

**Dual-wavelength thulium/holmium-doped fiber laser generation in 2  $\mu\text{m}$  region  
with high side-mode suppression ratio**

**ABSTRACT**

We demonstrate a dual-wavelength laser with emission in the 2  $\mu\text{m}$  wavelength region using a thulium/holmium co-doped fiber and a non-adiabatic tapered fiber as a comb filter. The configuration employed a backward pumping scheme and dual-wavelength laser was generated at 2023.53 and 2032.82 nm. The side-mode suppression ratio (SMSR) is more than 44 dB with overall good stability performance. The proposed configuration presents a simple yet practical scheme of generating 2  $\mu\text{m}$  dual-wavelength laser with good SMSR. This investigation may offer a more efficient yet eye safe dual-wavelength related applications for end users.

