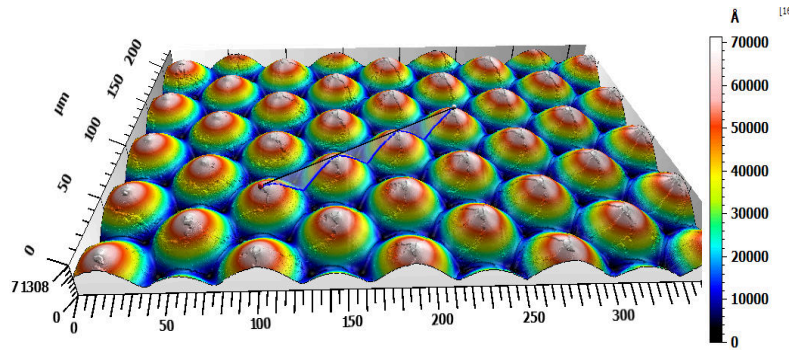


# Holo/Or Newsletter – Q3 2024

## Company News

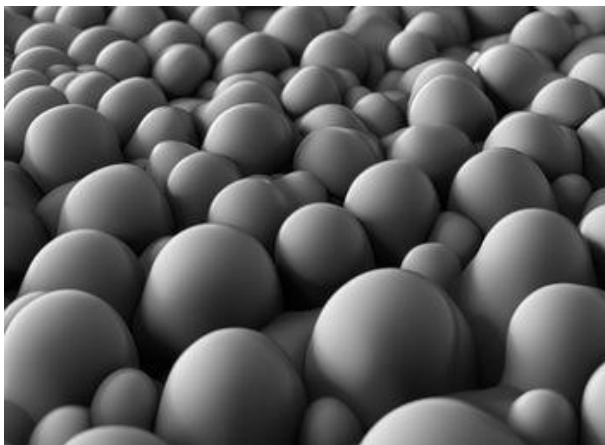
### VCSEL consortium reaching the finish line - Holo/Or supports high power VCSEL coupling to multimode fibers

During the last two years, Holo/Or has been a part of the VCSEL consortium, a MAGNET type project funded by the Israel Innovation Authority. During our work in the High power VCSELS work group, we cooperated with SCD, Civan lasers and other partners to support the development of innovative VCSEL based pumping modules. Our micro optics solutions enable collimation of VCSEL arrays, allowing coupling into a fiber. Looking forward to working with all our partners in the future.



## Publications and conferences

### Blazing fast Nanoparticles production using DOEs to enhance Pulsed Laser Ablation in Liquids



Pulsed Laser Ablation in Liquids (PLAL) is a promising method for the production of high purity colloidal nanoparticles. One of the main bottleneck in this method of synthesis is the low rate of particle production when using a single spot. In a [recent article](#) a group of researchers have used a Holo/Or [multi spot DOEs](#) to split their laser, showing that PLAL throughput can be increase by a factor very close to the number of split beams. The result indicate that using standard industria level laser power, PLAL productivity could in principle be increased to 3g/hr.

Want to increase the throughput of your laser process ? [contact us!](#)

### Ionizing the air with Extended focus Diffractive optics

Laser filamentation in air occurs when a strong laser causes ionization and plasma along the illumination channel. This can be useful for many applications, even for steering lighting! However, keeping the laser beam focused over extended atmospheric distances can be a challenging. In a [recent article](#), a group of researchers from LOA ,Paris, has used Holo/Or [multi focal DOEs](#) combined with our [Vortex lens phase plates](#) to achieve extended super filamentation in air. Need to extend your laser's depth of focus in transparent media? Check out our [focal shaping products](#).

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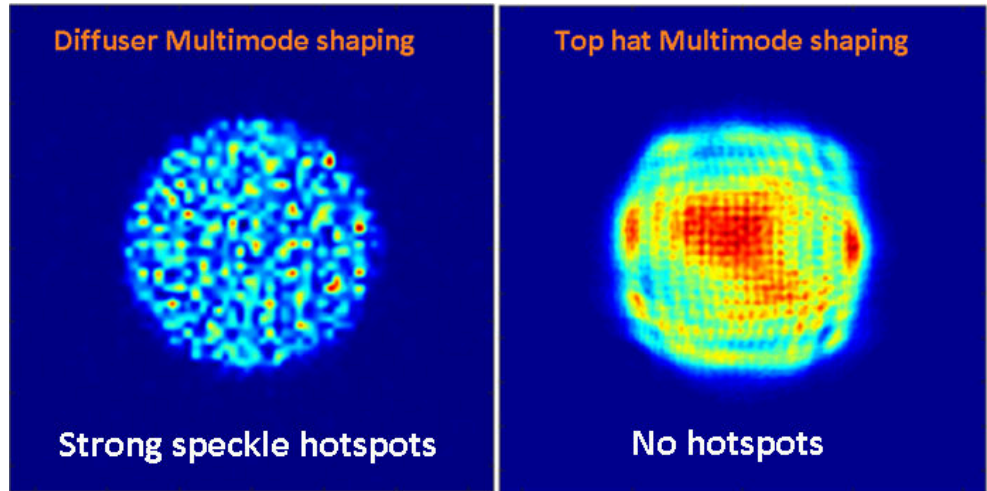
## Products and Applications

### Beam Shapers for aesthetic laser treatment eliminate speckle and hotspots along the beam path

In many laser aesthetic applications, the laser is delivered to the handpiece through a long arm, of with sensitive mirror optics in the joints. Sometimes, beam shaping optics needed for uniform treatment of the skin cannot be placed in the handpiece due to system constraints. In other cases, uniform

illumination is required over a certain depth of of focus, such as in the case of frequency conversion crystals. Diffuser type solutions, such as Micro lens arrays and [diffractive diffusers](#), are often used in such cases ,but tend to generate speckle if the laser is somewhat coherent and thus create hotspots on the optical components, shortening system lifetime and requiring costly maintainance visits.

Holo/Or has developed [beam shapers](#) that can work with multimode laser input and shape it into mostly uniform intensity patterns with long depths of focus , and no hot spots or speckle. These TH elements are ideal for cases where the beam shaper is close to the laser, often more than a meter of optical path from the patient's skin. [contact us to find out more](#)



### When even a little zero order is too much for your weld - Scanning half HEDS to the rescue !



The growth of Laser welding is leading to many challenging applications, including cases of butt-joint welding where only the two sides of the weld must be heated, with no power dposited in the middle. While our standard 1X2 DS beam splitters have typical zero order energies of <0.5% of input, this is still too much for such applications.

This is why we developed the [scanning Half HEDs](#), a 1X2 beam splitter with no energy between the two spots.

When correctly positioned, the beam is split between a zero order and the first diffractive order, with no energy in the middle, and with full adjustability of the energy ratio between the beams by shifting the beam on the DOE.

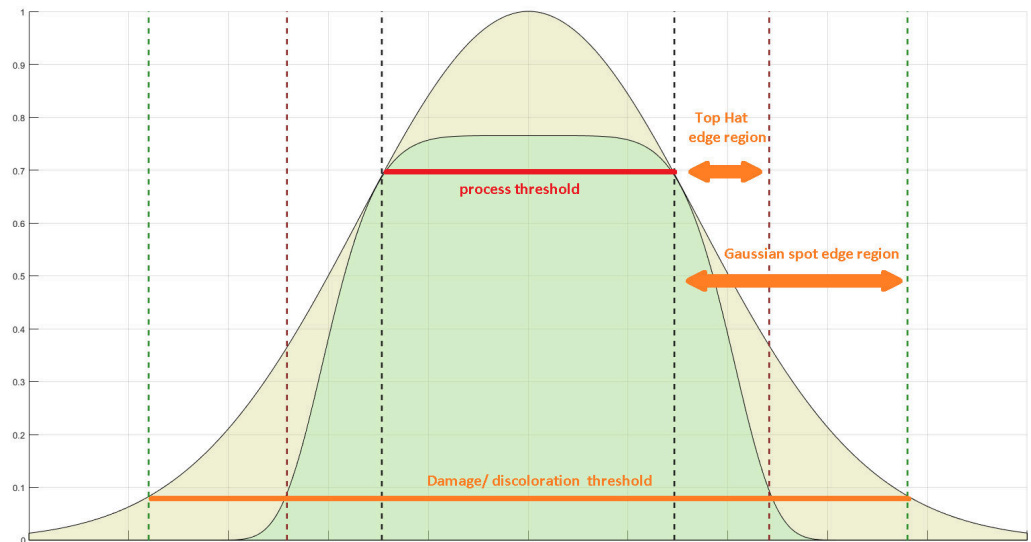
Get a quote at our [product page](#) (in remarks: "Half Scan HEDS") or [contact us for a custom DOE](#)

### Technical Tips

#### Technical tips- Our free TH Beam Shaper matlab P file and how to use it for tolerances modelling

[Top hat beam shaper elements](#) are highly useful for many precise laser applications, requiring precise positioning and focusing to get optimal performance. Holo/Or provides [a free tool to our customers](#), enabling you to model general TH element tolerances using Matlab.

The download includes a tutorial PDF for using the p file and defining tolerances, as well as an M file help script that can be copied and pasted into Matlab command line to run the P file.



If, despite this, you are running into difficulties with modelling your TH element, please [contact Holo/Or for support](#) and we will be happy to support you.

Please take into account that the tool cannot model ST (sharp edge top hat) non-analytical Top Hat beam shapers, and these must be modeled by Holo/Or.