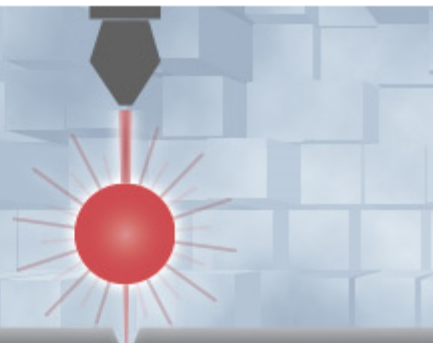


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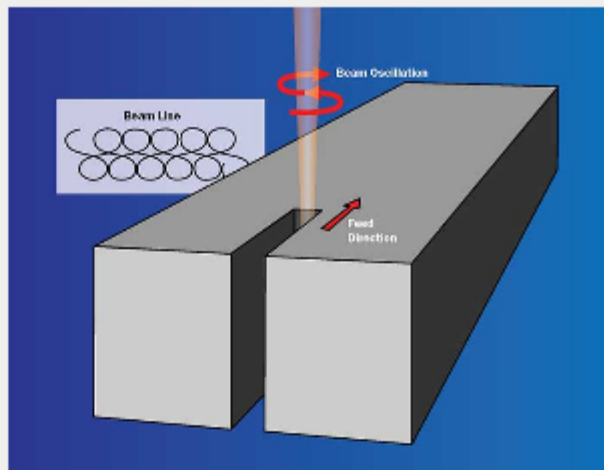
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Industrial Laser News

Dynamic Beam Shaping Improves Laser Cutting of Thick Steel Plates

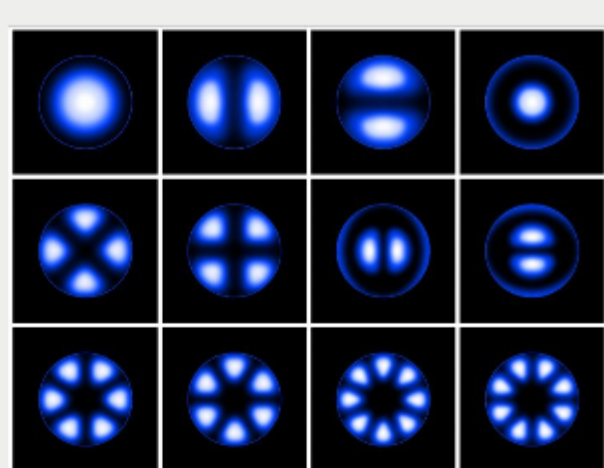
Even though thick plate cutting has a subsidiary market share in laser material processing, it is still a necessary feature for state-of-the-art machines. In recent years, research has concentrated on various quality issues that compromise productivity, resulting in notable improvements. About \$1.1 billion was allotted to research and development of macro laser metal cutting in 2016. Roughly 20 percent of this research addressed sheet thicknesses above 4 mm. Ongoing market monitoring points to a persistent industrial interest in this sector.



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Large Mode Area Optical Fibers Maintain Polarization

An optical fiber has been developed that preserves the coherent properties of light. This tapered fiber could be useful in the construction of high-power pulsed fiber lasers and amplifiers and polarization-sensitive sensors. The fiber enables control over both the distribution of light intensity and the polarization of light. It has an elliptical inner cladding and an extremely large core diameter that increases adiabatically from 8 μm to 70 μm .



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Configuring a 3D Triangulation Vision System

Machine vision using laser-based, 3D triangulation is a powerful way to acquire rapid, accurate measurements of product shape and dimensions, and it can readily identify dimensionally nonconforming units on high-speed production lines. As a result, this technique is employed in industries as diverse as lumber mills and microelectronics manufacturing. But there are many different ways to implement a laser line projection system. Each has its own characteristics, advantages and disadvantages.

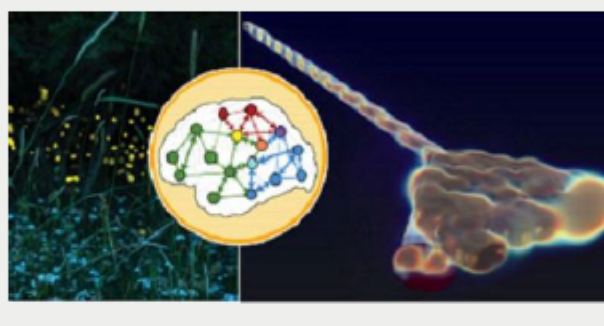
A Comparison of 3D Triangulation Configurations

	Standard Geometry	Reverse Geometry	Specular Geometry	Look-Away Geometry
Primary Advantage	Complexity is simple	High-speed light resolution	Useful with dark objects	Efficient highest measurement resolution
Primary Limitation	Requires large lens depth of field	Compensation of curvature	Specular reflections can cause measurement errors	Some occlusion
Primary Use	General purpose	High accuracy uses	Dark-to-need-to-fully-observed objects	Highly reflective objects, (glass, metals, etc.)

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Anapole Lasers Generate Ultrafast Pulses for Managing Nanoscale Optics

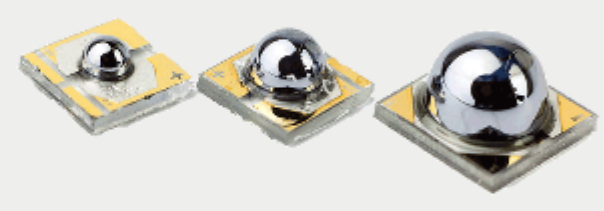
Anapole lasers made from semiconductors shaped into energy-storing nanodisks could be useful as an energy source for nanoscale optics in silicon-compatible platforms. According to researchers, the lasers could be made small enough to fit onto computer circuit boards while retaining the ability to shape and control laser pulses for manipulating things such as data switches, biomedical implants and solar cells.



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Fast and Sensitive Mid-IR Detectors for Gas Sensing

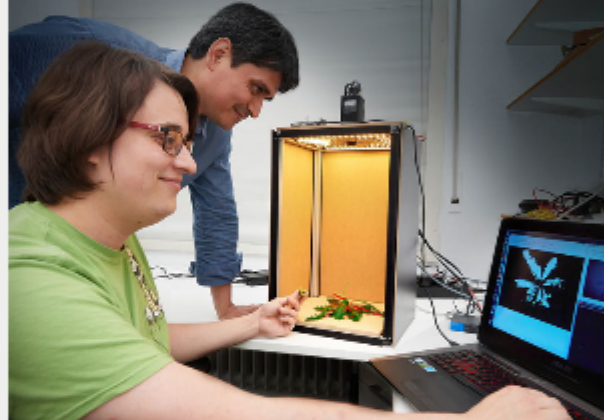
Demands from industrial, petrochemical and new medical diagnostic applications are very wide-ranging — from air quality, emission monitoring and leak detectors, to breath analyzers and explosive material sensors. For many years, mid-IR components were considered expensive, immature and unreliable for wide application in this range. Swift growth of the mid-IR market is changing that.



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Laser-Based Weeding Supports Sustainable Agriculture

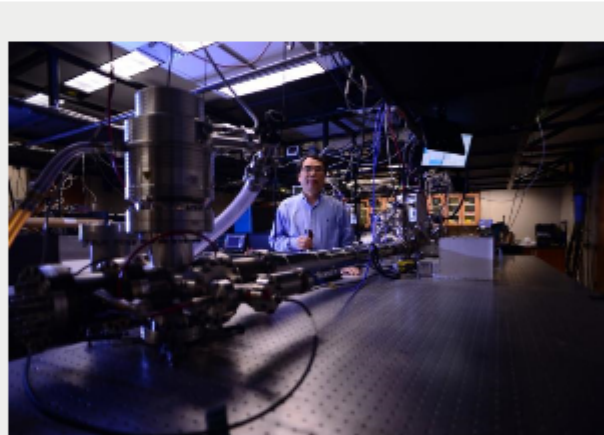
A smart system for controlling invasive weed growth uses multispectral sensors and computer vision algorithms to detect and classify all plants in a field. After weeds are identified, a laser beam is used to eliminate or seriously damage the weeds. Sensing cameras are attached to an all-terrain robot or even a tractor add-on to find and target unwanted weeds.



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53-Attosecond Light Pulse Sets a Record

The demonstration of a 53-attosecond x-ray flash is the fastest light pulse recorded to date, and beats the team's own record of a 67-attosecond extreme UV light pulse, set in 2012. Soft x-ray pulse duration of 53 attoseconds and single pulse streaking reaching the carbon K-absorption edge (284 electronvolt, or eV) were achieved by utilizing intense two-cycle driving pulses near 1.8- μm center wavelength.



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