

CASE STUDY

FEMTOPRINT

The Idea

FEMTOPRINT® technology consists in a table-top 3D printer to produce glass microsystems with nano-scale features. It applies an ultrafast low power femtosecond laser to fused silica or other transparent substrates. The laser, focused inside glass, locally modifies the refractive index of the material and increase the etching rate. The result is the possibility to create 3D optical waveguides or 3D micro-nano pattern with a maskless process.

Solution

This simple process opens interesting new opportunities for a wide range of users to create their own microsystems rapidly and without the need for expensive infrastructure. A broad variety of microsystems with feature sizes down to the nano-scale can be produced. These patterns can be used to form integrated optics components or be 'developed' by chemically etching to form 3D structures like fluidic channels and micro-mechanical components.

Worth noticing, sub-micron resolution can be achieved and sub-pattern smaller than the laser wavelength can be formed. Thanks to the low-energy required to pattern the glass, table-top femtosecond lasers not exceeding the volume of a shoe-box are sufficient to produce such micro- and nanosystems.



FEMTOprint

