

Abstract of Presentation

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Presentation Title(Should be no more than 20 words):

“Wavelength scalability with semiconductor disk lasers”

Abstract :

The semiconductor disk lasers, a relatively novel type of light oscillators, are now under intensive development. These lasers produce an excellent beam quality in conjunction with a scalable output power. I present recent achievements in frequency converted and wafer-fused optically-pumped semiconductor disk lasers. Orange-red radiation required for a number of challenging applications can be produced through frequency-doubling using a GaInNAs/GaAs material system. Using such a disk laser operating at a fundamental wavelength of 1224 nm, we demonstrate an output power of 2.68 W in the visible region with an optical-to-optical conversion efficiency of 7.4 %.

We developed optically-pumped disk lasers passively mode-locked with a semiconductor saturable-absorber mirror. The potential of harmonic mode-locking in producing pulse trains at multigigahertz repetition rates has been explored. Wafer fusion technique has been successfully applied for semiconductor disk lasers to advance the spectral scalability of these lasers.