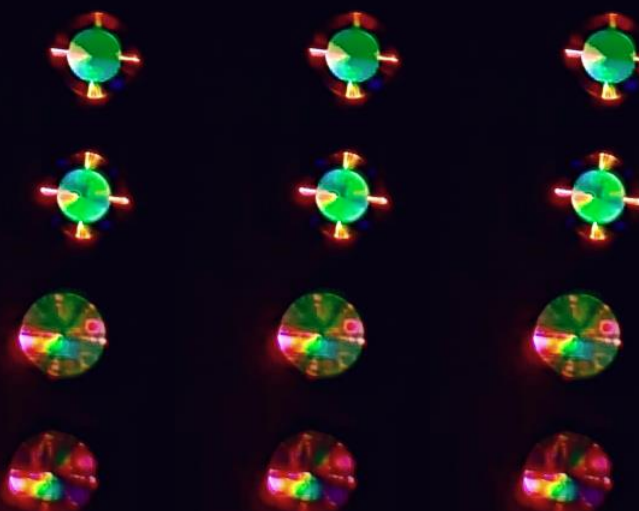


94% efficiency MOE lens / metalens demonstrated

Technical specifications to support press release dated 12 October 2021 from NIL Technology



The press release is found [here](#).

Read more about meta optical elements at nilt.com/technology/metalenses/.

NILT has designed, built, and characterized multiple Meta Optical Element (MOE) lenses with up to 94% absolute efficiency.

The demonstrated high efficiency makes the MOE lenses ideal for sensing and machine vision applications across multiple, innovative markets: consumer electronics, industrial, medical and automotive.

These lenses are ready to be mass produced to customers specifications.

NILT MOE lenses can be designed and prototyped for both simple and complex phase functions.

NILT MOE can be customized at wavelengths in the NIR and SWIR bands

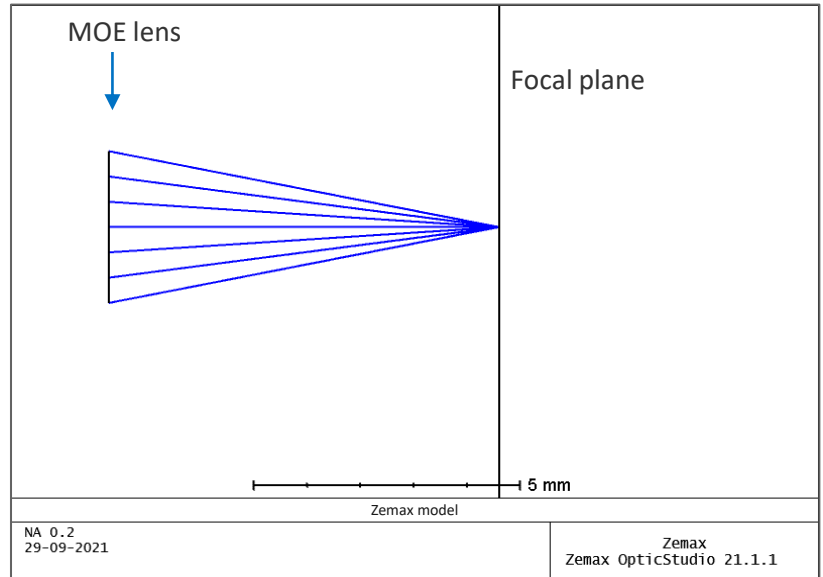
Specifications of high efficiency MOE

Parameter	Units	Specifications	Note
Numerical aperture		0.2	
Wavelength	[nm]	940	
Effective focal length	[mm]	7.35	
Lens diameter	[mm]	3.0	
Absolute focusing efficiency	[%]	94	Relative to incident intensity, on axis
Relative focusing efficiency	[%]	98	Relative to transmitted intensity, on axis
Thickness (wafer)	[mm]	1.1	
Material		Si/Glass	AR coating on non-structured side
AR coating, transmission	[%]	>99	Transmission through AR coated surface

Focal point of MOE lens

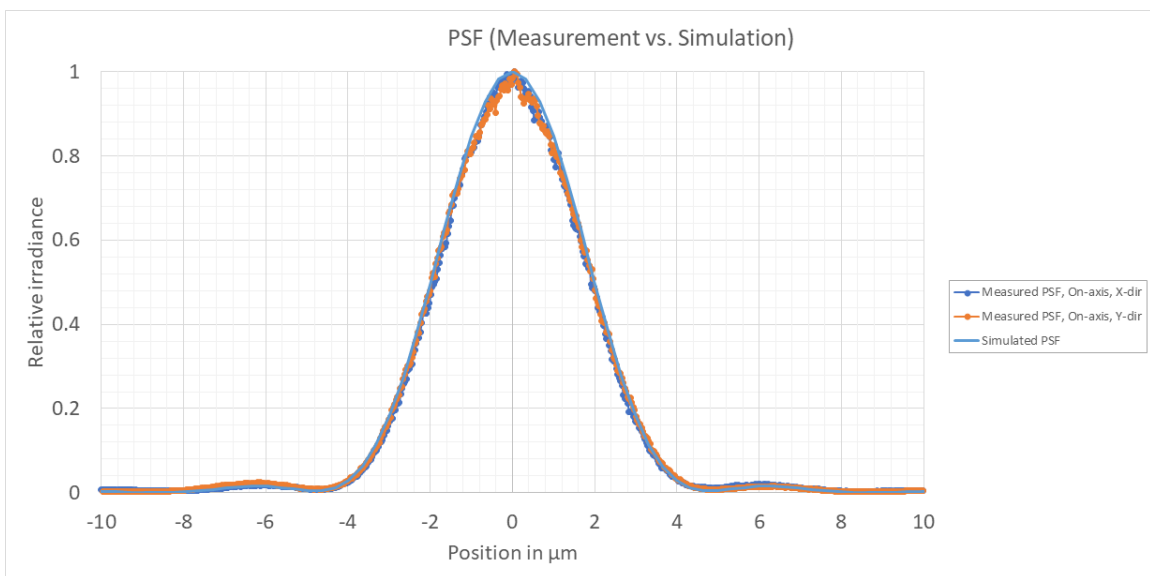
Zemax model of MOE lens
(NA=0.2)

- The figure shows the rays coming from the metalens and meeting in the focal point
- MOE is illuminated from the left with a plane wave
- Focal length: 7.35 mm
- Lens diameter: 3.0 mm



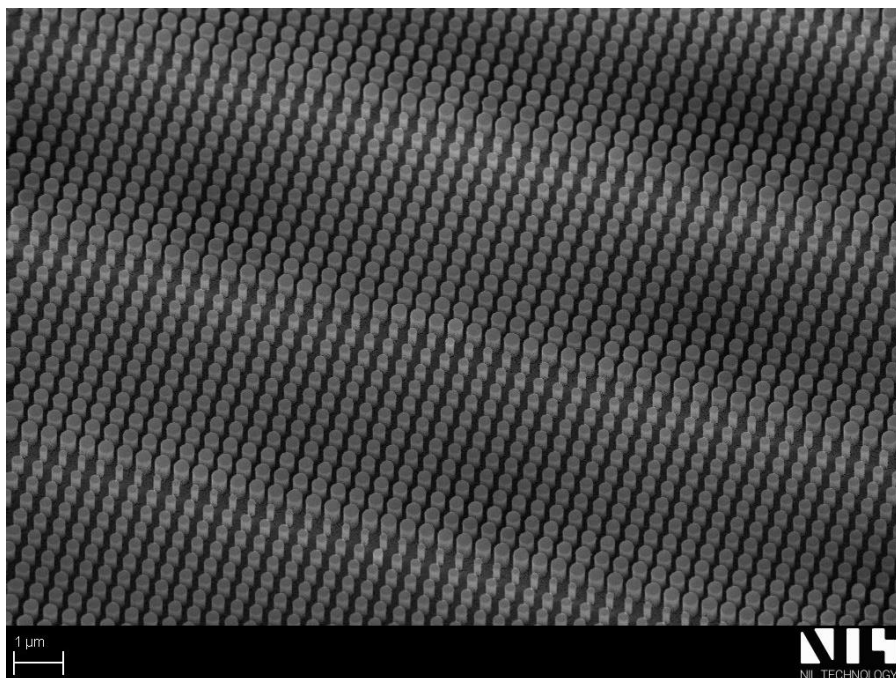
Point Spread Function (PSF)

With NILT's MOE design, the measured and simulated PSF for the NA = 0.2 MOE lens are in agreement. NILT's extreme precision at the nano-scale is responsible for this close agreement between simulation and measurement.



Meta-atoms

The NA =0.2 MOE lens technology is making use of meta-atoms with size down to 100 nm to create the optical lens function. Representative SEM image is seen here:



Inquires

For inquiries, contact Brian Orr, VP Sales, at contact@nilt.com

ABOUT NILT

NIL Technology ApS (NILT), founded in 2006, is an optical solutions company designing, developing, and manufacturing optical elements and components using high-precision nanoscale features. The company is backed by several industry-independent investors: Jolt Capital, NGP Capital, Swisscanto, Vaekstfonden, and the European Innovation Council (EIC). NILT creates competitive advantages with flat optics in optical applications for 3D sensing, consumer electronics, machine vision, autonomous vehicles, telecommunication, and AR/VR/MR displays; all solutions made by diffractive optical elements (DOE) and metalenses/meta optical elements (MOE). NILT is based in Denmark and has offices in Switzerland, Sweden, and the USA.

www.nilt.com | Sign up for [newsletter](#) | Follow us on [LinkedIn](#)