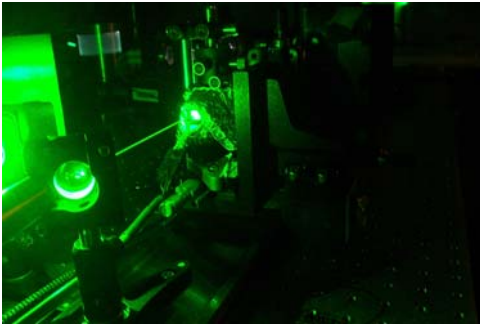


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Aculight Corporation Develops 60-Watt, Green Fiber Laser System

Company Debuts Technology at Solid State and Diode Laser Technology Review Conference in Albuquerque, NM, June 2004

Bothell, Wash., July 14, 2004 – Aculight Corporation, a leading developer of innovative laser technologies, has produced a 60-watt, 540-nm, frequency-doubled, large mode area (LMA) fiber laser system. The unique system could enable the use of fiber lasers in applications that demand high-power green laser output such as materials processing, large area displays, medical and military imaging. Aculight presented the system in a paper at the 17th Annual Solid State and Diode Laser Technology Review (SSDLTR) conference this June in Albuquerque, New Mexico.

“We’ve achieved something very unique with our new fiber laser system,” said Roy Mead, Aculight vice president. “We wanted to produce a high-power green laser that was either continuous wave (CW) or quasi-CW. It needed to have excellent beam quality, be highly efficient, lightweight, compact and rugged. Our new system provides 60-watts of green output at a 10-MHz pulsed repetition rate—and it can be even faster than that if we want. We have surpassed all of our goals.”

Aculight’s engineers initially developed the technology to satisfy the demands of a military customer. While they originally considered modifying conventional diode-pumped solid-state (DPSS) laser technology, they instead chose to create a groundbreaking fiber laser system. “There was an opportunity to leapfrog beyond the existing technologies to something that had even higher performance in all of the dimensions that our customer wanted,” said Mead. “It involved working with LMA fibers.”

Aculight’s system centers on an ytterbium-doped LMA fiber amplifier capable of achieving high average power, while allowing substantial peak power without the onset of nonlinear effects—characteristics essential for efficient frequency doubling. In the system, a seed laser source consisting of a 1080-nm CW fiber oscillator, an amplitude modulator, and a preamplifier provides input pulses to the LMA amplifier. The amplifier fiber is wound onto a small mandril to promote good transverse mode quality and polarization purity, and pumped at the output end by free-space coupling optics. The amplifier output is then directed into a pair of LBO crystals. The

result is a quasi-CW, 60-watt, 540-nm output with excellent beam quality and 10% electrical-to-optical efficiency.

The new system could mark an important step toward deploying green, high-power fiber lasers in the many military and commercial systems that now rely on DPSS and argon-ion lasers. Fiber lasers are especially desirable for these applications because their all-fiber designs are more reliable, efficient, compact and rugged than other technologies.

“Today’s green laser marketplace is dominated by DPSS and argon-ion lasers that produce less than 20 watts, or function at moderate repetition rates,” said Mead. “Our new system surpasses those performance characteristics and will likely extend past the 60 watts that we’ve achieved so far. And the techniques we’ve used to wavelength convert can apply to a variety of fiber systems, so will also allow us access to a wide range of wavelengths. This LMA fiber system really fits into a different region of the product space.”

Aculight plans to further develop its LMA fiber laser technology so that it can be made available to the commercial marketplace in the future.

Aculight debuted the system at this year’s SSDLTR conference in a paper entitled “60-Watt Output at 540-nm from a Frequency Doubled LMA Fiber Laser System.” The company also presented papers that included “Spectral Beam Combining of Large Mode Area Fiber Lasers,” “High Power Laser Source with Spectrally Beam Combined Diode Laser Bars,” and “Fiber Laser Pumping of CW and Pulsed Optical Parametric Oscillators.”

Founded in 1993, Aculight Corporation develops and manufactures innovative laser technologies for medical, industrial and national defense applications. Aculight’s technology portfolio includes fiber lasers, diode-pumped solid-state lasers, nonlinear optics, and external cavity diode lasers. For more information about Aculight, please contact Andrew Brown, director of business development, at (425) 482-1100, or visit www.aculight.com.

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