ASIA OPTICAL

Nanoimprinted All-inorganic Meta-optics

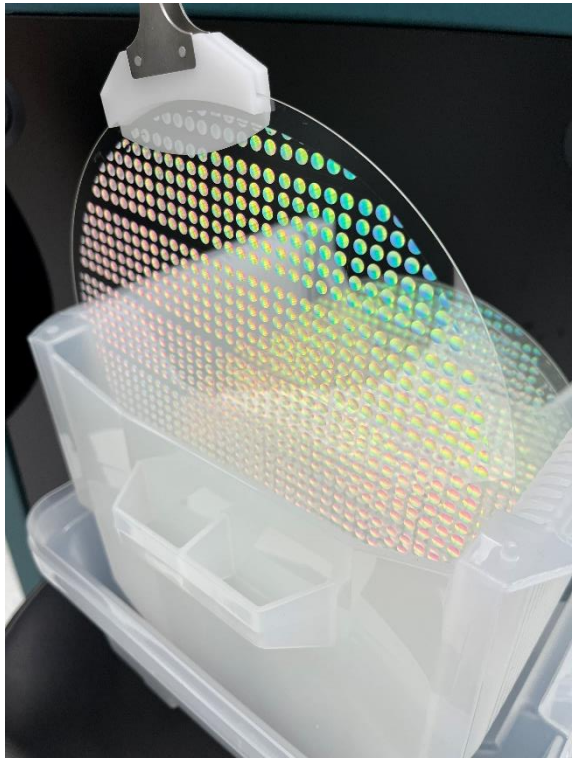
June 2025

Commercializing All-Inorganic Nanoimprinting Meta Optics

Asia Optical Co., Inc., a trusted supplier and manufacturer of full lineup of optical elements/modules, complete cameras, distance meters, optical sites for over 40 years has teamed up with Myrias Optics, Inc., a pioneer in all-inorganic nanoimprinted metaoptics.

Asia Optical Co., Inc.
https://www.asia-optical.com/index.php?lang=en

Myrias Optics, Inc.
https://myriasoptics.com/



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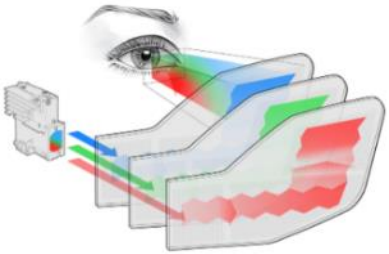
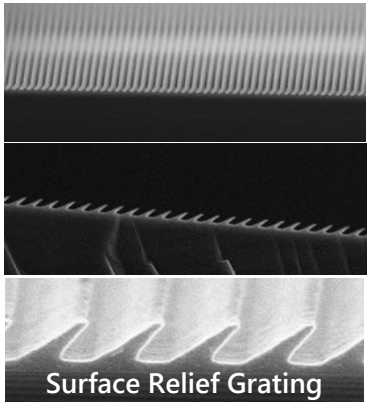
Meta Optics – Applications

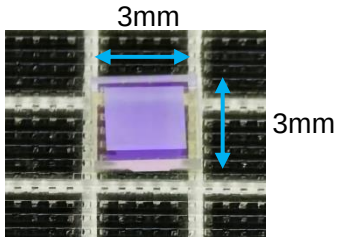
SRG Wave Guide AI Glasses (Surface Relief Grating)



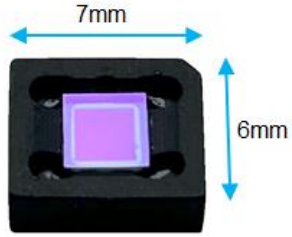


1. Thin and Light
2. Wider FOV
3. Lower Production Cost
4. Physically Stable
5. Flexible Design

IR lenses Illumination and Imaging



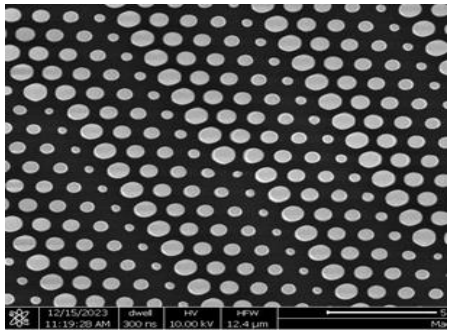
Meta-Lens

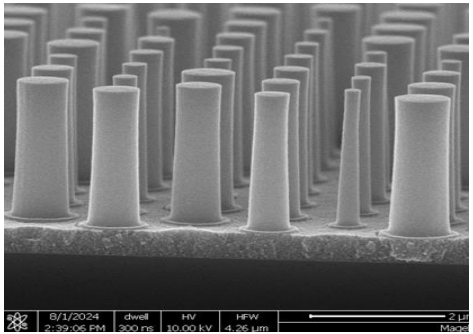


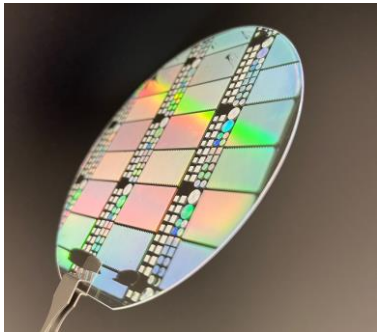
IR Projection Module

1. Ultra Small Lens Unit
2. Lower Production Cost
3. Physically Stable
4. Flexible Design

Meta Optics – IR Projection Lens

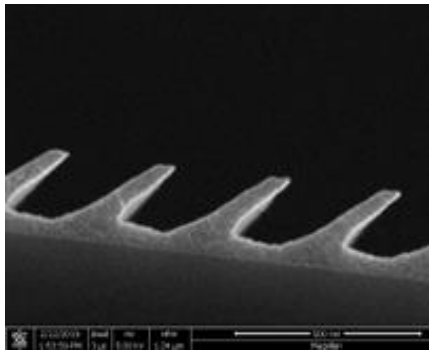


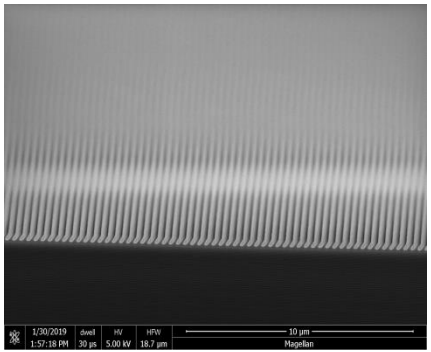


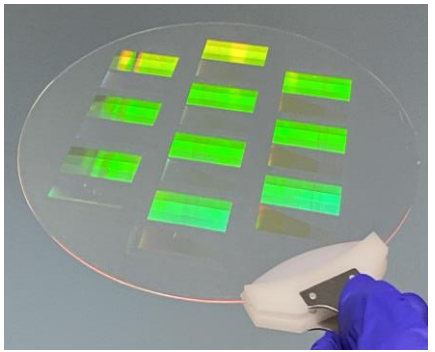


1. Ultra Small Lens Unit : Integration of collimator lenses and a DOE makes it a single plate lens.
2. Unrivaled Lower Cost : Our unique nano-imprinting process shorten production time significantly.
3. Physically Stable : All inorganic material (TiO_2) gives high stability, reliability and longer lifetime.
4. Flexible Design : High and tunable RI, design can be more flexible.

Meta Optics – SRG Wave Guide for AI Glasses



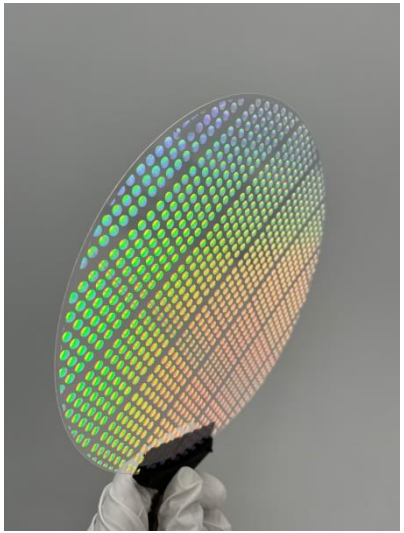




1. Thin and light : Much lighter and thinner compared with geometric wave guide.
2. Wider FOV : Our unique all inorganic material (TiO_2) gives high RI up to 2.3.
3. Unrivaled Lower Cost : Our unique Nano imprinting process shorten production time significantly.
4. Flexible Design : High and tunable RI, design can be more flexible.

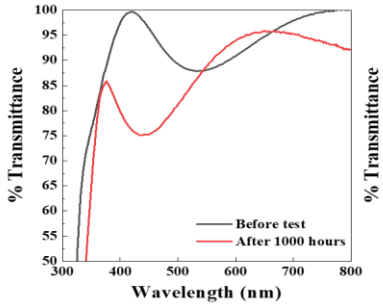
All Inorganic Composite: Performance and Stability

Our meta-structures are comprised entirely of inorganic materials such as TiO_2.
After calcined and ALD (Atomic Layer Deposition) back filled, RI (Refractive Index) reaches 2.3 and it allows higher aspect ratio of meta structures.
Inorganic materials are very stable to heat, cold, humidity and UV.

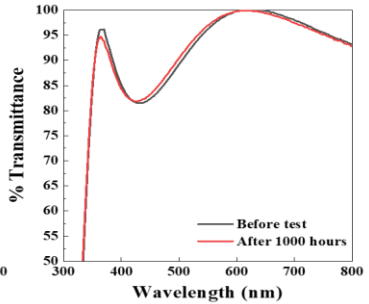


- High refractive index (up to 2.3)
- RI fine-tunable (1.9~2.3)
- Higher RI provide higher efficiency
- Thermally stable
- Weather resistant
- No deteriorate under UV exposure
- Good mechanical strength

Traditional TiO_2-Polymer



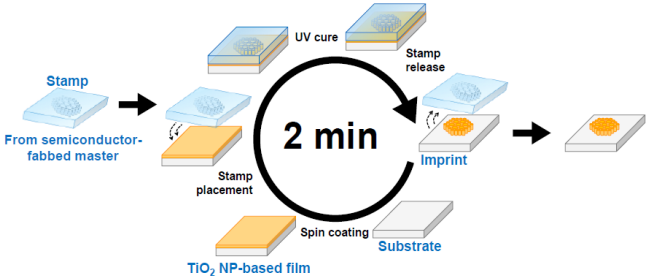
AO-Myrias All Inorganic



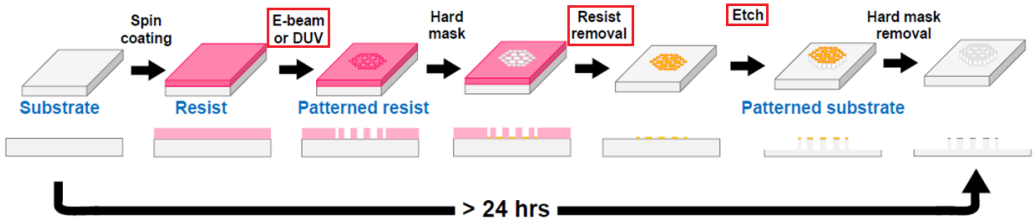
No change in Myrias films after weathering test.
Polymer based films have large drop in transmittance

Printed Meta Optics: Unrivalled Lower Cost

Our production process is a unique additive nanoimprint manufacturing process, similar to molding. We do not use a subtractive “etching” process, commonly referred to as semiconductor-fab processing. This unique and proprietary process is faster, more scalable, and results in highly reliable and environmentally stable devices with higher overall performance.



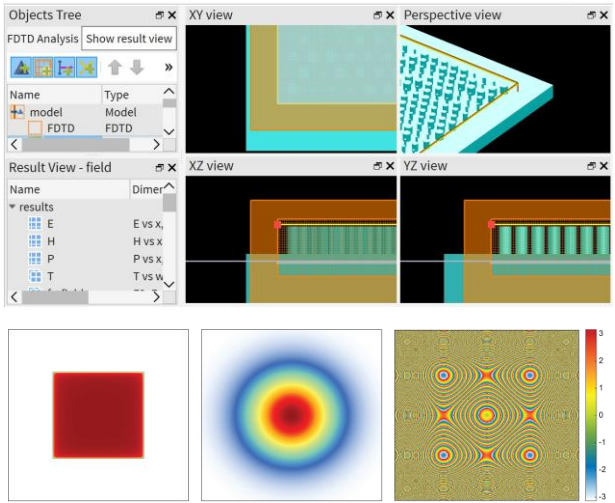
2 minutes
Nano-Imprinting process



Time consuming
Semiconductor-fab process

Fast Iteration Cycle: Rapid Mastering

We have closed loop design and simulation capabilities utilizing a proprietary design environment and state of the art FDTD simulation enabling rapid prototyping and product validation for our customers



- Design:

Closed loop design and simulation capabilities utilizing a proprietary design environment and state of the art FDTD simulation capabilities to create and optimize a wide range of optical components.

- Mastering and Prototyping

A critical element for fabrication of nanoimprinted optics is the ability to create accurate masters for replication. We have a range of mastering capabilities and partnerships ranging from small scale rapid prototyping with 3 weeks cycle time, to manufacturing of large area production masters on 300mm substrates.

- Manufacturing

Transition from prototypes to volume manufacturing is quick and scalable with a range of processes already demonstrated on 200mm production tools.

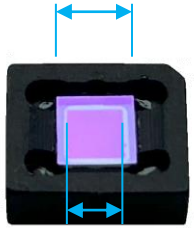
Production Sample Available: IR Dot Projection Meta-lens

Production samples are available for your evaluations.
The sample is a meta lens for IR dot projector, which replaces several conventional optical elements including DOE element with a thin single meta-lens.
IR projector module with VCSEL is also available.

IR Dot Projector Pattern

Dot Projector Module

Meta-lens Size 3x3mm x 0.5mm



Meta-lens Active Area 2.2 x 2.2mm

Wavelength	:	940nm
Focal Length	:	3.1mm(15K), 3.35mm (18K)
Active Area	:	2.2x2.2mm
Meta-lens Size	:	3x3mm x0.5mm
Module Size	:	6x7mm
FOV (Projection Angles)	:	75x83 deg
Diffractive Efficiency	:	63%
Center Contrast Ratio (Peak/Min)	:	Mean 29 (Min 18 ~ Max 52)

Thank you

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