



Press Release LASER World of PHOTONICS 2013

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Jenoptik to introduce new laser technology and optics at LASER 2013.

Jenoptik will show its new and enhanced laser technology products and optical systems as well as demonstrate its system integration expertise at the LASER 2013 trade show, to be held in Munich from May 13 to 16, 2013. The company is also sponsoring a special exhibition to support the 40th anniversary of the world's leading trade show for photonics.

The exhibited products of the Lasers & Material Processing division include the new semiconductor lasers with further improved efficiency and a new fiber-coupled diode laser module. In addition, new applications of the JenLas® *D2.fs* femtosecond laser and the JenLas® *disk IR70E* disk laser will be on display.

The Optical Systems division will present new UV lenses for laser direct imaging, mask projection and ablation and will show its customized waveguide chips for integrated optical modulators. The company will showcase its multifaceted expertise concerning integrated system solutions by demonstrating beam-forming lenses and microoptics live. It will also introduce an NIR camera system for surveillance.

Special exhibition supported by Jenoptik with a laser show

Jenoptik is supporting the special exhibition called "40 Years LASER World of PHOTONICS" at the Munich trade show by sponsoring a laser show, together with LEC GmbH. The exhibition itself is being held in the reception hall of the Munich trade show grounds to mark the anniversary of the LASER trade show. In addition to other well-known companies in the industry who have provided exhibits, Jenoptik's display case shows the evolution and development of selected high-tech solutions in the fields of optics, lasers, and laser distance measurements.



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Visit Jenoptik at LASER World of PHOTONICS, from May 13th to 16th 2013, at booth # 320 in hall C1.

For further information to the exhibition of Jenoptik's divisions Lasers & Material Processing and Optical Systems, please visit: www.jenoptik.com/laser2013

Jena, May 7th 2013

Overview of the latest products:

More efficient laser material processing with new single emitters and laser bars from Jenoptik.

The new [semiconductor lasers](#) from Jenoptik are perfect pumping sources for fiber lasers and disk lasers. With high efficiencies of over 70 percent and very low beam divergence they combine high output and high brilliance with long lifetime and low costs.

The 9xx nanometer single emitters with 90 micrometer aperture come with 12 Watt output power. Their efficiency at this output power and installation on a passive heat sink is 64 percent. The maximum efficiency that can be attained is 74 percent.

The 9xx nanometer minibars are perfect beam sources: they combine the high brilliance of the single emitters with the low installation costs of the bars. With a maximum output power of 55 Watts and installation on a passive heat sink, they obtain 69 percent efficiency. The improvement of the efficiency is particularly striking in the case of full bars for 976 nanometers and a 20 percent filling factor. With 80 Watt output power these bars provide an efficiency of 66 percent.

The bars for 938 nanometer wavelength and 50 percent filling factor have been improved for the optical pumping of disk lasers. Their efficiency is 64 percent when installed on a passive heat sink and with 200 Watt output power.

All semiconductor lasers from Jenoptik are subject to stringent in-process controls and comply with all requirements of highest quality, reliability and lifetime.

High-resolution images can be downloaded at: www.jenoptik.com/pdb-diodelasers.



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New fiber-coupled diode laser module for material processing.

On a display at the LASER in Munich is Jenoptik's new semi-bar-based fiber-coupled diode laser module. With this module, providing 200 Watt output power from a 200 micrometer fiber with NA 0.2 the Lasers & Materials Processing division extends its product portfolio of high-brilliance fiber-coupled OEM modules.

The module is equipped with a pilot laser and internal output monitoring. With an industry-type housing and a plug-in high-power fiber, the 200 Watt module is ideal for direct material processing such as hardening of functional surfaces or for plastics welding. High brightness and excellent lifetime make this module an outstanding pump source.

JenLas[®] *D2.fs* – a femtosecond laser for the industrial production of medical components.

The application of ultra-short pulse technology in the production of medical devices equipment generates advantages that permit new processing methods for complex, delicate patterns in available and also in new, more heat sensitive materials. These positive effects include less damage due to the heat such as, for example, melting damage, and a minimum heat-affected zone.

The focus in the production of stents, in addition to the conventional processing of shape memory alloys, is primarily on processing of the bioresorbable polymers – such as polylactides (PLA) – of less than 300 micrometer diameter and maximum 100 micrometer wall thickness. The [JenLas[®] *D2.fs*](#) femtosecond laser generates smallest cutting grooves of approximately 10 micrometers. Defined material ablation and no damage through the heat treatment makes processing safer.

The JenLas[®] *D2.fs* can also be used to advantage for precision hole drilling in medical components, such as endoscopes, implants or catheters. In addition, drilling biomedical filters obtains even more delicate patterns and the processing of electrodes of platinum alloy can open up new fields of application in biochemical processes. Potential uses of the JenLas[®] *D2.fs* in the medical industry include surface structuring for optimized tissue growth aid or the generation of lotus effects or the development of lab-on-a-chip products. JenLas[®] *D2.fs* is ideal for use in industrial environments. The investment costs in the laser are recovered quickly by savings for finishing processes, such as laborious mechanical burr removal and the distinctly higher yield of the production processes.

A live demonstration of the laser JenLas[®] *D2.fs* in industrial use – namely cutting of the hypotubes – can be seen at booth C2.559 of the company LLT Applikation GmbH.

High-resolution images can be downloaded at: www.jenoptik.com/pdb-lasersystems.



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Processing of carbon fiber reinforced plastics with the JenLas® *disk IR70E*.

The [JenLas® *disk IR70E*](#) is a diode-pumped single-mode disk laser. Due to the high pulse energy and the short pulse duration this laser is very good for processing carbon fiber reinforced plastics (CFRP). The JenLas® *disk IR70E* has a number of advantages over other laser types such as fiber, lamp-pumped or CO₂ lasers. Outstanding features include the excellent beam quality in connection with a very high pulse peak power.

When CFRP is processed by the JenLas® *disk IR70E*, the heat affected area remains very small making this disk laser an outstanding tool for functional and optical surfaces. The laser can cut, drill and 3D-ablate CFRP material, because ablation layer by layer can be generated. Besides, the application of the laser neither causes delamination nor foaming of plastics, or discoloration of the drill hole or of the cutting edge area. Very good results are obtained, in particular, with thermosetting CFRP materials.

Processing CFRP by laser still has high development potential in many respects – driven primarily by the quest for higher efficiency in the mobility sector, such as in the aviation industry and in the automotive sector. The demand for CFRP materials is growing rapidly. Laser processing by JenLas® *disk IR70E* is a building block that efficiently closes a process gap.

High-resolution images can be downloaded at: www.jenoptik.com/pdb-lasersystems.



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UV lenses for mask projection and ablation.

At its booth at the LASER World of PHOTONICS trade show in Munich, Jenoptik will present [UV lenses](#) for mask projection, direct imaging and ablation. The diffraction-limited UV lenses are used for wavelengths down to 193 nanometers and for magnifications of 1:1 to 1:20. High numerical apertures up to 0.55 and also higher, if requested by the customer, guarantee an excellent resolution down to the sub-micrometer range throughout the entire image field of up to 42 millimeters.

These customer-specific lenses are characterized not only by their high image quality, homogeneity, and the durability of their optical parameters, but also by the use of quartz glass and UV-resistant coatings. Qualified material selection, the company's existing core expertise in lens design as well as cutting-edge coating, production and test technologies and long-term application know-how provide the basis to achieve this outstanding performance. Jenoptik covers the entire process chain from development and prototyping to serial production.

UV laser light is a key technology for manufacturing miniaturized components and imaging highly accurate structures in different materials. Due to the short wavelength of laser light, precision down to the nanometer range can be achieved. UV lenses for micro-material processing are used in the semiconductor industry for structuring and drilling different materials, for the production of LCD, OLEDs and MEMS as well as for manufacturing micro-fluidics structures in medical technology.

High-resolution images can be downloaded here: [Link to the image database.](#)

Customized VIS and NIR Waveguide Chips.

Jenoptik has expanded its portfolio of [integrated optical modulators](#) and units for laser pulse modulation and customized waveguide chips based on lithium niobate. These can now be produced based on customer requirements for almost any wavelength between 532 and 1550 nanometers, in a visible (VIS) and near infrared spectrum (NIR). Outstanding features of these units include a high damage threshold and an excellent contrast ratio. This makes it possible to expand areas of application, especially in laser materials processing and measurement instrumentation.

Jenoptik adopts the design of the wavelength and the electrode structures, including the complete assembly of integrated optical modulators. Waveguide chips can be adapted to customer requirements, regarding waveguide and electrode structures, fiber coupling, connector assembly, and housing design. Lower quantities are possible. In the process, the company can rely on its own technological know-how developed in house and its experience from a multitude of projects.



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The newest developments make it additionally possible to physically reduce the size of the components by almost fifty percent, thus promoting the trend toward miniaturized laser systems.

Integrated optical modulators for pulse modulation are used to modulate amplitude and phase as well as for pulse-forming, pulse rate reduction and for rapidly switching light from the most varied laser sources. They are used in interferometric applications in industrial measuring technology, in laser materials processing for pulse modulation and in safety-related applications, such as laser distance and speed measurements.

High-resolution images can be downloaded here: [Link to the image database.](#)

Customized NIR camera systems for more security.

Near-infrared camera systems can capture images even in poor light conditions or at night. Therefore, they are attractive for surveillance, for industrial image processing and for biometric and safety-related applications. At LASER in Munich Jenoptik presents a customized NIR camera system for surveillance, as an example for the versatile possibilities the company offers in development and manufacturing of [integrated imaging solutions](#).

Jenoptik develops and manufactures customized camera systems; their characteristics, such as optics, lighting, image processing as well as hardware and software, can be adapted to the particular requirements of an application. This includes the selection of CCD or CMOS sensors with different resolutions, variable forms and sizes of the imaging board, LED lighting for different wavelengths and different interface concepts.

For each application, the optics are exactly adapted to the image sensor and conditions of use. The housing can also be provided with optical features to further increase the efficiency of the opto-electronic system. A software development kit for Windows and Linux operating systems is part of the offer. Jenoptik has many years of experience and access to unique technological resources, which gives the products an extraordinary price-performance ratio.

High-resolution images can be downloaded here: [Link to the image database.](#)



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About Jenoptik

As a comprehensive optoelectronics group, Jenoptik divides its activities into five divisions: Optical Systems, Lasers & Material Processing, Industrial Metrology, Traffic Solutions and Defense & Civil Systems. Its customers around the world mainly include companies in the semiconductor and semiconductor equipment manufacturing industry, automotive and automotive supplier industry, medical technology, security and defense technology as well as the aerospace industry.

In the [Lasers & Material Processing division](#) Jenoptik covers the entire value-added chain of laser material processing and it is one of the leading providers – from components through to complete systems.

The [Optical Systems division](#) provides opto-mechanical and opto-electronic systems, modules and assemblies for highest quality standards and is a development and production partner for optical, micro-optical and coated components – made of optical glass, infrared materials as well as polymer.

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