

High energy L-band femtosecond fiber laser with carbon nanotube saturable absorber

ABSTRACT

An L-band mode-locking erbium-doped fiber laser with high pulse energy is presented incorporating 1497 nm pump wavelength. Microfiber-based carbon nanotube saturable absorber is employed to initiate mode-locking operation in ring cavity. This mode-locked laser operates in soliton regime by scheming net anomalous dispersion of laser cavity. We observe mode-locked laser with Kelly's sidebands properties and 860 fs pulse duration at 341 mW pump power. The pulse energy of this mode-locked laser is measured at 1.08 nJ, on account of 20 % laser output excerpted from the laser cavity. This achievement is beneficial for numerous applications demanding on a high energy mode-locked laser source at L-band wavelength region.

Keyword: Ultrafast optics; Laser mode locking; Carbon nanotubes