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Compact Dual-Wavelength Laser Generation Using Highly Concentrated Erbium-Doped Fiber Loop Attached to Microfiber Coupler

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A compact and low noise dual-wavelength fiber laser is demonstrated using a 70-cm-long Erbium-doped fiber loop attached to a microfiber coupler. The coupler functions to inject a 980-nm pump light as well as to tap out the output. At the maximum pump power of 8.4 mW, dual-wavelength laser is obtained at 1537.7 and 1551.4 nm with peak powers of 20.5 and 20.9 dBm, respectively. Both laser outputs are stable with a signal to noise ratio of more than 35 dB at room temperature. Both 1537.7 and 1551.4 nm lasers start to lase at threshold pump power as small as 2.5 mW with efficiencies of 0.14% and 0.10%, respectively.

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