

PRESS RELEASE

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MPO 100 - Multi-User Tool for 3D Lithography and 3D Microprinting

Heidelberg/Würzburg – "1 - 10 - 100 - 1000" – Achievable component heights of over 1 cm, surfaces with roughness in the order of 10 nm, structure sizes of less than 100 nm, and writing speeds over 1000 mm/s: At the SPIE Photonics West in San Francisco, from January 25th to 27th, Heidelberg Instruments will be presenting, for the first time, the new two-photon polymerization **MPO 100**, a **multi-user tool** that combines both the **requirements of 3D lithography** with resolutions in the 100 nm range and **3D microprinting** with structure heights of over one centimeter, all in one device.

"The MPO 100 is a unique tool for microfabrication and achieves the highest resolution among additive manufacturing processes at 100 nanometers. Furthermore, the 1-10-100-1000 capability of the MPO 100 will enable users at universities, R&D institutions, as well as the industry and offer significant advantages for new developments in areas such as micro-optics, microfluidics, and biomedicine," says Dr. Benedikt Stender of Multiphoton Optics GmbH, the subsidiary of Heidelberg Instruments where the development of the MPO 100 was carried out.

The MPO 100 works with a laser wavelength in the green spectral range, which is ideally suited for the 3D structuring of typical photoresists. Furthermore, MPO 100 is optimized to use the hybrid polymers (ORMOCER[®]s), particularly important for various applications. In addition to sophisticated algorithms to maximize structure quality, the synchronized scanning system offers the possibility of stitching-free patterning. In addition, the MPO 100 is currently the only tool in the market equipped with a flowbox that guarantees temperature stability of up to 0.1°C and thus provides the necessary stability for large-scale exposures. Application-specific writing modes enable customer-specific printing requirements and distinguish the MPO 100 as a multi-user tool.

"With the MPO 100, we have combined the strengths of both companies in one system: Multiphoton Optics' sophisticated exposure unit for two-photon polymerization and Heidelberg Instruments' industrial platform, which guarantees the required stability and meets the necessary industry standards. The capabilities of the MPO 100 are already very popular with our customers, who benefit from the worldwide support from our service organization and ISO-certified production," says Steffen Diez, COO of Heidelberg Instruments.

Contact for further questions:

Veronika Loose, Marketing and Communications

press@multiphoton.de

+49 931 90879288

More information:

<https://heidelberg-instruments.com/>

<https://multiphoton.de>

About Heidelberg Instruments Mikrotechnik GmbH:

With over 35 years of experience and more than 1,000 installed systems, Heidelberg Instruments is one of the leading international players in the development and production of high-precision photolithography systems and nanofabrication tools. Heidelberg Instruments systems are installed in industrial and scientific facilities around the world. They are used for efficient direct writing, as well as for photomask fabrication for a wide range of industries - including semiconductors, quantum computing, photonics, 2D materials, IoT, and many related application fields.

About Multiphoton Optics:

Multiphoton Optics GmbH, a wholly owned subsidiary of Heidelberg Instruments Mikrotechnik GmbH, is a global solution provider for 3D lithography via two-photon polymerization (TPP). This disruptive technology enables the production of complex functional structures in micro-optics and microsystems technology, optical interconnect technology, micromechanics, and biomedical technology. The modular 3D printing platform enables the high-precision fabrication of structures in the submicrometer to millimeter range with very high throughput.

Selected Images with Captions



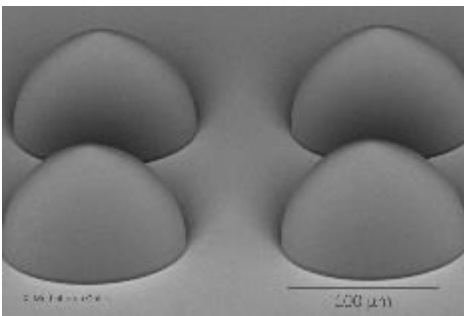
The MPO 100, the new Two-Photon Polymerization platform, designed and developed by Multiphoton Optics GmbH, Sales and Service by Heidelberg Instruments Mikrotechnik GmbH

Source: Heidelberg Instruments Mikrotechnik GmbH



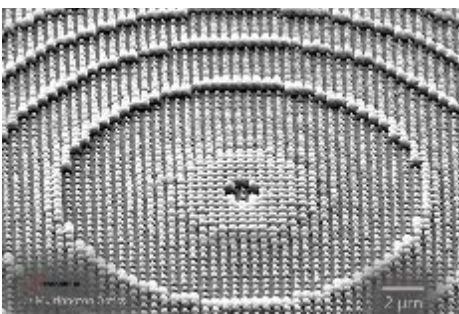
1 cm print height: 3D scaffold structures for biomedical applications such as implants in regenerative medicine.

Source: Multiphoton Optics GmbH



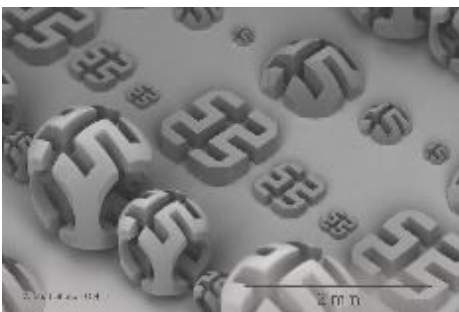
10 nm roughness: High quality microoptical elements with varying shapes (e.g. freeform) and sizes can be fabricated either on planar substrates or directly on active/passive devices.

Source: Multiphoton Optics GmbH



100 nm resolution: Metastructures with feature sizes below the diffraction limit can be fabricated in a single process step.

Source: Multiphoton Optics GmbH



1000 mm/s Scan speed: 3D structures for diverse applications such as optics, mechanics, and life science can be fabricated at high speed.

Source: Multiphoton Optics GmbH