



NEWSLETTER - Q2 2020

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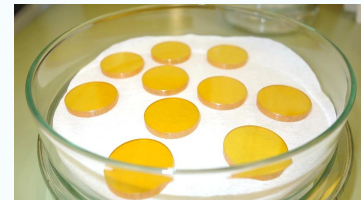
Announcements

Holo/Or proudly presents our brand-new family of **cost-effective accurate beam shaping solutions** for low to medium power source systems – our POG family. POG products are cost effective shaping solutions compatible with 3D sensing applications, medium power aesthetic heat treatment devices, metrology and surface inspection and more. [Read about them here.](#)

New Products

New Beam Combiner Dual Wavelength ZnSe lenses - corrected for guide laser at competitive cost

We have recently developed a new production process that enables Holo/Or to offer diffractive-corrected [DW](#) ZnSe lenses. These lenses focus both the guide laser and the 10.6/2.94μm laser at the same focal plane.



Our process is especially efficient at large batches of small lenses (such as diameters of 15mm or less), often used in laser surgery devices. The process also allows for easy customization of the EFL without extra tooling costs.

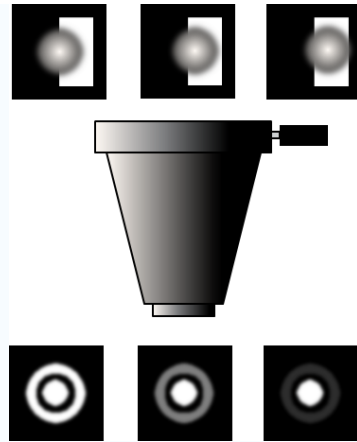
[Contact us](#) for more details.

Applications

Application Notes renewed and expanded

The increasing availability of high power lasers is

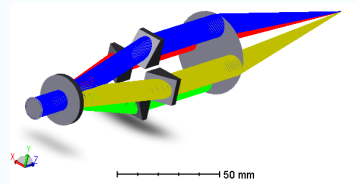
leading to a major increase in laser welding applications. Often, a tailored intensity profile can enhance performance and enable stronger welds with better seams and lower contact angles. Holo/or offers a variety of DOE beam shapers optimized for welding applications; including our HEDS dual spot-welding family, our brazing diffusers, our RADA axicon arrays, and our M-shaper diffusers.



By correctly utilizing Holo/Or's beam shaping DOE, one can achieve variable shapes, power ratios, or spots separations with the same laser system. This enables system flexibility for multiple types of welding processes. You can read more about variable shaping in [our article](#).

Direct Laser Interference Patterning (DLIP)

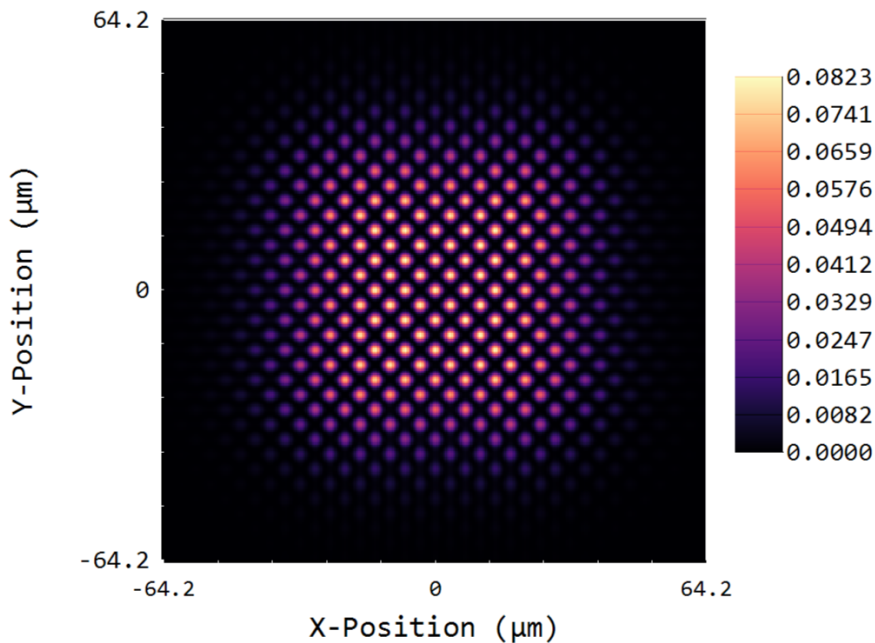
In the last few years there has been a growing interest in utilizing Direct Laser Interference Patterning (DLIP) for surface structuring with high power short pulse lasers.



We at Holo/Or are involved in several such projects, and to support our customers in this field we developed a Zemax™ OpticStudio model of a DLIP optical system.

This Zemax model allows one to simulate nominal performance as well as tolerances. It can be easily customized for any optical parameters such as wavelength, beam size, splitting angles, number of orders, focal length, etc.

You can read more and [freely download the model here](#). Holo/Or will be happy to support you with all your DLIP needs, just [contact us](#) with your inquiry.



Polychromatic Huygens PSF

2/6/2020
1.0530 to 1.0530 μm at 0.0000 (deg).
Image size is 128.00 μm square.

Zemax
Zemax OpticStudio 19.4

Technical Tips

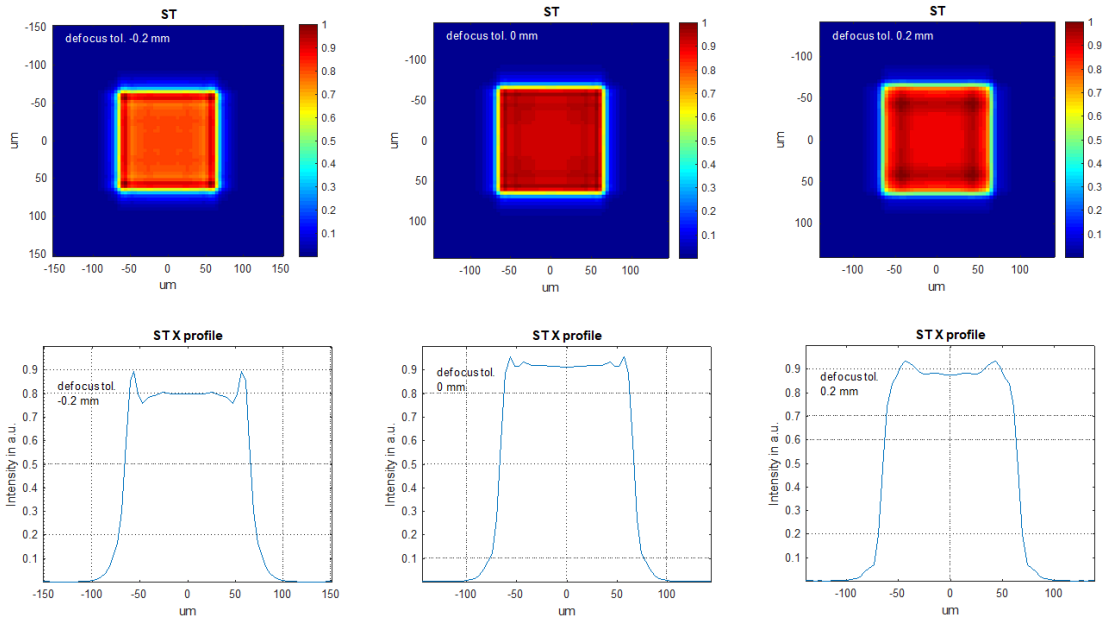
Defocus and beam ellipticity effect on Stable Top-Hat “ST”

Many laser applications, especially in material micro processing, require flat top, sharp edged spots with a shape optimized for the application parameters. HoloOr’s “ST” family of diffractive beam shaper elements meets this need.

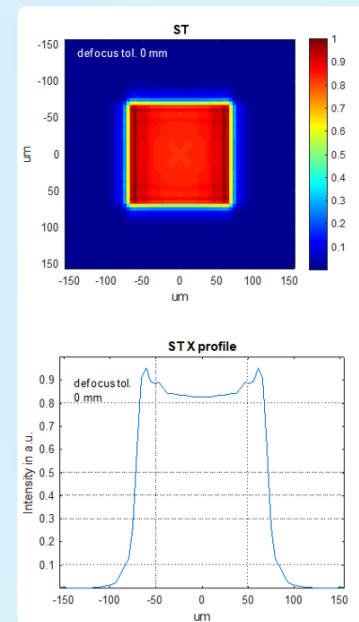
Based on feedback from our customers, there are two common issues that commonly pop up when ST elements are used. The first issue is defocus and how it affects the final shape, and the second is the effect of an elliptical input beam on the top-hat’s final shape.

When a flat top shape is defocused, the shape becomes convex or concave-like, depending on negative or positive defocus and design type. The example in the image shows a defocused ST.

Holo/Or highly recommend working with large effective focal lengths if possible, to **increase the depth of focus** and reduce the effect of concave or convex-like shapes. This behavior can also be compensated for by slight adjustment of the beam divergence angle, if you are using a variable beam expander or DOE tuner before the ST element (highly recommended).



HoloOr's standard ST elements are designed for perfectly symmetrical TEM₀₀ beam with a specific beam size (defined at \exp^{-2}). In practice, most beams have at least some ellipticity, thus beam size is different in the X and Y axes. This can result in a concave shape in one direction relative to the other, as shown in the following figure. It is important to note that defocus can improve the shape, especially at small variations in beam size. For more info, read our [application notes](#).



For more informaton please [contact us](#).

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