INO
CHALLENGING LIGHT
FOR OUR PARTNERS

LASER MICROMACHINING

INO is a world-class center of expertise in industrial applications for optics and photonics. As a leading technology developer and provider, INO is home to a large concentration of skills in the field of laser micromachining in Canada.

Our team of laser micromachining specialists works together with our clients to develop custom solutions to problems for which no solutions are available on the market. We can also develop open-architecture systems whose configuration can be modified by users to meet a variety of needs. Our optics/photonics know-how is both practical and diverse, allowing us to incorporate our micro-machining capabilities into our other areas of expertise to develop innovative components that can be used in the most complex photonic systems. During the past years, INO has also developed uniquely agile fiber lasers to further add flexibility to the micromachining processes.

SPECIALIZED EQUIPMENT & TOOLS

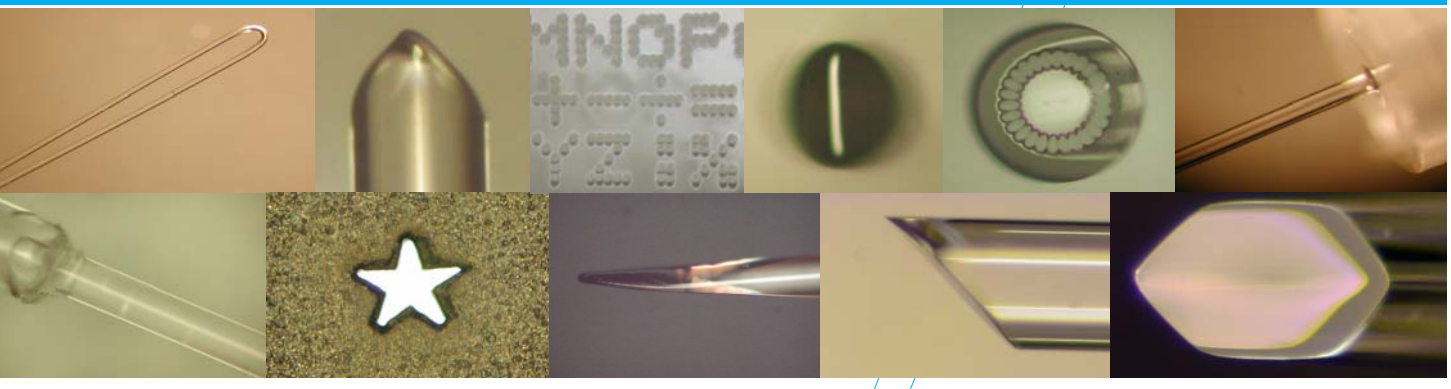
Our micromachining processes include ablation processes (cutting, drilling, and shaping) and fusion processes (welding, polishing, and forming).

We have permanent setups for process development:

- _ CO_2 lasers (4 systems)
- _ Femtosecond laser
- _ Excimer laser
- _ Nd: YAG laser (1,064 nm, 532 nm, 355 nm, and 266 nm)

For plastics, the CO_2 laser offers a number of possible industrial processes such as cutting, drilling, and welding. For metals, the femtosecond laser yields a machining resolution of about 1 µm while reducing thermal effects. CO_2 and femtosecond lasers can also be used for machining ceramics, while in many cases excimer lasers offer the best blend of machining speed and precision.

In addition, INO uses its own patented technologies to design pulsed nanosecond fiber lasers (MOPAW) allowing for fine shaping of laser output pulses emitted from Yb doped and Er doped fiber lasers at 1064 or 1530 nanometer.



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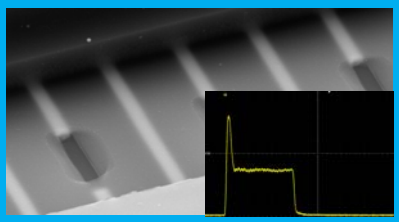
APPLICATIONS

We have built an enviable reputation among small and medium-sized businesses by offering them custom micromachining services and processes for specific applications. We can develop custom processes, prototype machined parts, and machining systems on demand.

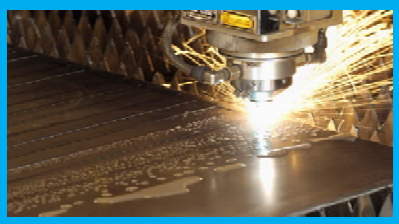


SEMICONDUCTOR MEMORY REPAIR

Our client wanted to develop a new generation of lasers to process and repair DRAM, SRAM, and other types of memory that are continuously breaking new ground in terms of miniaturization. The performance of the lasers used for these repairs must constantly be enhanced to improve process efficiency and product quality while reducing costs. We developed an industrial fiber laser that can operate 24 hours a day/seven days a week and which provides unparalleled flexibility in laser pulse shaping.

LASER SCRIBING THIN FILM FOR PHOTOVOLTAIC CELLS

The use of photovoltaic (PV) cells that harness the power of the sun to produce electricity is growing very rapidly. One of the main types of solar cells is composed of active layers of CIGS thin film (made from copper, indium, gallium, and selenide) deposited between two electrodes. After each layer is completed, laser scribing or patterning must be performed for electrical isolation and to divide the solar panel into many cells. Fiber lasers are expected to play a major role in this industry. ››



METAL MACHINING

Laser technology is extensively used in metal machining, which is why a wide variety of machining systems are now available on the market. However, demand for ever-smaller miniaturized components with new features can impose constraints beyond the capacity of existing systems. For these applications, we use a femtosecond laser, which allows us to perform precise machining operations with minimal thermal impact on the surrounding material. Furthermore, for grooving and cutting of metal, tests conducted with our MOPAW fiber laser have shown very promising results. ››

PLASTIC MACHINING

Laser micromachining processes have many advantages. They allow for micro-scale machining and are contact free, which helps prevent surface contamination. In addition, laser welding makes it possible to fabricate components without adhesive for results that are more stable, durable, and shock resistant. CO_2 lasers can just as readily be used for cutting and drilling as for welding plastic parts and films. Lasers are ideal tools for highly localized heating and very fast processing. ››

SEE OUR COMPLETE PORTFOLIO AT WWW.INO.CA

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