

Photonic Professional GT2

Make small things matter.



Highest resolution 3D printing

Photonic Professional GT2 is a versatile solution for research and prototyping

Nanoscribe's Photonic Professional GT2 offers the world's highest resolution 3D printing for rapid and ultra-precise microfabrication.

The printer uses Two-Photon Polymerization (2PP) to produce filigree structures of nearly any 3D shape: crystal lattices, porous scaffolds, naturally inspired patterns, smooth contours, sharp edges, undercuts and bridges are all possible.

Flexibility in design combined with straightforward operation and a wide range of materials and substrates make the Photonic Professional GT2 an ideal instrument for science and prototyping in multi-user facilities and research laboratories.



Nanoscribe's 3D printers support cutting-edge research in over 30 countries. More than 1,300 pioneering research projects prove the powerful manufacturing and design capabilities of this technology.



KEY FEATURES

- ▶ High-speed 3D Microfabrication using galvo technology
- ▶ 3D design freedom with sub-micrometer feature sizes
- ▶ Straightforward 3D printing workflow from CAD-model import to printed product
- ▶ 3D Microfabrication Solutions Sets tailored to a variety of scales and applications
- ▶ Broad range of print materials and substrates

DESIGNED FOR RESEARCH AND RAPID PROTOTYPING IN

- ▶ Microfluidics
- ▶ Micromechanics
- ▶ Biomedical engineering
- ▶ Micro-electro-mechanical systems
- ▶ Mechanical metamaterials
- ▶ Photonic metamaterials and plasmonics
- ▶ Microoptics
- ▶ Further nanostructures

TECHNICAL SPECIFICATIONS

Printing technology	Layer-by-layer Two-Photon Polymerization
Minimum XY feature size	160 nm typical; 200 nm specified*
Finest XY resolution	400 nm typical; 500 nm specified*
Finest vertical resolution	1,000 nm typical; 1,500 nm specified*
Layer distance	0.3–5.0 μm*
Maximum object height	8 mm*
Build volume	100 x 100 x 8 mm ³ *
Minimum surface roughness R _a	≤ 20 nm*
Max. scan speed	from 100 to 625 mm/s*

*Values may vary depending on the Solution Set, objective or photoresin in use



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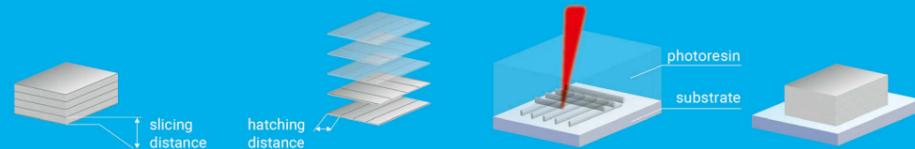
User-friendly software tools

Straightforward printing workflow in a few simple steps

The included software eases the fabrication of nearly any 3D shape in a straightforward process. The DeScribe STL import wizard prepares a 3D CAD model for printing with field-proven software recipes. These ready-to-use recipes include optimized printing parameters, e.g., slicing and hatching settings, as well as print strategies for solid and shell & scaffold printing. Moreover, you can develop and retrieve any time your own individual and application-specific recipes to customize print jobs as desired.

Once the print job is compiled, the design is loaded in NanoWrite, the printer graphical user interface. NanoWrite automatically executes the job, controlling all printer hardware and parameters throughout the process. Using the integrated live camera, you can monitor the complete print process in real time.

3D CAD Model → Slicing + Hatching → 3D Printing → Final Part



Two-Photon Polymerization

3D Microfabrication from nano to macro with submicron precision

The Photonic Professional GT2 is based on Two-Photon Polymerization technology. This provides the highest possible resolution in additive manufacturing combined with a straightforward 3D printing workflow and great fabrication flexibility. With a resolution more than 100-fold higher than standard 3D printers, the Photonic Professional GT2 impresses with sub-micrometer precision and high-speed 3D Microfabrication.

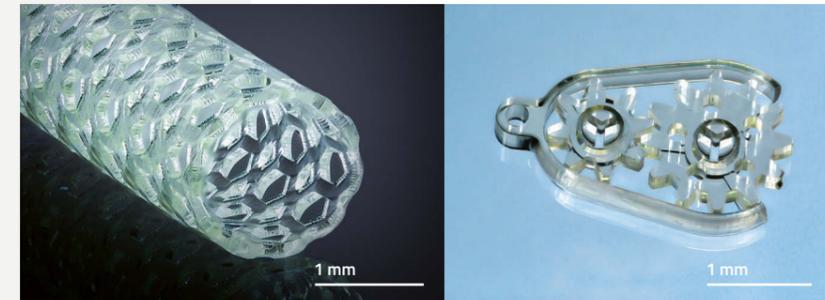
Our 2019 launched printer now bridges the gap between the micro and macro scales. For the first time object dimensions ranging from the sub-micrometer to the millimeter scale and print volumes of up to 100 mm³ are achievable.



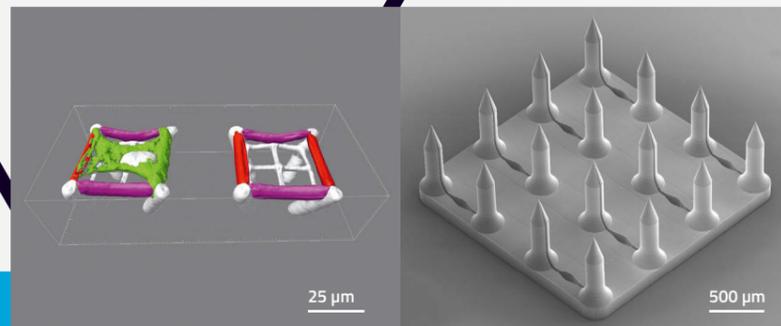
Advanced solutions, ready to use

3D Microfabrication Solution Sets tailored to your needs

Photonic Professional GT2 offers 3D Microfabrication Solution Sets suited to a range of scales and applications. These sets were developed to master the most challenging microfabrication tasks with user-friendly operation in mind. They combine an objective lens with a field-proven software recipe and high-performance resin materials. The wide variety of printing solutions meets the requirements for high-precision additive manufacturing from the sub-micrometer range to millimeter-scale dimensions.



Left: Porous tube of 8 mm length 3D printed in 1:10 h. **Right:** Functional gearbox with two gears contained within a housing. STL Author: brx017 (CC-BY-NC-SA 3.0).



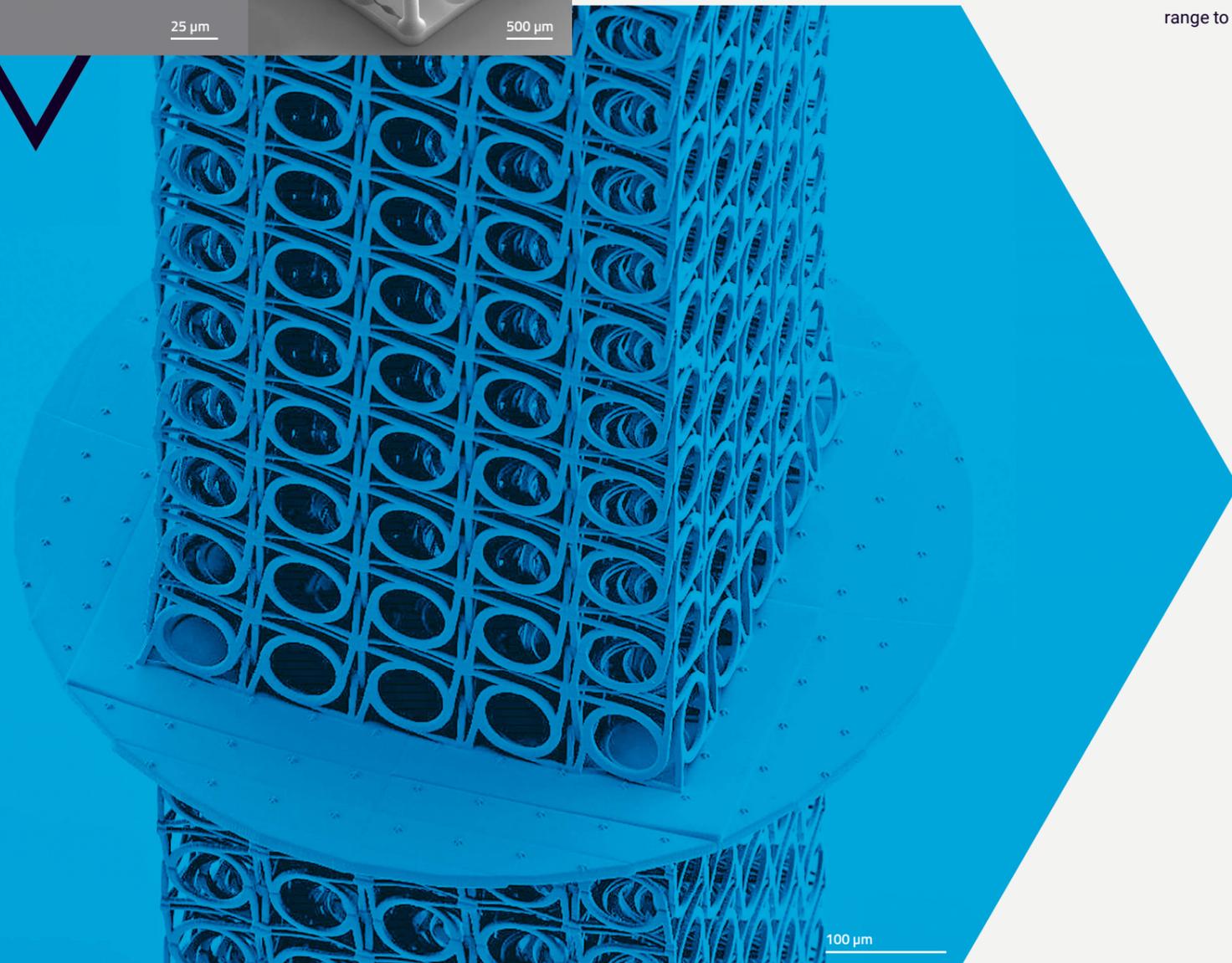
Top left: 3D reconstruction of a laser scanning microscope (LSM) image stack of a scaffold (white) that is locally functionalized with vitronectin (magenta) and laminin (red) proteins. The green color represents actin cells (nucleus in white in the center; image: M. Bastmeyer, KIT). **Top right:** Open-channel micro-needle array with sharp tips. (Image: Z. Faraji Rad, Univ. of New South Wales, Univ. of Birmingham) **Bottom:** Metamaterial crystal that responds to compression with a twisting motion (Image: T. Frenzel, KIT).

Wide range of applications

2,000 experts in research and prototyping
form our highly innovative customer base

Key innovations materialize with the versatility of Nanoscribe's 3D printers: Mechanical and photonic metamaterials, freeform microoptics, steerable microrobots, and cell scaffolds for life science exemplify the breakthrough research highlighted in more than 1,000 peer-reviewed journal publications.

Our 3D printers are designed as open systems, suitable for a broad selection of materials and tailored to satisfy the needs of material developers for testing new resins. A variety of materials and processes allow optical, mechanical, electrical, chemical and biological properties to be tuned as needed, e.g., in optics, photonics or biomedical engineering. Moreover, a wide choice of suitable substrates include glass, silicon wafers, photonic and microfluidic chips. On-chip and on-fiber printing techniques are possible.





Why Nanoscribe

Join the Nanoscribe community! As the pioneer and market leader in high-precision additive manufacturing, we are your reliable partner for microfabrication systems, software, and solutions. Founded in 2007 as a spin-off of the Karlsruhe Institute of Technology (KIT), we are a vibrant, award-winning company and part of the BICO Group since June 2021. With our field-proven systems, straightforward 3D printing workflows and all-in-one solutions, our more than 3,000 system users are driving future-shaping applications.

In our Nanoscribe community there are innovators and thought leaders across a broad spectrum of scientific research and industries including life sciences, microoptics, photonics, material engineering, microfluidics, micromechanics and MEMS. Their fascinating innovations have now been published in over 1,400 peer-reviewed journals.

CUSTOMER SUPPORT AND SERVICES

With more than 15 years of experience in microfabrication technologies, our customer support team strives to provide the best support in the shortest time possible. Sales and support are provided worldwide from locations in Germany, China and the USA, as well as by a worldwide network of certified distributors. Our interdisciplinary and multilingual service team attends to your requests with comprehensive customer support:

- ▶ Commissioning, maintenance and repair
- ▶ On-site and online training sessions
- ▶ 24/7 assistance through NanoGuide, a comprehensive self-service platform
- ▶ Phone, e-mail and remote support
- ▶ Technical and application support beyond primary use cases
- ▶ Extended maintenance and guarantee contracts, upgrade and relocation services



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