

269. Title: High-power terahertz radiation from surface-emitted THz-wave parametric oscillator
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Abstract: We report a pulsed surface-emitted THz-wave parametric oscillator based on two MgO:LiNbO₃ crystals pumped by a multi-longitudinal mode Q-switched Nd: YAG laser. Through varying the phase matching angle, the tunable THz-wave output from 0.79 THz to 2.84 THz is realized. The maximum THz-wave output was 193.2 nJ/pulse at 1.84 THz as the pump power density was 212.5 MW/cm², corresponding to the energy conversion efficiency of 2.42×10^{-6} and the photon conversion efficiency of about 0.037%. When the pump power density changed from 123 MW/cm² to 148 MW/cm² and 164 MW/cm², the maximum output of the THz-wave moved to the high frequency band. We give a reasonable explanation for this phenomenon.