

Processes:

- Novel UV solid state laser process.
- Direct ablation of organic substrate materials.
- Direct patterning of thin films on flat substrates.
- Direct imaging / sintering of specialist functional materials.

Capabilities:

- High resolution imaging optics (<3um L:S).
- No constraints on pattern complexity.
- Efficient debris extraction.
- Auto-alignment <5um, Autofocus.
- Automatic loading (optional)
- Fully flexible process optimisation.
- Accurate depth control / selective material removal.

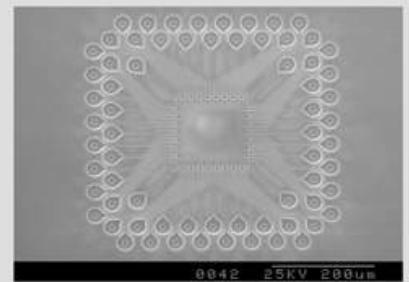
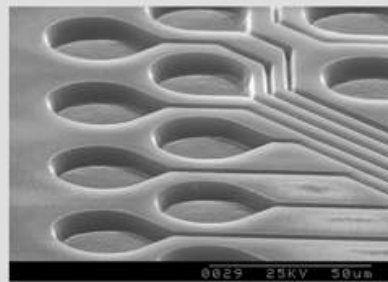
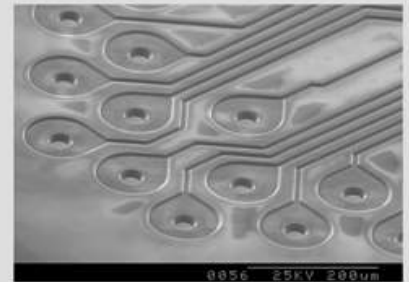
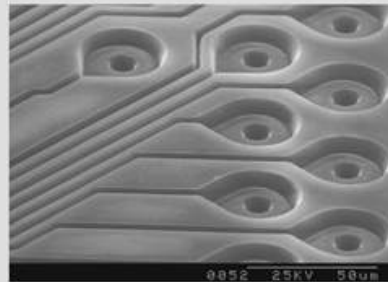
Low cost of ownership:

- Single step, dry etching process.
- No chemicals, gases, waste water treatment.
- No hazardous materials.
- <50% CoO vs equivalent Excimer process.
- Simple control system.
- Long maintenance intervals.
- Low infrastructure costs vs Excimer lasers or photolithography equipment.

MSV-302C

Advanced IC Package Manufacturing Tool

Product Datasheet



The **MSV302C** is a high volume manufacturing machine specifically designed for high resolution LDA (Laser Direct Ablation) of organic substrates. The ablated structures enable embedded circuitry, required for next generation IC substrates and interposers.

The technology allows direct ablative removal of organic materials down to a resolution of a few microns, utilising M-Solv's proprietary 'Scanned Mask Imaging' (SMI) technology.

The ablated 3D structures can be subsequently filled with a conducting material to create embedded circuitry.

Built upon an ultra-stable, vibration isolated granite structure, the multi-mode solid state laser beams are scanned at high speed to illuminate a photo-mask, which is subsequently imaged and de-magnified onto the surface of the substrate.





The MSV302C is capable of processing on 20" x 24" substrates. High accuracy, high speed X-Y translation stages and mask positioners allow for accurate registration of image to substrate.

Using solid state lasers and multiple process heads, the MSV302C ensures high throughput at a low cost of ownership.

This fully industrial and automated tool can include auto-loading from cassette by robot, and is controlled proprietary software.

Beam Delivery:

- Wavelength: 355nm
- Image field*: 20x20mm
- Resolution*: <3um
- Photo-mask: up to 7x7"
- Beam shaping optics

Process:

- Scanned Mask Imaging (SMI)
- Step & repeat
- Scan methods: raster, point & shoot, custom path
- Thru' mask via imaging (photo-mask free via processing)

Process Control:

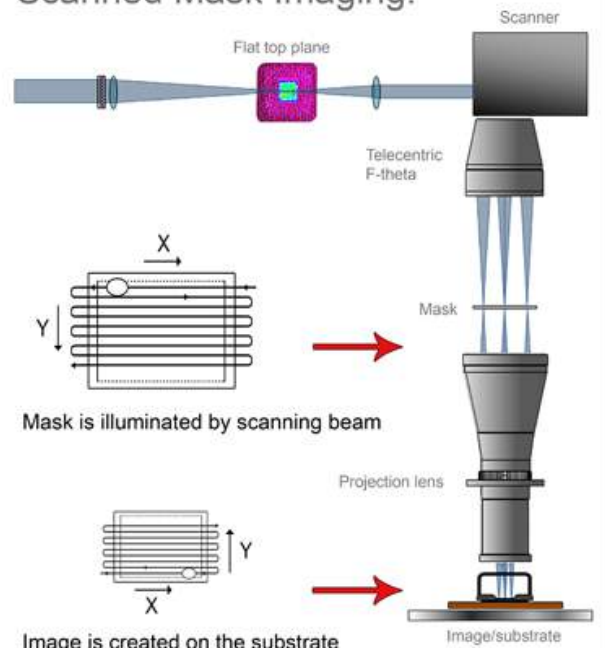
- Fast, high accuracy CNC X-Y translation stages
- Mask positioner
- Fast glavo-scanner
- Dynamic autofocus
- Dynamic process control
- Efficient debris extraction
- M-Solv process software
- Auto-loading (optional)
- Auto-alignment (<5um), fiducial skiving

Machine Architecture:

- Multiple process heads (operate in parallel)
- Ultra stable granite sub base
- Vibration isolated machine core
- Class 1 laser safe, interlocked enclosure
- Touch panel user interface
- Enclosed electronics
- Dimensions: 1600mm(H) x 2000mm(W) x 2000mm(D)
- Weight: <3000kg

*Lens specification can be customised, with trade-offs between field, resolution and cost. M-Solv reserves the right to change machine specifications without prior notice.

Scanned Mask Imaging:



The above SMI method allows the laser energy to be directed to where it is required, allowing more efficient illumination of the mask (Point and Shoot Illumination).

The addition of a simple aperture upstream of the scanner allows "mask-less" via formation, using Point and Shoot Thru' Mask Imaging.

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