



Sintec Optronics

September 2016 Issue

# SINTEC NEWSLETTER

Laser Expert in Singapore

<http://www.SintecOptronics.com>

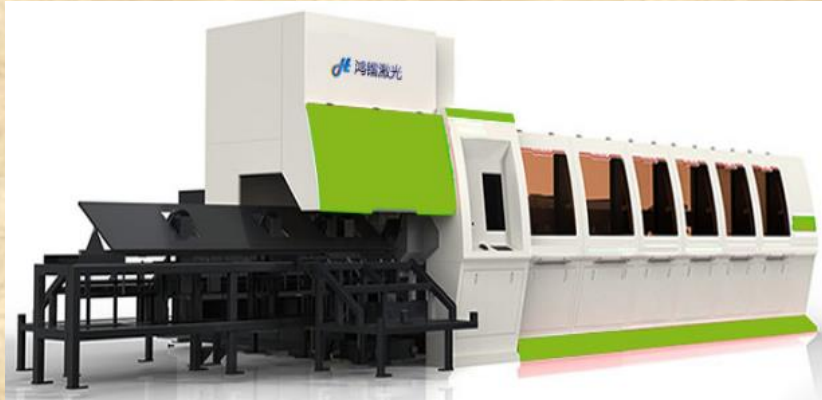
## *Quality and Excellence, presented by Sintec Optronics*

### Laser Machines for Marking, Welding, Cutting etc.

We have many laser machines for different applications! We invite you to see our overview videos on youtube:

[https://youtu.be/T\\_TnOwEQI3U](https://youtu.be/T_TnOwEQI3U)

<https://youtu.be/63nLTd3RPCY>



We make use of unique robotic solutions like robot arms to angle the laser incidence on your object. This ensures 6 degrees of freedom in up/down, left/right, forward/backward, and the 3 rotation axis: pitch, yaw, roll. This allows us to incident the laser at unique angles for non-standard shapes!



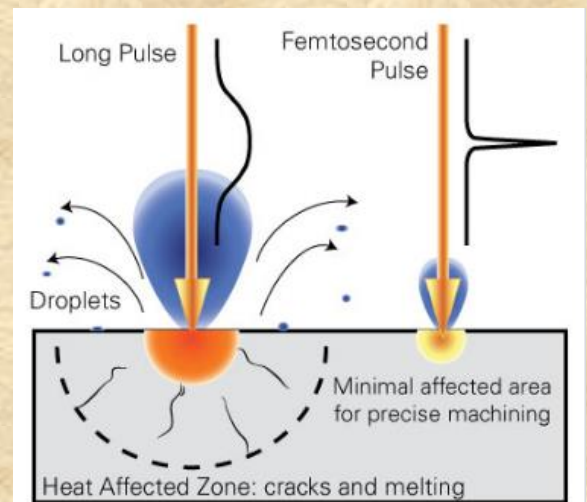
Pipes to be cut at 45 degree angle, and to have odd shapes cut from the sides!

### Ultrafast pulse width Laser Applications

We are now exploring to make laser machines using ultrafast pulses.

For long pulse (nanosecond duration) laser machining, the energy is deposited over a relatively long period of time, allowing heat to be conducted into the material and cause undesirable effects such as splatter and re-solidification of melted material, discoloration, cracks, and voids due to thermal stress. The size of the "Heat Affected Zone" (HAZ) limits the minimum feature size that can be created.

For ultrashort pulse laser processing (pulse durations of 10-12 seconds and below), the duration of the laser pulse is shorter than the time required for energy to be transferred to the surrounding area of the laser interaction volume, or transferred from electrons to atoms, when the initial incident light is absorbed by electrons. This minimizes the HAZ and maximizes the precision of the material processing.



This allows us to do very precise micromachining shown in the pictures below. Inquire our ultrafast laser sources today !



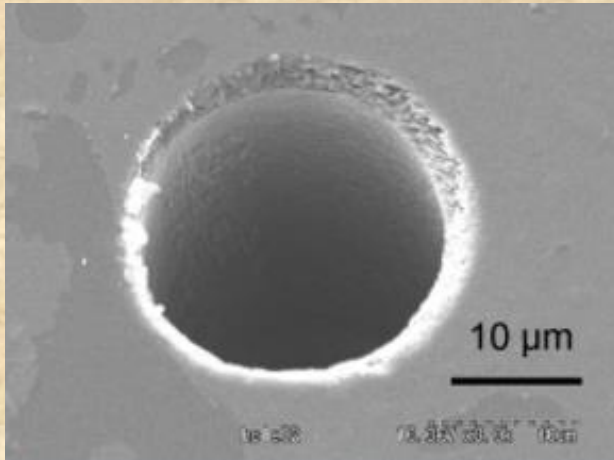
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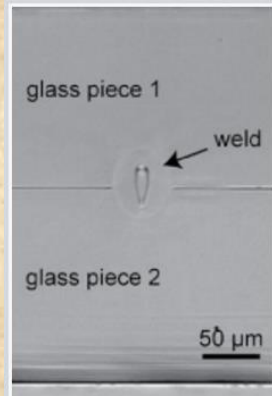
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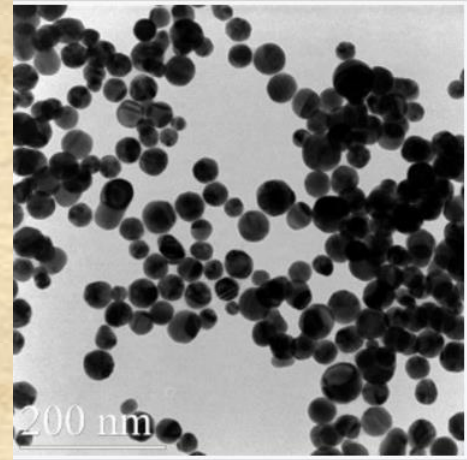
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**Femtosecond laser micromachining: 20 µm diameter hole in single crystal diamond**



Cross-section of a femtosecond laser weld at the interface between two pieces of glass. A complete seal is formed, with no damage to the external surfaces of the glass.



TEM image of nanoparticles generated with femtosecond fiber laser ablation directly in liquid. Average particle size is < 40 nm.

## **Electro Optical Q-switches Pockels Cell**

A Pockels cell alters the polarization state of light passing through it when an applied voltage induces birefringence changes in an electro-optic crystal such as KD\*P and BBO. When used in conjunction with polarizers, these cells can function as optical switches, or laser Q-switches. Frequently, Q-switches are employed in laser cavities for the purpose of shortening the output pulse, resulting in a light beam with enhanced peak intensity. High-speed electronic drivers properly matched to the cell produce the best results for short pulse applications.

Nowadays, many laser applications demand faster and faster repetition rates. Acousto-Optical Q-switches offer rise time of hundreds of nanoseconds, but Electro Optics can offer rise times of 1ns only! Basically, Electro-optics can do everything Acousto-optics can do, but much faster!

There are different crystal materials such as KD\*P, KTP, RTP, BBO, LiNbO3 etc. for different wavelength of operation.



## **Office in Bangalore! \*NEW**

We are pleased to announce our new office in Bangalore! The new office will be fully operational by the end of the year, but we have already started basic operations. The purpose of this office is to provide good service and fast response to our customers in India! Our sales engineer will be happy to meet you for a chat and discuss your needs. The primary contact for our India office is [india@sintec.sg](mailto:india@sintec.sg)

## **Exhibition: Laser World of Photonics India (Sept 21-23 in Bangalore)!**

We are attending Laser World of Photonics India next! We hope to see you at our booth! Our booth is located in the Singapore Pavilion ! Our booth number is **B019-B**

## **Promotional items!**

We are currently overstocked on items such as Q-switch drivers, laser lamps, CO2 focussing lens and CO2 f-theta lens, high power fiber cable, ceramic reflectors, Optical galvanometers that supports 12-30mm apertures, and galvo drivers. Inquire about our stock items now and receive large discount!

## **Price reduction over all our products!**

Our prices have also recently reduced over all our product range! Please inquire our sales for updated price lists !

## **Sintec Optronics (India)**

Bangalore

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