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Femtosecond laser micromachining of transparent material is a powerful and versatile technology. In fact, it can be applied to several materials. It is a maskless technology that allows rapid device prototyping, has intrinsic three-dimensional capabilities and can produce both photonic and microfluidic devices.

## **Femtosecond Laser Micromachining: Photonic and ...**

Femtosecond laser micromachining can be used either to remove materials or to change a material's properties, and can be applied to both absorptive and transparent substances. Over the past decade,...

## **Femtosecond laser micromachining in ... - Nature Photonics**

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Microprocessing is an expanding market

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for laser sources both displacing non-laser processes and opening new applications. • Laser micromachining technologies have revolutionized manufacturing in microelectronics, semiconductor, photovoltaics, LED, medical device fabrication.

## **Femtosecond Laser Micromachining Applications | IPG Photonics**

Femtosecond lasers have unique characteristics of ultrashort pulse width and extremely high peak intensity; however, one of the most important features of femtosecond laser processing is that...

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Ultra-high precision femtosecond laser micromachining workstations for industry and science needs. Perfect choice for scientific laboratories and R&D centers - an entire laboratory on an optical table. Highly reliable, ultra-high precision industrial femtosecond laser micromachining workstation.

### **Products - Workshop of Photonics | Femtosecond Laser ...**

Femtosecond laser micromachining is used to inscribe waveguide Mach-Zehnder interferometers in a glass chip and to pattern gold resistive heaters on the chip surface.

### **Thermally reconfigurable quantum photonic circuits at ...**

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Workshop of Photonics. We are dedicated to developing instruments and solutions for femtosecond laser micromachining tasks. It is our passion for over 17 years, starting in 2003. Our state-of-the-art systems together with the great team, allows us to provide winning solutions, that meet customers' requirements. More about us.

## **Laser Micromachining Solutions - Workshop of Photonics**

To facilitate this, a novel femtosecond laser-based machining protocol has been developed that allows the precision sculpting of access slots into the NCF core along the length of the fibre. The process is a direct-write process using a digitally defined scanning strategy with no need for physical masks or additional processing such as wet etchants and/or focussed ion beam machining.

## **OSA | Femtosecond laser machining of hollow-core negative ...**

Femtosecond lasers currently show

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much promise as potential sources of choice in a number of laser micromachining applications, including biomedicine, photonics and semiconductors. The status of micromachining with femtosecond pulses is reviewed for a variety of materials and a comparison made with other solid-state lasers.

## **Femtosecond Laser Micromachining: Current Status and ...**

Femtosecond laser micromachining of transparent material is a powerful and versatile technology. In fact, it can be applied to several materials. It is a maskless technology that allows rapid device prototyping, has intrinsic three-dimensional capabilities and can produce both photonic and microfluidic devices.

## **Femtosecond Laser Micromachining | SpringerLink**

Femtosecond laser is among the greatest breakthroughs of laser

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technologies in the last century, and we have recently witnessed that the 2018 Nobel Prize in physics was awarded to Professors Gerard Mourou and Donna Strickland for their groundbreaking work in chirped pulse amplification (CPA) technology which leads to an explosive improvement in the peak power of ultra-fast laser.

## **Single femtosecond laser beam induced nanogratings in ...**

Femtosecond lasers provide a cold ablation micromachining process due to their high peak-power. The high peak-power breaks down the material almost instantly and removes it without affecting the surrounding material. It is ideal for processing of fine 100s of microns features, or smaller, with a minimal heat-affected zone (HAZ).

## **Femtosecond lasers for medical device manufacturing and ...**

Femtosecond lasers ensure high quality polyimide micromachining Precise



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machining of small features in thin materials calls for ultrafast, high-power lasers. In our application laboratory, we have seen good results when machining very small features in 25  $\mu\text{m}$  thick polyimide film using our IR and green wavelength ORIGAMI XP lasers.

## **Femtosecond lasers ensure high quality ... - NKT Photonics**

Many important microstructured photonic devices are produced with femtosecond laser with particularly few pulses, and the number of pulses remarkably affects the quality of the microstructures. 32 Therefore, the effect of the number of pulses on the damage and its morphology with various energy densities is further studied.

## **Surface damage and threshold determination of Ge-As-Se ...**

Femtosecond machining has not yet been readily accepted by industry due to the complexity of these systems. U.S. Photonics has addressed these issues

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including thermodynamics, vibration isolation and control, positioning systems and laser delivery, offering a completely hands-off solution that is simple to use and capable of mass production.

### **US Photonics Inc. |·| About Us and our Ultrafast ...**

The advent of picosecond and femtosecond fiber lasers has provided compact and easy-to-maintain ultrafast tools for industry and academia.

Applications of these lasers range from materials processing to microscopy and other scientific uses. Placing these lasers at the technological leading-edge are advances that include polarization-maintaining and photonic-crystal fibers, as well as cavity ...

### **Picosecond and femtosecond fiber lasers serve industry and ...**

"Femtosecond lasers are important for many applications because they emit a large number of photons in a short

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period to provide a very high intensity and extremely high precision without causing ...

## **New ultrafast yellow laser poised to benefit biomedical ...**

"Femtosecond lasers are important for many applications because they emit a large number of photons in a short period to provide a very high intensity and extremely high precision without causing any thermal damage," says Ghosh. "However, there is no commercially available femtosecond yellow laser that can provide all the desired parameters ...

## **Tunable high-power femtosecond yellow laser has biomedical ...**

Gas sensing is crucial to applications ranging from medical diagnostics (including cancer detection) to pollution monitoring. Photonics can help make gas sensors compact and extremely sensitive, as in a silicon nitride (SiN) waveguide-based sensor designed and

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tested by researchers at Ghent  
University (Ghent, Belgium) and TU Wien  
(Vienna, Austria) that senses acetone,  
isopropyl alcohol, and ...

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