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Title:Scaling submillimeter single-cycle transients toward megavolts per centimeter field strength via optical rectification in the organic crystal OH1
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Abstract:We present the generation of high-power single-cycle terahertz (THz) pulses in the organic salt crystal 2-[3-(4- hydroxystyryl)-5.5-dimethylcyclohex-2- enylidene]malononitrile or OH1. Broadband THz radiation with a central frequency of 1.5 THz (λ<inf>c</inf>= 200 μm) and high electric field strength of 440 kV/cm is produced by optical rectification driven by the signal of a powerful femtosecond optical parametric amplifier. A 1.5% pump to THz energy conversion efficiency is reported, and pulse energy stability better than 1% RMS is achieved. An approach toward the realization of higher field strength is discussed. © 2012 Optical Society of America.
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