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Title

A narrowband optical parametric oscillator tunable over 6.8 THz through degeneracy with a transversely-chirped volume Bragg grating

Source

APPLIED PHYSICS B-LASERS AND OPTICS, vol.105, no.2. NOV 2011, 239-244.

Abstract

An efficient nanosecond optical parametric oscillator (OPO) with output energies of 0.75 mJ using a periodically poled KTiOPO(4) crystal pumped at 532 nm and generating narrowband output continuously tunable over the range of 6.8 THz, between 1053 nm and 1075 nm, is demonstrated by employing a transversely-chirped volume Bragg grating. The tunable reflectivity spectrum of the chirped volume Bragg grating allowed a smooth transition between singly-resonant and doubly-resonant operation of the OPO without cavity rearrangement. This gave a unique possibility to experimentally verify theoretical predictions regarding the efficiency of type-I and type-0 phase matched degenerate OPOs pumped by multimode Q-switched lasers.