

## MICROFLUIDICS

The precise control and manipulation of liquids in very small volumes is the essence of microfluidics, for example in lab-on-a-chip applications. Nanoscribe's Photonic Professional *GT2* offers the highest resolution in 3D printing today, enabling tailored and smooth surfaces to be printed as desired. The additive fabrication approach overcomes technical challenges such as high aspect ratios or high surface to volume ratios. Thus, 3D intertwined compact mixers and filter elements can be achieved. The design freedom of the 3D microprinters allows to fabricate even biomimetic micro-needles for painless drug delivery and customized nozzles up to millimeter sizes.

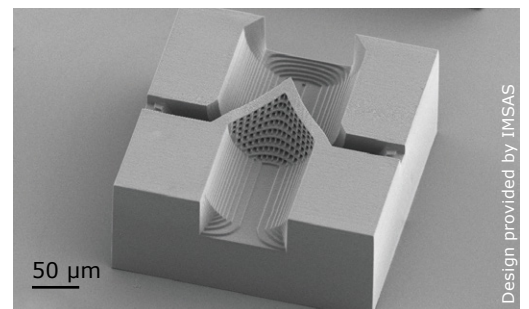


### 3D MICROFLUIDIC FILTER

**Challenge:** Fabrication of a non-clogging micro-porous 3D filter with connectors in thick-film SU-8.

**Solution:** The Photonic Professional *GT* allows for high resolution 3D printing over the total height of the filter element.

**Source:** [www.nanoscribe.de/en/applications/microfluidics/](http://www.nanoscribe.de/en/applications/microfluidics/)

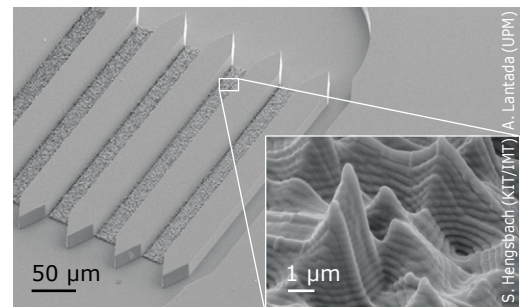


### TAILORED SURFACES WITHIN MICROFLUIDIC DEVICES

**Challenge:** Introduction of micro-textured surfaces into microfluidic channels to study impact on cell motility or to design hydrophobic/hydrophilic characteristics.

**Solution:** 3D printing allows for tailor-made sub-micrometer modifications of the surface topography. For further replication, these can be used as masters.

**Source:** DOI: 10.1007/s10544-014-9864-2

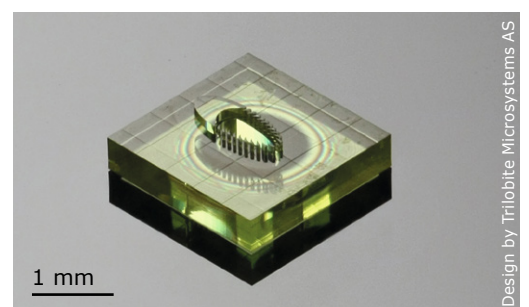


### MASTER OF FILTER ELEMENT

**Challenge:** Rapid and precise fabrication of masters for injection molding or imprinting with heights and aspect ratios exceeding those accessible with other techniques.

**Solution:** Additive fabrication easily overcomes the design constraints while enabling rapid design iterations and preserving the replicability for mass production.

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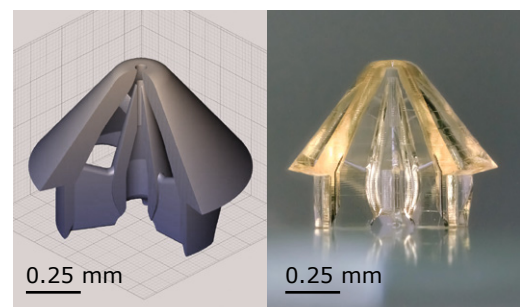


### NOZZLES

**Challenge:** Fabrication of designer microfluidic nozzles for the precise formation of droplets, sprays or jets.

**Solution:** Almost arbitrarily shaped nozzles with micrometer precision can be printed. This allows for internal features and precisely structured orifices.

**Source:** DOI: 10.1364/OE.24.011515



Learn more about the world's  
highest resolution 3D printer  
Photonic Professional *GT2*

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