

PLASMONICS

Nanoscribe's Photonic Professional *GT2* system is the world's highest resolution 3D printer. It offers resolution between what can be achieved with electron beam lithography and UV lithography, providing at the same time the full fabrication flexibility for 2D, 2.5D as well as for 3D objects. Highest accuracy for high performance demanding researchers is enabled with one single instrument that can be installed in a non-clean room as well as in a clean room environment. Maskless lithography is possible on silicon wafers as well as on non-conductive substrates like glass. The four examples below show ways to achieve plasmonic behavior.



PERFECT ABSORBER

Challenge: Fabrication of a metamaterial absorber in the MID-IR range, that shows good heat dissipation.

Solution: Printing of a polymeric four-tined fish-spear-like resonator array that is covered by a continuous metallic film for excellent thermal conductance.

Source: DOI: 10.1002/adma.201300223

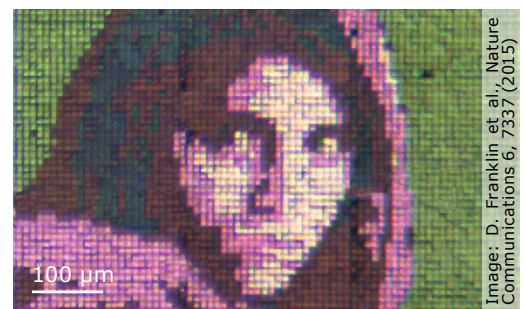


PLASMONIC COLOR DISPLAY

Challenge: Develop a reflective display with pixels based on a surface plasmon resonance that can be tuned electrically to modulate the color.

Solution: Fabrication of a 2.5D master pattern array of nanowells and subsequent processes like nanoimprinting, aluminum coating and placing of liquid crystals.

Source: DOI: 10.1038/ncomms8337

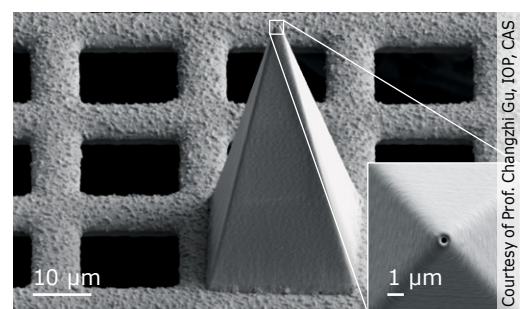


SUBWAVELENGTH LIGHT FOCUSING

Challenge: Provide a novel methodology for realization of 3D plasmonic focusing with a signal stronger than other techniques for subwavelength light focusing.

Solution: Fabrication of hollow pyramids with apertures of varying sizes and subsequent coating with a thin gold film on different substrates including a copper grid.

Source: DOI: 10.1364/OE.23.022564

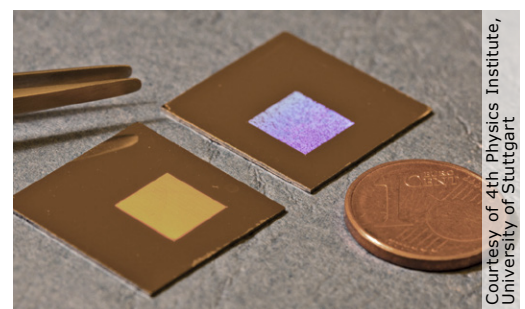


PLASMONIC NANOANTENNA

Challenge: Establish an easy-to-use alternative for electron beam lithography for fabrication of plasmonic nanoantennas with line widths down to 105 nm.

Solution: The Photonic Professional *GT* enables patterning of polymer serving as an etch mask on a gold layer covering an area of tens of mm².

Source: DOI: 10.1021/acsp Photonics.5b00141



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

Nanoscribe GmbH

Phone +49 721 981 980 0

E-Mail plasmonics@nanoscribe.com

Web www.nanoscribe.com