

Multiwavelength L-band fiber laser with bismuth-oxide EDF and photonic crystal fiber.

ABSTRACT

A multiwavelength laser comb using a bismuth-based erbium-doped fiber and 50 m photonic crystal fiber is demonstrated in a ring cavity configuration. The fiber laser is solely pumped by a single 1455 nm Raman pump laser to exploit its higher power delivery compared to that of a single-mode laser diode pump. At 264 mW Raman pump power and 1 mW Brillouin pump power, 38 output channels in the L-band have been realized with an optical signal-to-noise ratio above 15 dB and a Stokes line spacing of 0.08 nm. The laser exhibits a tuning range of 12 nm and produces stable Stokes lines across the tuning range between Brillouin pump wavelengths of 1603 nm and 1615 nm.