

Extended nonlinear parametric process in anomalously pumped linear cavity oscillator

ABSTRACT

We demonstrate a linear cavity fiber optical parametric oscillator with extended pump-signal separation of 14.3 THz (116 nm). The signal laser is provided by a pair of 1675nm fiber Bragg gratings and a tunable idler from 1456.12 nm to 1462.48 nm is generated by detuning the pump wavelength in the anomalous dispersion regime of a highly nonlinear fiber. At such large pump-signal separation, we are still able to record a parametric conversion efficiency of more than 35 dB and idler optical signal-to-noise-ratio of 50 dB on average. The stability of the lasing signal and idler is examined and result shows both signal and idler peak power fluctuation is less than 1 dB over a period of 30 minutes.

Keyword: Linear cavity; Parametric process