

Micro- and Nanofabrication

Selective ablation



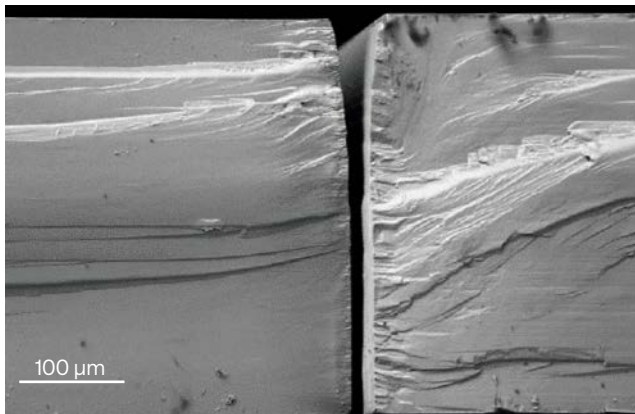
Selective ablation of tungsten carbide.

High-contrast marking



Corrosion-free black-and-white marking on a stainless steel hemostatic clamp using the BiBurst option.

Brittle & highly thermally sensitive material cutting



Multi-pass cadmium tungstate cutting. No cracks. All thermal trace effects eliminated.

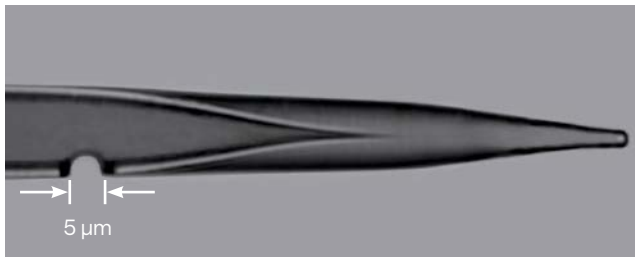
Source: Micronanics Laser Solutions Centre.

Stainless steel stent cutting



Example of a stent cut from stainless steel.

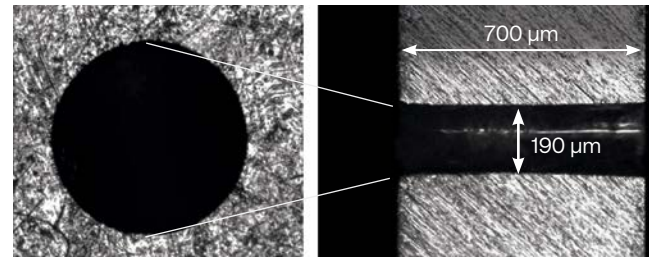
Glass needle micro-drilling



Glass needle micro-drilling.

Source: Workshop of Photonics.

Steel drilling



Taperless hole micro-drilling in stainless steel alloys.

Source: Workshop of Photonics.

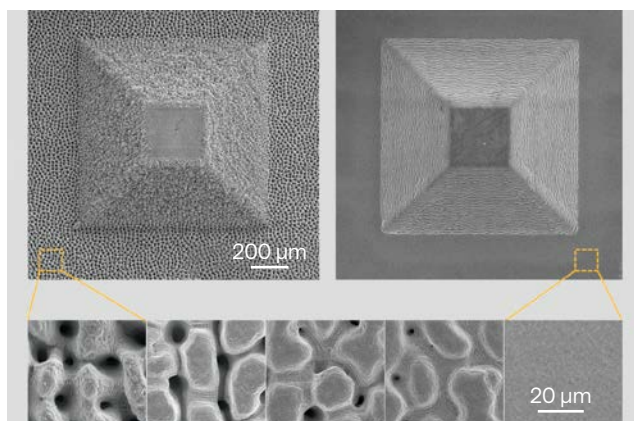
Milling of complex 3D surfaces



3D-milled sample in copper. Zoom-in SEM image.

Source: A.Žemaitis, et al. Scientific Reports (2019).

Stainless steel polishing



SEM images of structures ablated in stainless steel, before and after polishing using a GHz burst (from left to right).

Source: D.Metzner, et al. Applied Surface Science (2020).

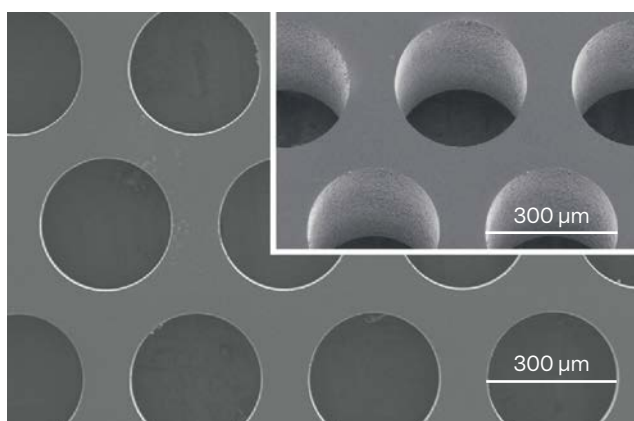
Birefringent volume modification in glass



Form induced birefringence-retardance variation results in different colors in parallel-polarized light.

Source: Workshop of Photonics.

High-precision glass drilling



Glass micro-drilling, no taper.

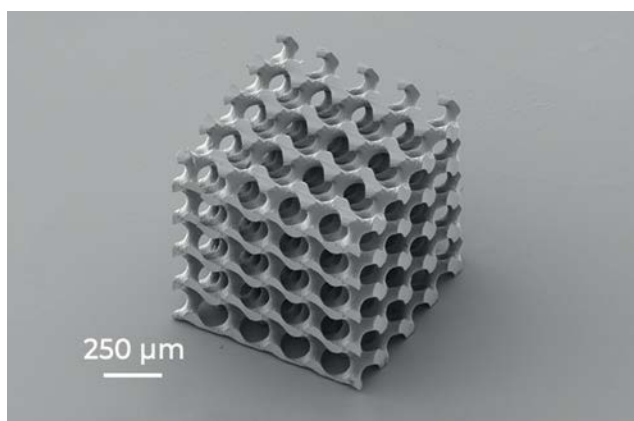
Source: Workshop of Photonics.

3D glass etching



Structure fabricated in fused silica.

3D multi-photon polymerization

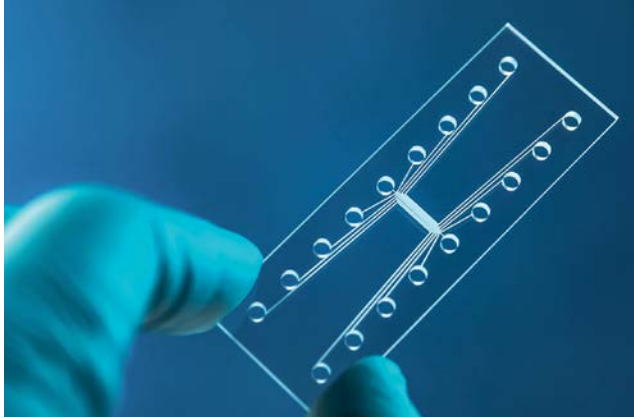


3D structure fabricated from SZ2080 polymer using multi-photon polymerization.

Source: Femtika.



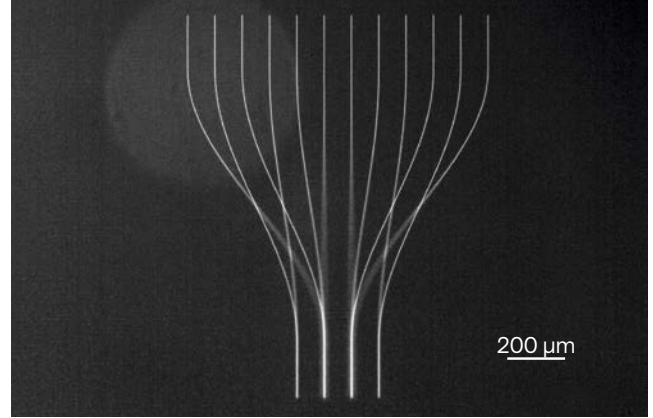
Microfluidic channel ablation and welding



Microfluidic chip manufacturing with channel sealing.

Source: Workshop of Photonics.

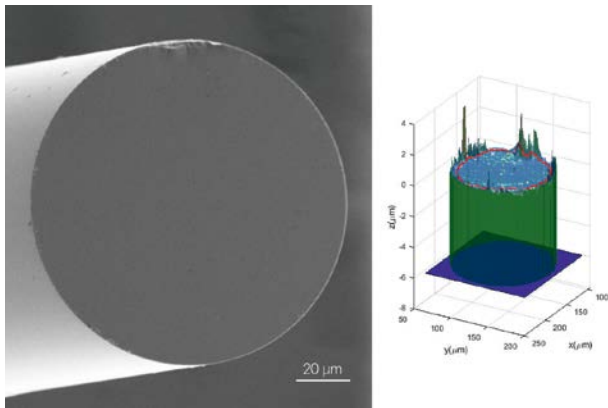
3D waveguides



3D waveguides fabricated in fused silica.

Source: Workshop of Photonics.

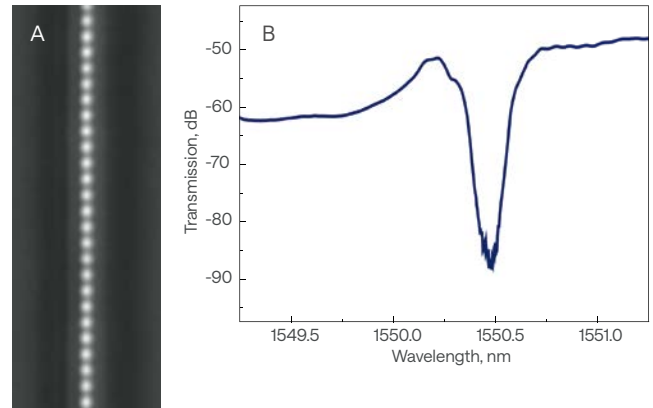
Fiber cleaving



Fiber end-face after laser-based scribing (left) and its surface profile (right).

Source: Swinburne University of Technology.

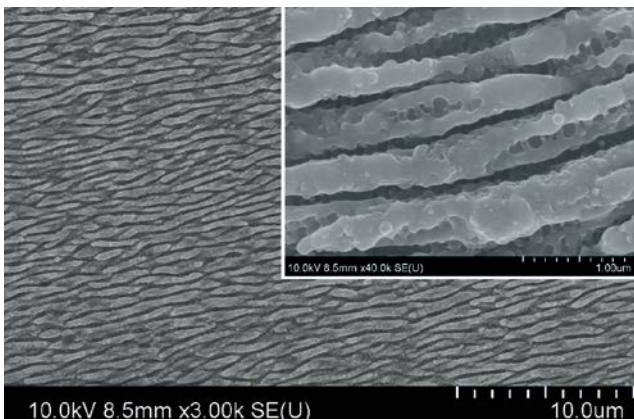
Bragg grating waveguide (BGW) writing



First-order Bragg gratings inscribed in a waveguide (a). Resonant spectral transmission of the inscribed BGW (b).

Source: G.Zhang, et al. Photon. Res. (2019).

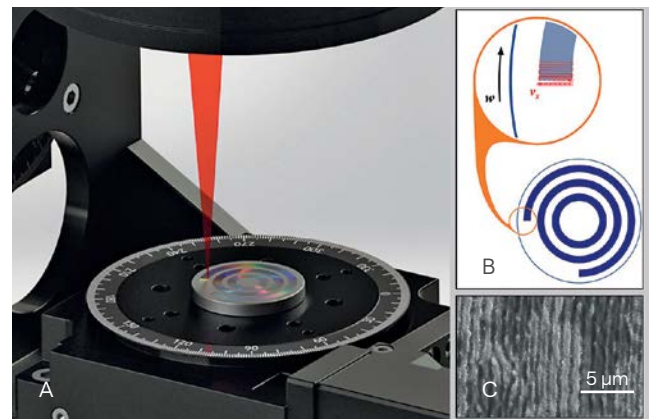
SERS sensor fabrication



SEM image of the Ti-6Al-4V (TC4) surface after irradiation with a progressive laser scan.

Source: L.Lu, et al. Nanomaterials (2019).

Friction and wear reduction



Schematic of the laser treatment (a), laser patterning strategy (b), SEM image of induced LIPSS (c).

Source: I.Gnilitskiy, et al. Lubricants (2019).

Intraocular lens cutting



Laser-cut intraocular lens.

Source: LASEA.

Silicon Carbide dicing



Single-pass (300 mm/s) dicing of a 500 μm thick 4H-SiC wafer.

Cutting and welding



Cut and welded parts from brass using a single laser system.

Silicon dicing



Precise dicing of a silicon wafer.

Surface texturing



Moon-like surface texturing on a watch bezel.

Source: LASEA.

Nozzle drilling



Precision drilling of the nozzle holes.

