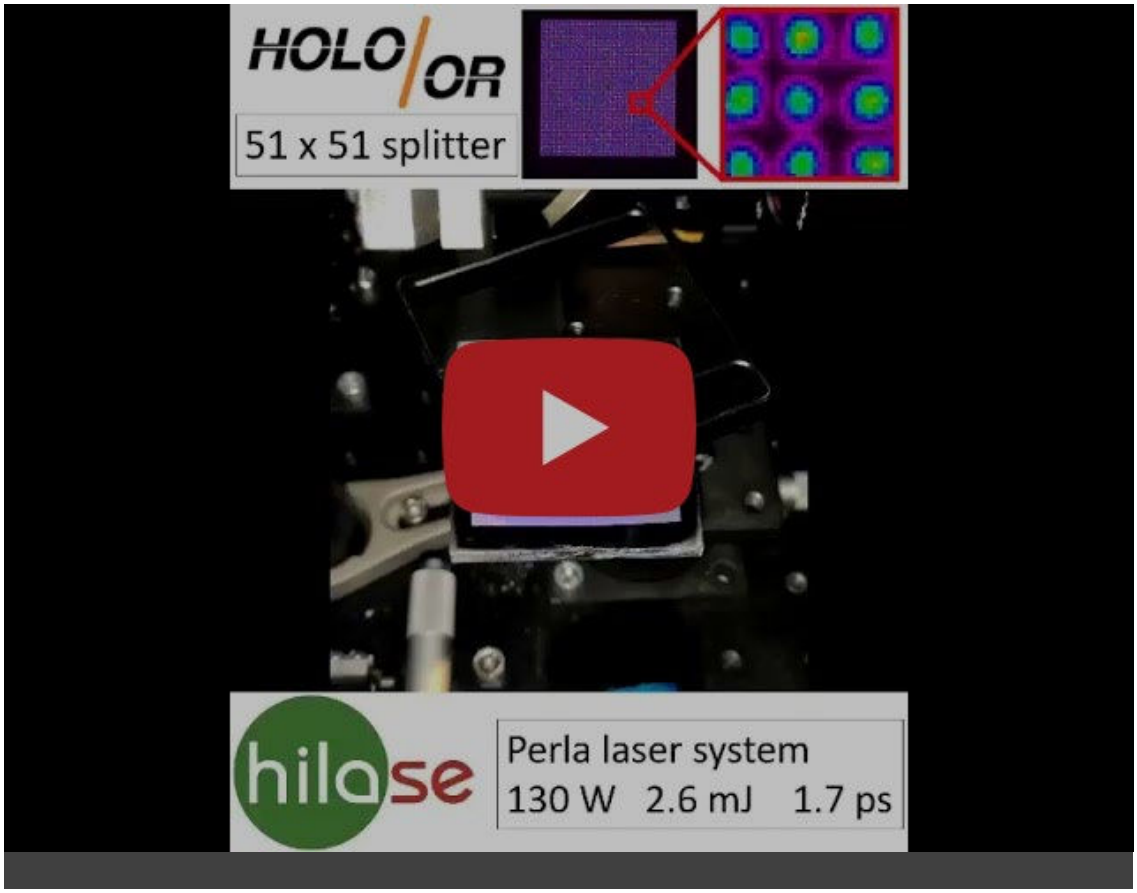
NEWSLETTER - Q2 2021

Coming Soon

Laser Surface Texturing with single DLITe Beam splitter DOE - a joint peer reviewed article by Holo/Or and HiLASE



DLITe beam splitters are specially designed DOEs which enable patterning of large areas without any movement of the galvo scanner or stage. They are used to shape a high-power input laser beam into a precise array of laser spots with user defined separations between them. The patterned areas can then be

stitched together at a high speed by external movement, to achieve industrial processing speeds.

Holo/Or in cooperation with HiLASE tested this concept. In the article we will present the obtained results.

Laser beam shaping and scanning for LIFT Processes - A joint publication by Holo/Or, Scanlab and Pulsar

UV MicroLED LIFT processes employing a diffractive optical element (DOE) beam shaper, galvo scanner and f-theta lens setup have highly demanding requirements on the intensity profile at the sample surface in order to reach the necessary performance. These include a small rectangular shape with sharp edges, a uniform flat region and minimal distortion over the scan field.
In the article we will present a novel laser scanning setup consisting of a custom Top-hat beam shaper in combination with an automatic alignment system, a scan head, f-theta lens and a synchronized stage that fulfills all requirements of the LIFT process.

Contact us to discuss your project requirements

Upcoming Events

Holo/Or will be participating in the upcoming **Photonics+ Virtual Exhibition**, taking place on Jun. 29-30.
Come visit our virtual booth, and join our CTO, Mr. Natan Kaplan, in a live 10-minutes talk on **Flexible beam shaping for the optimization of high-power industrial laser applications.**
The talk will take place on June 29, 15:15-15:25. Mark your calendars!

New Products

Adjustable ring shaper with central spot for laser welding

Studies show that using a central spot with coaxial surrounding ring power distribution, can improve laser welding speed as well as other process parameters, by increasing the stability of the melt pool. Achieving such an energy distribution is most commonly done using special multi-mode fiber lasers with either a dual or triple core, where the central core is surrounded by concentric one or two ring-shaped cores. This method presents some limitations, mainly in the ratio of power between the ring and central spot and the high-costs that comes with such demanding specifications.

Holo/Or's Adjustable spot and ring shaper presents a much simpler and cost-effective solution, enabling full continuous adjustment of the power ratio between the central spot and the ring, for optimal process results. It consists of 2 identical binary DOEs, each divided into an even number of azimuthal segments, half of them clear and the other half with a diffractive axicon function encoded to their pattern. The two DOEs are rotated against each other to create different output patterns of a ring and a central spot with a continuous power ratio adjustment. This solution is an evolution of our previous Flexishaper concept, with much decreased defocus sensitivity and is suitable for both single mode and multi-mode fibers.

Join our talk on Photonics+ exhibition to learn more

Contact us to discuss your project requirements

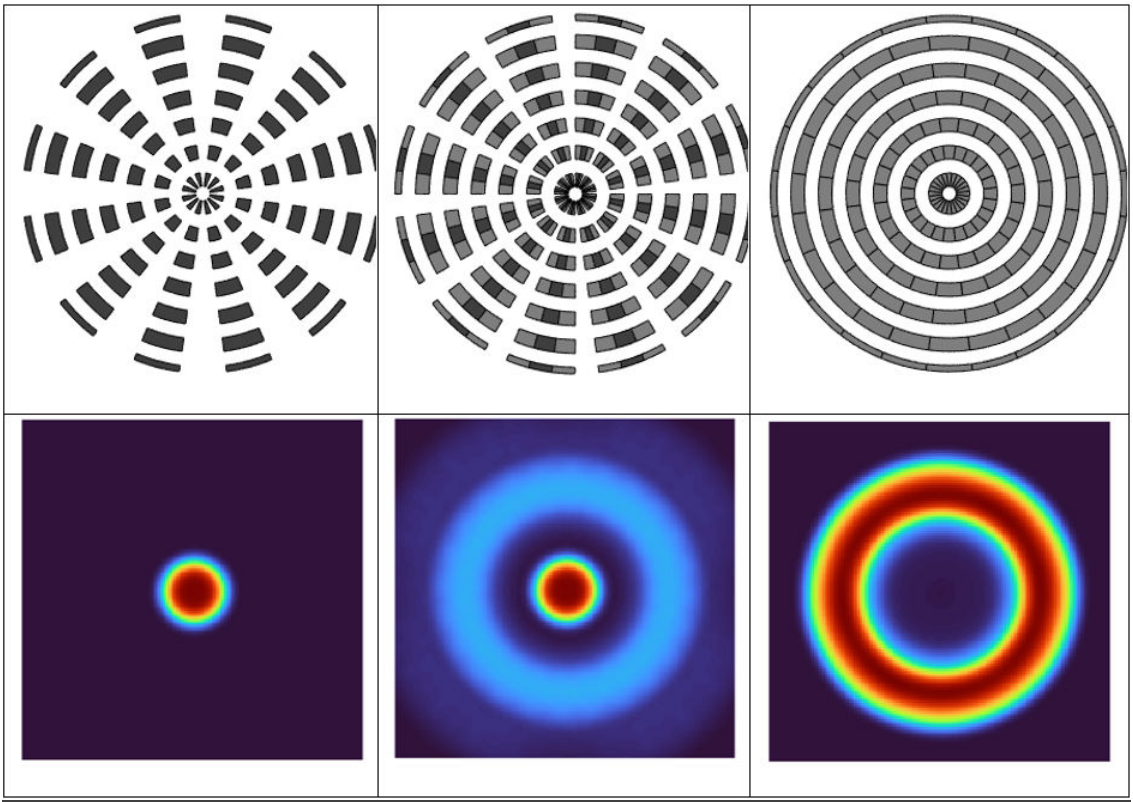
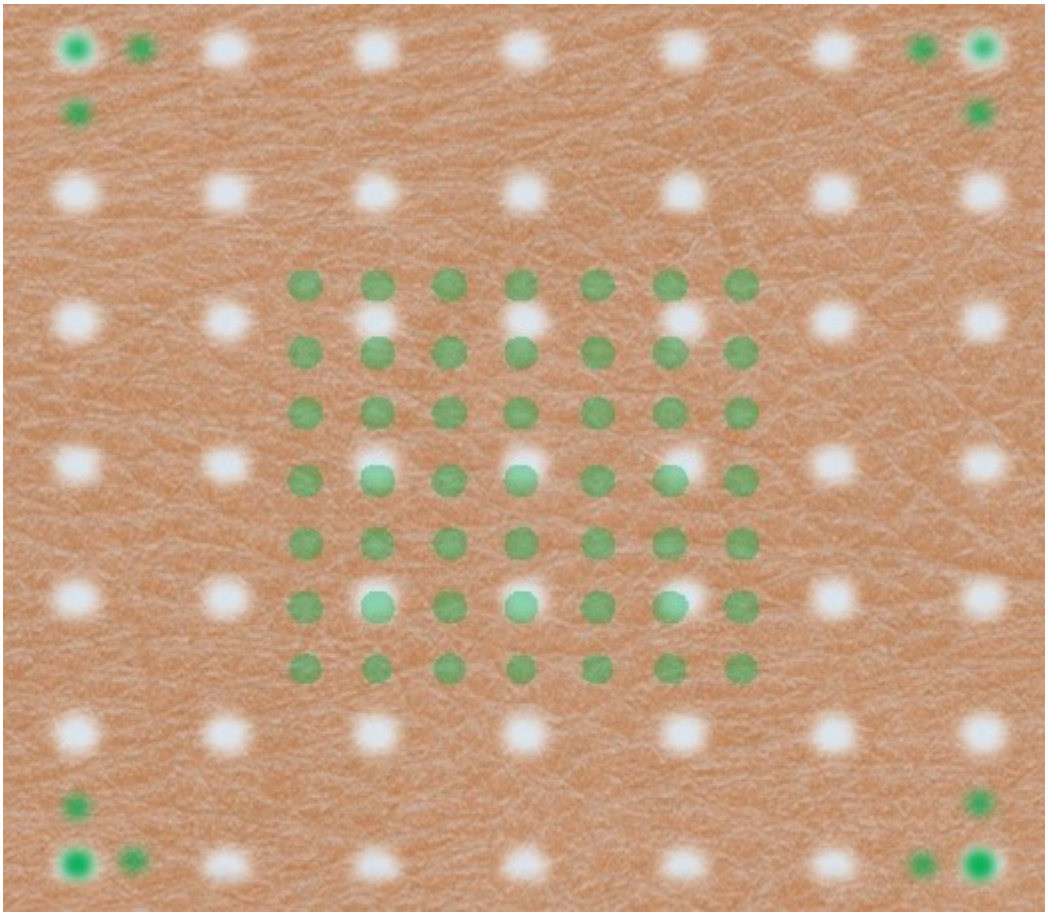


***Figure 1**: Upper row shows 3 positions (a, b & c) of relative rotation orientation: 0, 7.5, and 15 degrees respectively between two binaries DOEs. Lower row shows the intensity distribution related to each of the rotational orientations on the row above: 1 a – all of the power is concentrated in the central spot, 1 c – all of the power is concentrated in the ring, 1 b - an intermediate position where some of the power is at the central spot and some is at the surrounding ring.*

Fractional IR spot array generator with visible treated area marker

Diffractive beam splitters are often used to generate an array of spots on a patients' skin during fractional laser treatment, with their accurate splitting angles, flatness and high LDT making them especially suitable for this task.One issue when working with diffractive beam splitters and invisible IR beams is the fact that the spots array size at the visible guide laser wavelength is much smaller than the actual treatment area. This makes it more difficult to manually "stitch" the treated areas, reducing the treatment speed.



Holo/Or has developed an innovative family of beam splitter DOEs meant for the laser aesthetic fractional treatments market. These DOEs project a part of the guide laser energy to the edges of the treated area, can be either in the form of four corners or a surrounding frame, clearly marking the area that will be treated in the next pulse. These DOE can be designed for any combination of marking laser and treatment laser wavelengths, and can be customized to generate any desired number of spots for the fractional spot pattern.

Contact us to discuss your project requirements

Applications and technical tips

Tips for designing and modelling a STED microscope in ZEMAX OpticStudio

Stimulated emission depletion (STED) microscopy is a powerful tool for the study of sub-micron samples, especially in biology. In out published article in MicroscopyToday, we present a simple, straightforward method for modeling a STED microscope using Zemax geometrical optics ray tracing principles, while still achieving a realistic spot size, with an output behavior consistent with the real, diffractive behavior of a STED de-excitation spot. This method can simplify the design of custom STED setups by proper modeling of the resolution performance.

Read the full article here

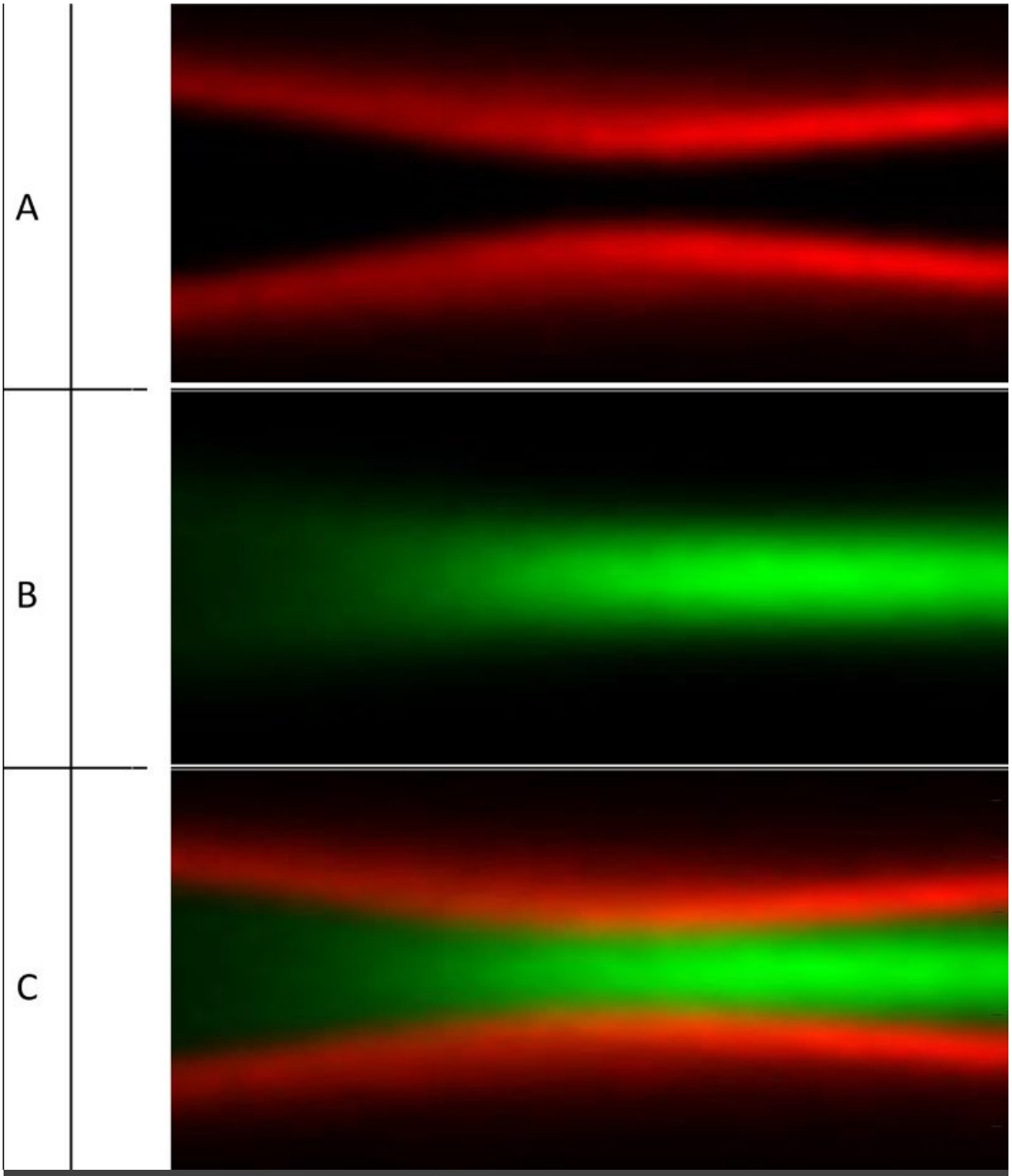


Figure 2: *DOF simulation of the STED system - ZX intensity distribution in A.U.* ***a,*** *Depletion channel;* ***b,*** *excitation channel;* ***c,*** *combined view*

How to achieve the best shaping performance using Holo/Or's beam Shapers

Many of our customers struggle with the installation of out Top-Hat beam shapers, when trying to obtain results similar to those simulated. To aid our customers in installing the elements and clarify how to draw the best shaping

performance, we wrote this installation manual, which can also be found on our website under **“Publications > Technical Resources”** section.

Contact us to discuss your project requirements

Please contact us with any question

13B Einstein Street
Ness Ziona, Israel
www.holoor.co.il
holoor@holoor.co.il

Follow Us:

Website

LinkedIn

YouTube

Facebook

Twitter