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Title:Simultaneous pulse generation of orthogonally polarized dual-wavelength at 1091 and 1095 nm by coupled stimulated Raman scattering
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Abstract:Intracavity coupled Raman conversions in KTP and KTA driven by a laser diode (LD) pumped Nd:YAG/Cr4+:YAG 1064 nm laser is demonstrated in this paper. Simultaneous pulse generation of orthogonally polarized dual-wavelength at 1091 and 1095 nm are achieved by balancing the Raman gain of KTP and KTA. Under the LD pump power of 8.1 W, the maximum average output powers at 1091 and 1095 nm are 170 and 150 mW, respectively. The corresponding pulse width and repetition rate are measured to be 3.3 ns and 11.2 kHz, with the pulse peak powers calculated to be 4.6 and 4.1 kW, respectively. The laser source with such small wavelength separation and orthogonal polarization provides the interest for terahertz generation in the 1 THz range. Our study provides a simple and flexible method to achieve orthogonally polarized dual-wavelength laser source by Raman-based intracavity coupled nonlinear frequency conversions. © 2012 Optical Society of America.
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