

## **Improvement of comb lines quality employing double-pass architecture in Brillouin-Raman laser.**

### **Abstract**

We demonstrate a generation of multiple wavelength lasers incorporating a Brillouin-Raman fiber laser using a double-pass structure. The Raman and Brillouin amplification medium is provided by the combination of 11 km long dispersion-compensating-fiber and 25 km long large-effective-area-fiber. The laser structure is primarily pumped by single Raman pump wavelength at 1455 nm. The loop mirror is utilized as the reflector, which allows Stokes lines and pump light to propagate back into the cavity. A flat output of multiwavelength lasers with uniform optical signal-to-noise ratio across the flat bandwidth is realized from the proposed laser structure.

**Keyword:** Fiber laser; Stimulated Raman scattering; Stimulated Brillouin scattering; Rayleigh scattering; Large effective area fiber.