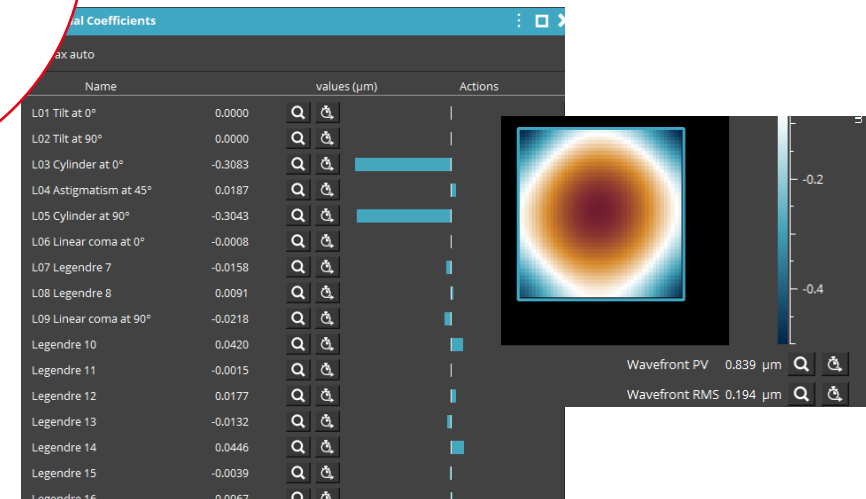
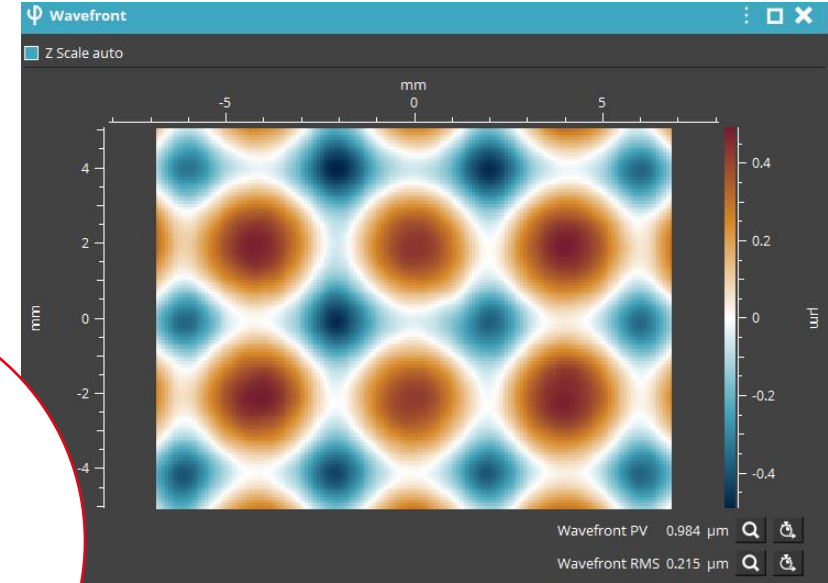
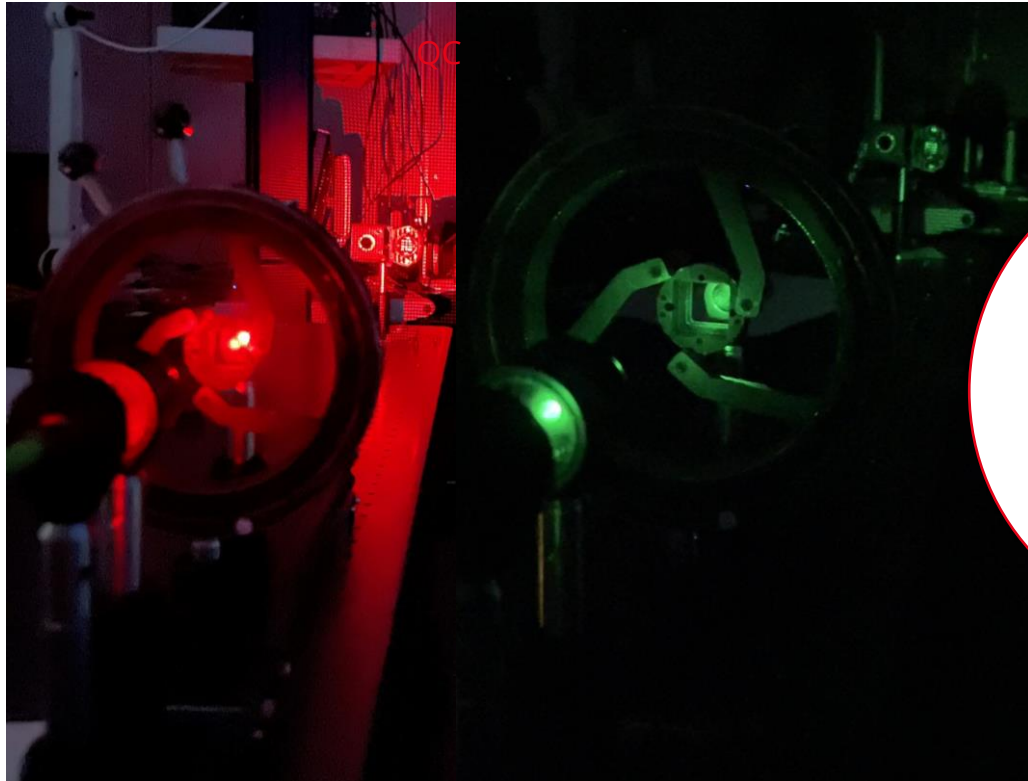
Modular system
for **lab and R&D**



MESO

Robust instrument
for **industry & production**

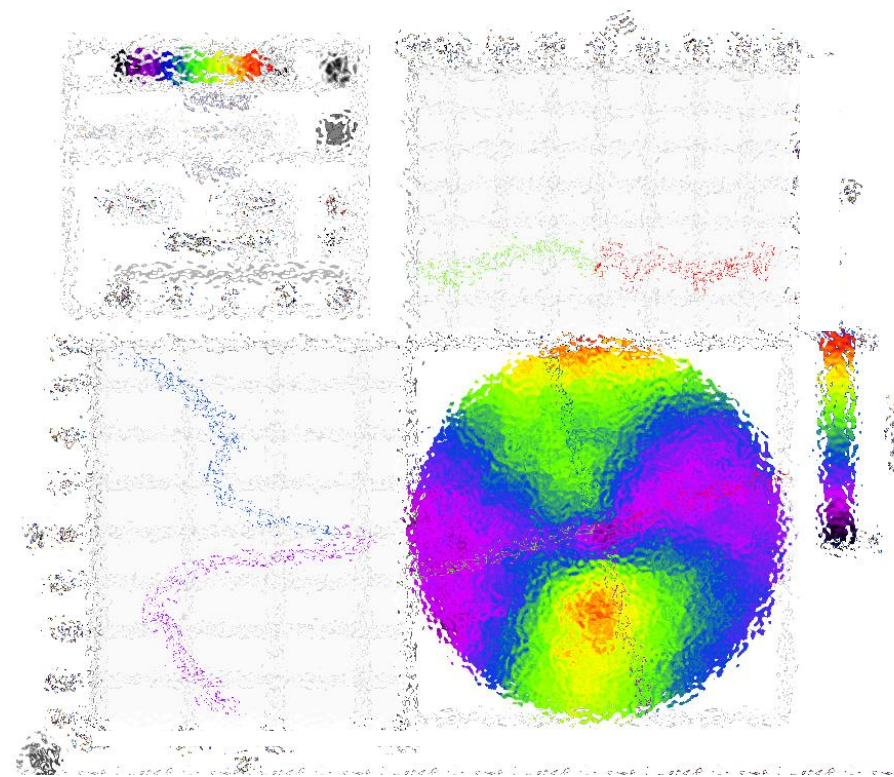
LIFT metrology for industry | Microoptics production



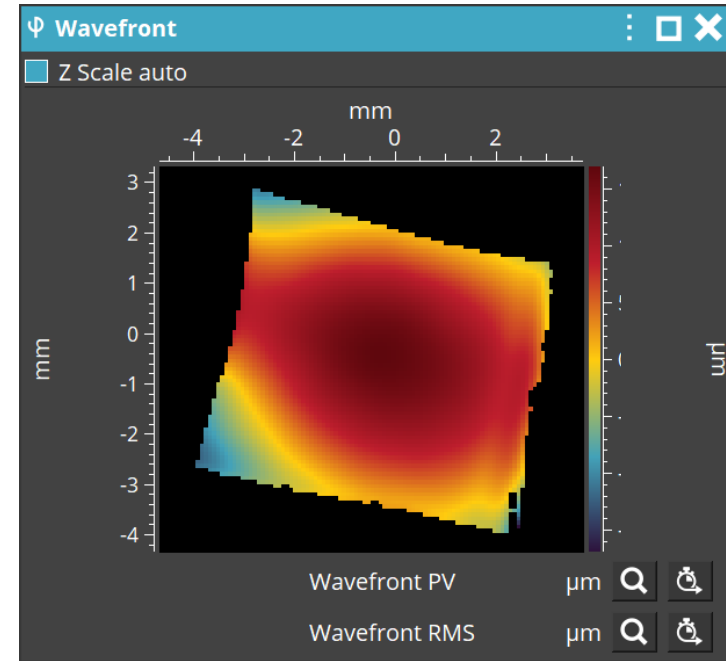
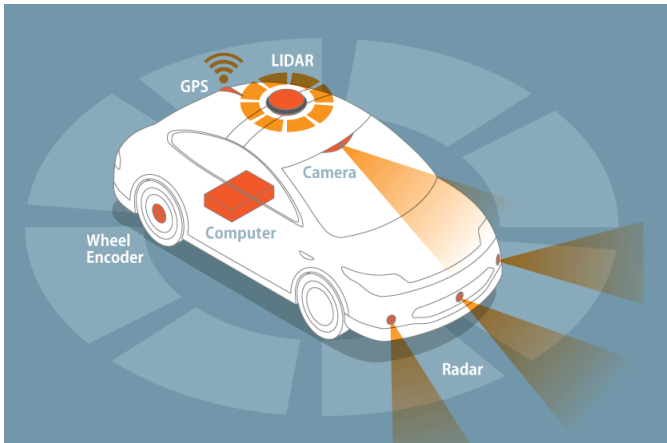
Optical testing **at multiple wavelengths**

LIFT metrology for industry | Microoptics production

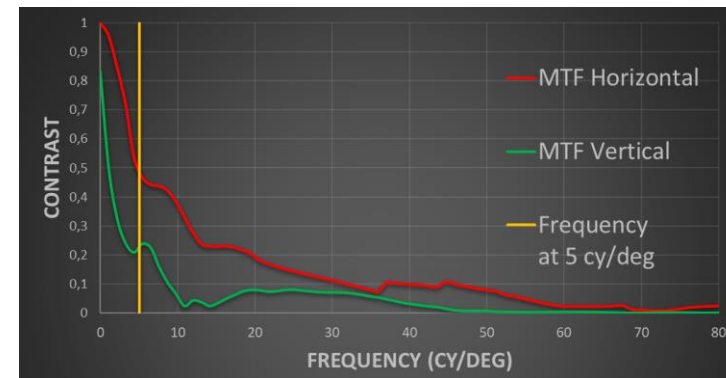
Surface quality testing
Injection mold validation



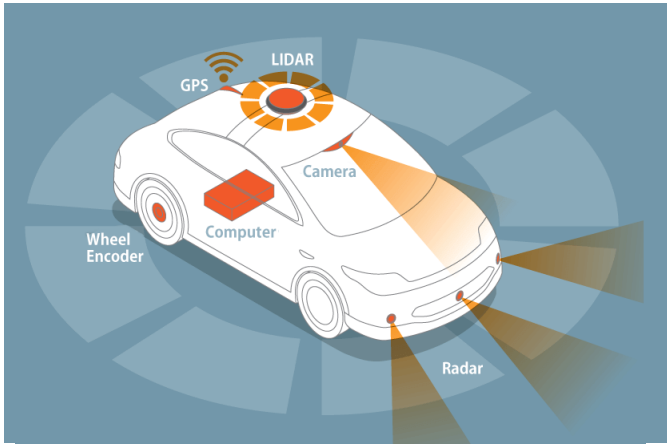
LIFT metrology for industry | Automotive sensors



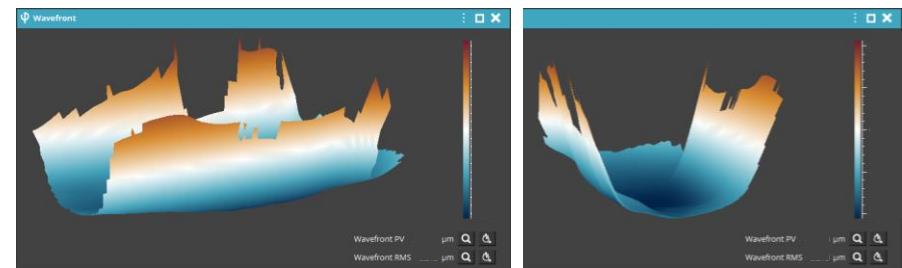
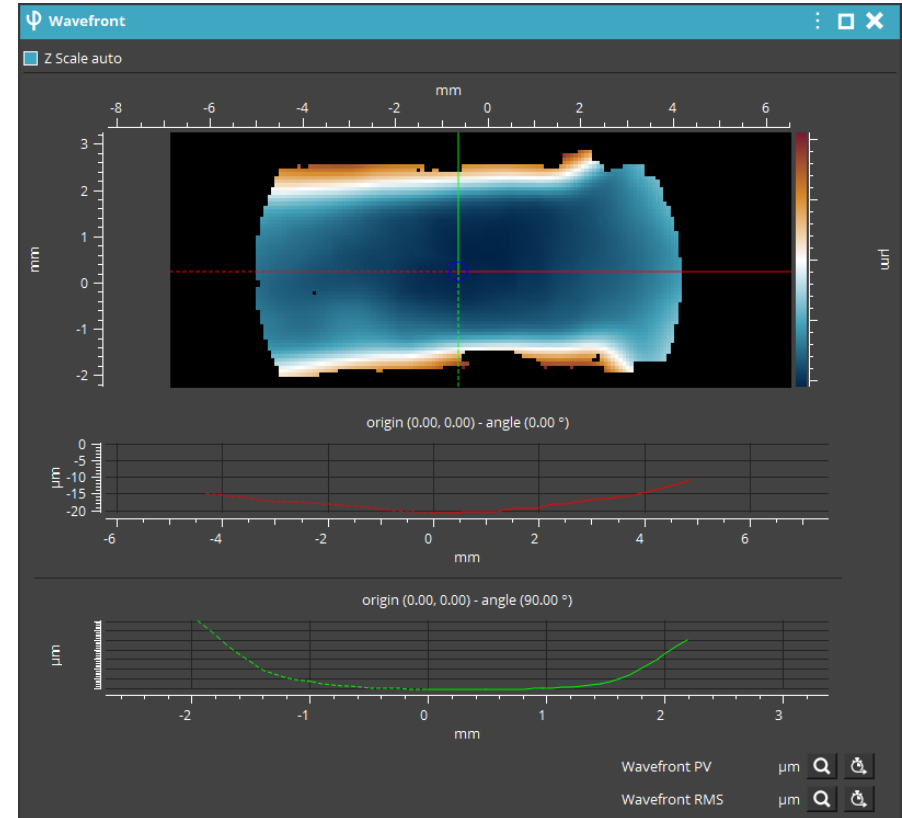
Surface shape in reflection
Mold dev. & validation
Optical quality in transmission
MTF measurement



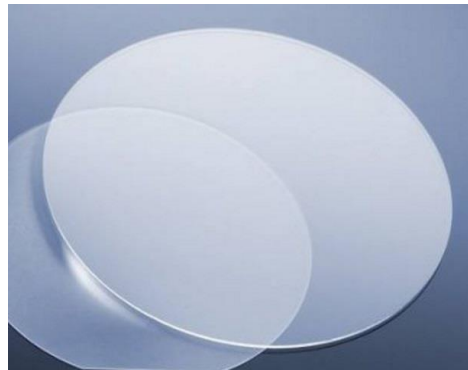
LIFT metrology for industry | Automotive sensors



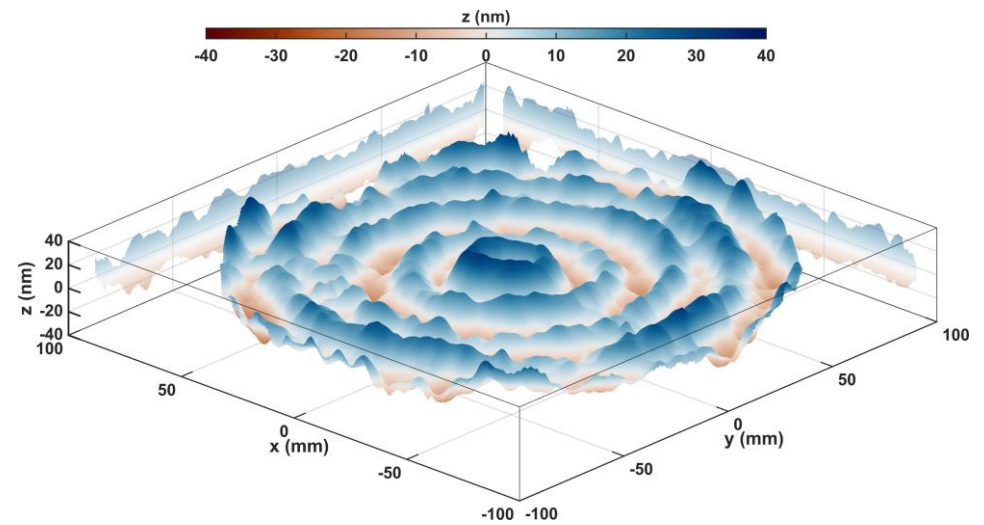
Transmission Wavefront Error



LIFT metrology for industry | Glass manufacturing



Polishing quality
Coating-induced stress



Conclusions

- + Imagine Optic has perfected the LIFT WFS reconstruction and implemented it in its line-up
- + LIFT provides up to **680 x 500 phase points** per pupil of analysis
- + **Achromatic** tech. for VIS and SWIR
- + Complex optics of from micro to large (10s μm up to 6"):
optical quality in transmission, **surface shape error** in reflection,

Thank you for your attention

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What can we do for you?

- + Bring our solutions to your metrology needs, share our knowledge
- + Happy to perform tests on your samples

What can you do for us?

- + Prepare your 2024 budget by keeping a line item for optical metrology!
- + Share your metrology needs for today and tomorrow! Help us design products to meet your needs