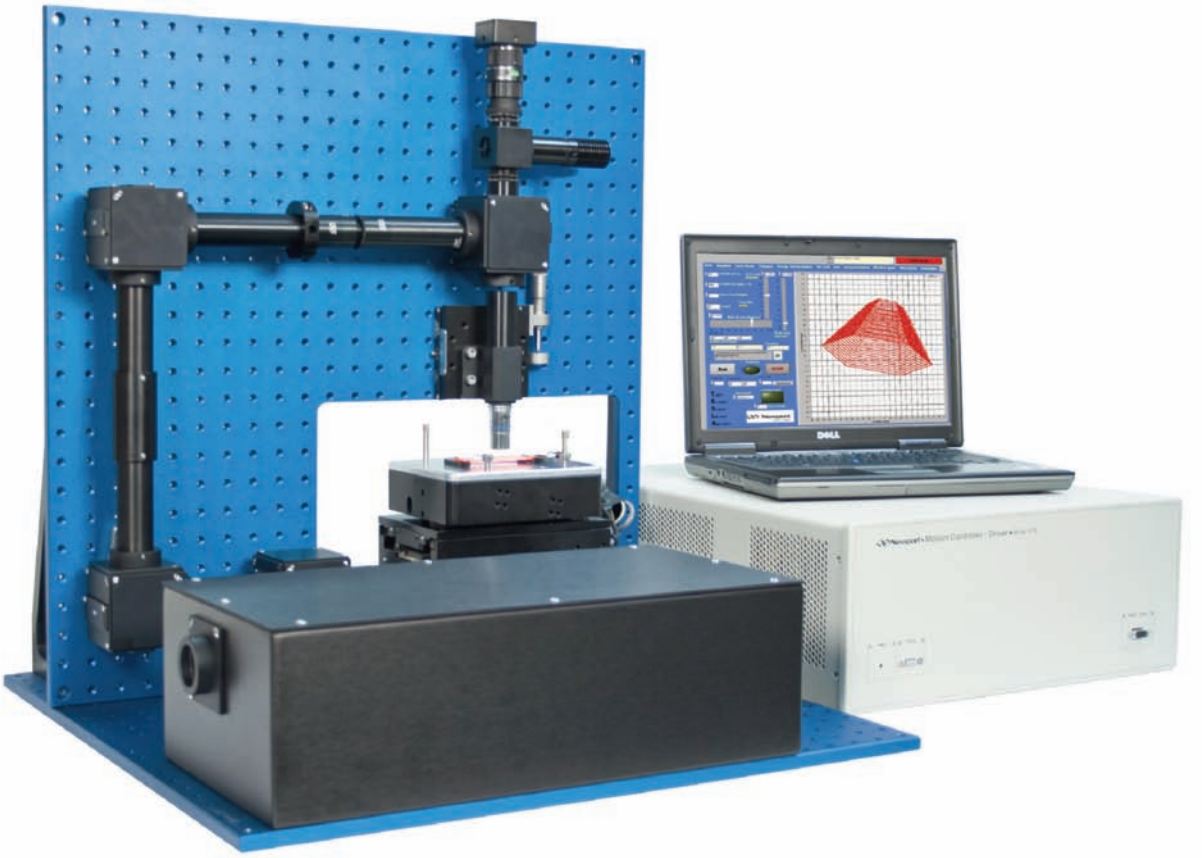
Laser μFAB™

MICROFABRICATION WORKSTATION



Newport's Laser μFAB is a table-top easy to use micromachining tool for various applied materials research fields. This device combines the flexibility and accessibility of a typical research grade experimental setup with the stability, reliability, and ease of operation of a fully developed industrial instrument. The Laser μFAB can be integrated with various types of lasers giving the user the capability to machine virtually any dielectric, conductive, and ceramic materials. With the aid of software written specifically to meet the requirements of laser micromachining, two- and three-dimensional microstructures can easily be patterned. Newport's Laser μFAB is the ideal solution for the most advanced research in materials science and device physics.

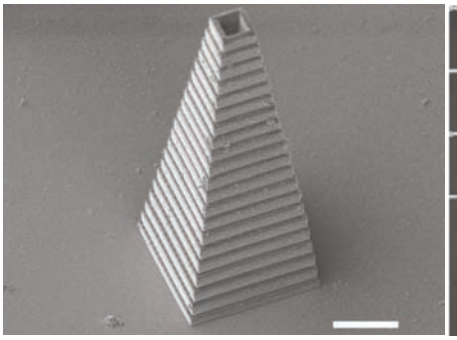
Please contact a Newport sales representative at our toll free number 1-800-222-6440 or email tech@newport.com to order or to find out more. For custom needs please contact Newport's Technology and Applications Center team.

Applications

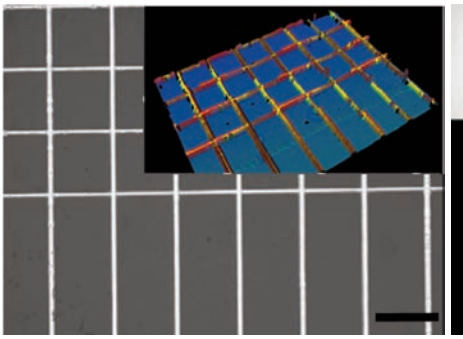
- Three-dimensional microfabrication by two-photon polymerization of photonics, microelectronics, and MEMS devices
- Ablation of industrially relevant materials including metals, polymers, semiconductors, glasses, ceramics, and biological targets (laser milling, dicing, scribing and selective material removing)
- Volume writing of waveguides and microfluidics in dielectrics
- Nanosurgery for in vivo sub-cellular investigations in model organisms
- Surface micro- and nano-structuring (sensors and bio-inspired materials)

Newport
Experience | Solutions

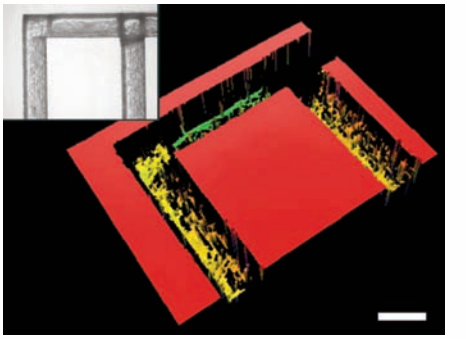
Laser µFAB™



Three-dimensional microstructure fabricated with two-photon polymerization using the laser µFAB workstation and imaged with a scanning electron microscope (scale bar 20 µm)



Laser assisted deposition of silver patterns on a glass substrate using a Mai Tai® laser (scale bar 20 µm). A surface profile of the same sample is shown in the inset



Two-dimensional patterns on polymer film fabricated by laser ablation using a Spitfire® amplifier. The same sample viewed through a light microscope is shown in the inset. (scale bar 10 µm)

Specifications:

Laser source:	400-1100nm wavelength range, output beam diameter 5 mm (at $1/e^2$)
Spot size on sample:	≤ 1 µm when using microscope objectives and 10-20 µm when using simple lenses
Laser power control:	Computer controlled variable attenuation from OD0 to OD4
Motion system:	Total travel distance (XYZ): 100mm x 100mm x 5mm
	Resolution: 0.05 µm; Maximum XY speed: 300 mm/s
Vision system:	On-axis reflective light microscopy for monitoring real-time laser processing
User interface:	Simple and intuitive software for advanced laser processing

ABOUT NEWPORT'S TECHNOLOGY AND APPLICATIONS CENTER

Newport's Technology and Applications Center (TAC) develops application-specific solutions for our research customers. Current activities of the TAC are focused in the areas of Ultrafast Spectroscopy, Nonlinear Microscopy, Raman Spectroscopy, Ultrafast Micromachining, and Test and Characterization of Photovoltaic Solar Cells. Using in-house expertise and collaborations with key educational institutions, the members of this team develop application solutions, write Application Notes and publish articles in peer reviewed journals. TAC team has integrated Newport products into a number of stand alone devices in the form of kits. Supercontinuum generation, CARS microspectrometer, characterization and attenuation of ultrafast laser pulses and Two-photon polymerization are a few of the examples of complete solutions developed by TAC members.

To learn more about TAC and its activities please visit us on the web at www.newport.com/tac and for a complete list of preconfigured solutions developed at TAC please visit us on the web at www.newport.com/pas

Newport Experience | Solutions

Newport Corporation, Global Headquarters
1791 Deere Avenue, Irvine, CA 92606, USA

www.newport.com

PHONE: 1-800-222-6440 1-949-863-3144 FAX: 1-949-253-1680 EMAIL: sales@newport.com

Complete listings for all global office locations are available online at www.newport.com/contact

	PHONE	EMAIL		PHONE	EMAIL
Belgium	+32-(0)0800-11 257	belgium@newport.com	Irvine, CA, USA	+1-800-222-6440	sales@newport.com
China	+86-10-6267-0065	china@newport.com	Netherlands	+31-(0)30 6592111	netherlands@newport.com
France	+33-(0)1-60-91-68-68	france@newport.com	United Kingdom	+44-1235-432-710	uk@newport.com
Japan	+81-3-3794-5511	spectra-physics@splasers.co.jp	Germany / Austria / Switzerland	+49-(0)6151-708-0	germany@newport.com
Taiwan	+886 -(0)2-2508-4977	sales@newport.com.tw			

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