PikaRay-10µJ

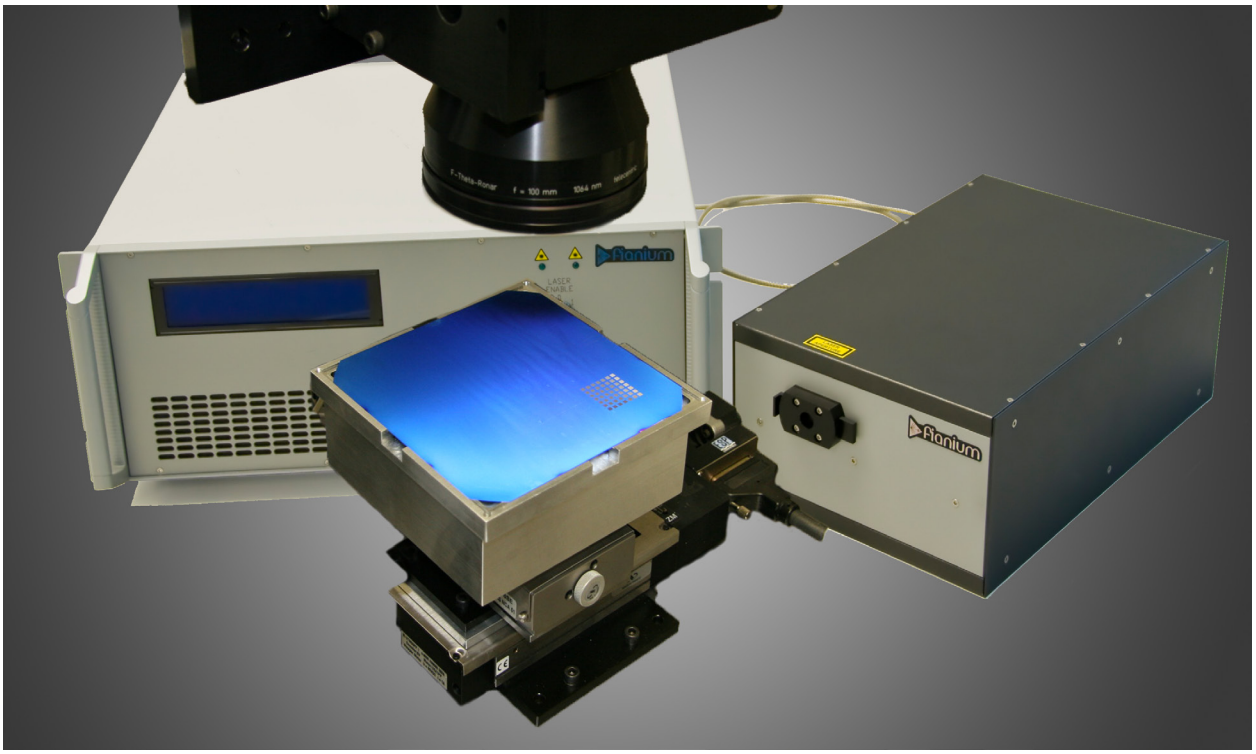
Ultrafast Laser Micromachining System

MICROTECH® instruments, inc.

Product Description:

The PikaRay-10µJ system is based on an ultrafast fiber laser combined with an optical scanner, positioning hardware and control software. Ultrafast fiber lasers provide a combination of reliability and ultra-high peak power, which makes them the ideal tool for industrial material processing applications. The picosecond laser ablation process occurs on such short timescales that thermal effects are minimized. Without thermal effects, micro-cracking, melting, and other common defects that are commonly problematic in nanosecond laser processing are avoided.

Product Components:



Product Specifications:

Laser Wavelength:	532 nm and 1064 nm
Pulse Energy:	5 µJ at 532 nm and 10 µJ at 1064 nm
Pulse duration:	20 ps
Repetition rate:	from single shot to 1 MHz
Thin-film scribing rate:	up to 10 m/s
Thin-film clearing rate:	up to 100 mm^2/s

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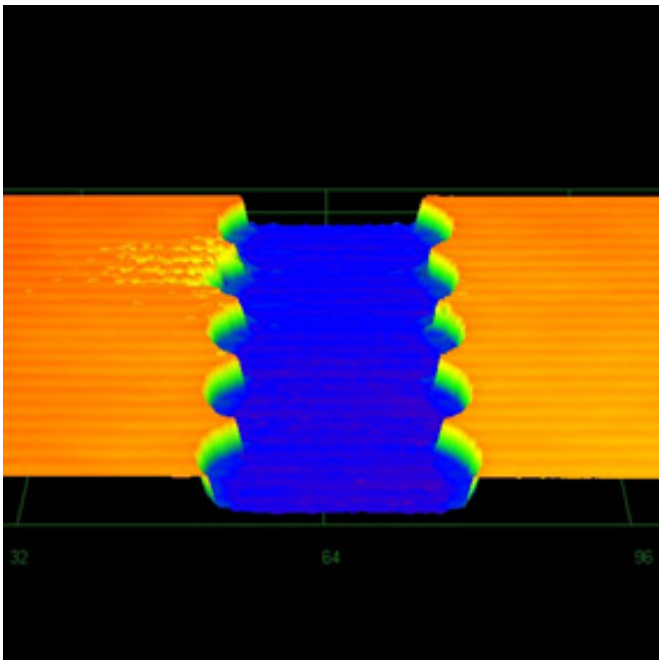
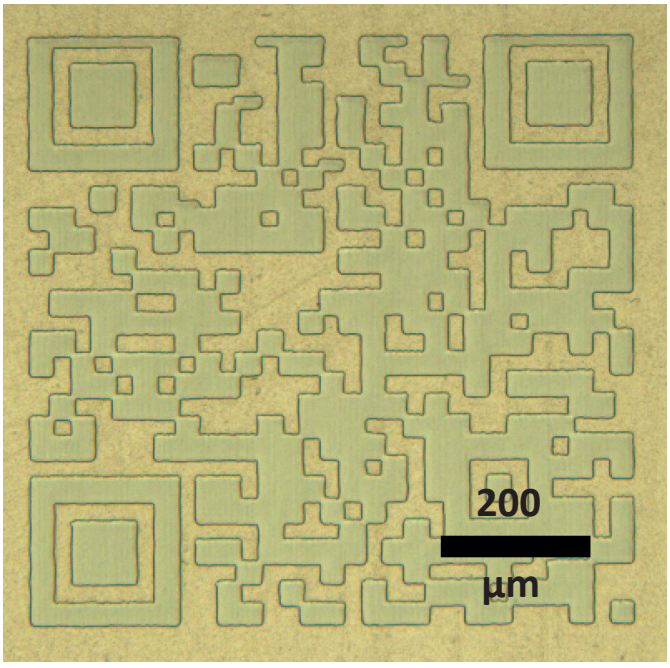
The input beam size and the focusing objective can be tailored to provide a customizeable spot size on the workpiece as small as 5 µm. The software synchronessly controls the laser output and the location of the focused spot on the work surface, so arbitrary patterns and text can be marked and machined with ease and at high speed.

Positioning hardware: designed to customer specifications.

Applications:

- Processing of thin metal films on bulk substrates and plastic membranes
- Patterning Silicon Nitride Anti-Reflection Coatings on Crystalline-Silicon Solar Cells
- Scribing and patterning of transparent conducting oxide (TCO) thin films.





Confocal microscope image of a patterned metal film (left) and microscope image of a patterned area of TCO film (right). The images demonstrate the capability to selectively remove and pattern the thin films in arbitrary and complex shapes with very high quality.

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