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Title:Simple short-pulse CO<inf>2</inf> laser excited by longitudinal discharge without high-voltage switch
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Abstract:We have developed a longitudinally excited CO<inf>2</inf> laser without a high-voltage switch. The laser produces a short laser pulse similar to those from TEA and Q-switched CO2 lasers. This system, which is the simplest short-pulse CO<inf>2</inf> laser yet constructed, includes a pulsed power supply, a high-speed step-up transformer, a storage capacitor, and a laser tube. At high pressure (4.2 kPa and above), a rapid discharge produces a short laser pulse with a sharp spike pulse. Inmixed gas (CO<inf>2</inf>: N<inf>2</inf>: He01: 1: 2) at a pressure of 9.0 kPa, the laser pulse contains a spike pulse of 218 ns and has a pulse tail length of 16.7 μs. © Springer Science+Business Media, LLC 2012.
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