51.

Accession Number

12086836

Author

Lin Zhang. Yan Yan. Yang Yue. Qiang Lin. Painter O. Beausoleil RG. Willner AE. Author/Editor Affiliation

Lin Zhang. Yan Yan. Yang Yue. Willner AE. : Department of Electrical Engineering, University of Southern California, Los Angeles, CA 90089, USA

Qiang Lin. Painter O. : Thomas J. Watson, Sr., Laboratory of Applied Physics, California Institute of Technology, Pasadena, CA 91125, USA

Beausoleil RG. : HP Laboratories, Palo Alto, CA 94304, USA

Title

On-chip two-octave supercontinuum generation by enhancing self-steepening of optical pulses Source

Optics Express, vol.19, no.12, 6 June 2011, 11584-90. Publisher: Optical Society of America, USA.

Abstract

Dramatic advances in supercontinuum generation have been made recently using photonic crystal fibers, but it is quite challenging to obtain an octave-spanning supercontinuum on a chip, partially because of strong dispersion in high-index-contrast nonlinear integrated waveguides. We show by simulation that extremely flat and low dispersion can be achieved in silicon nitride slot waveguides over a wavelength band of 500 nm. Different from most of previously reported supercontinuu that were generated either by higher-order soliton fission in anomalous dispersion regime or by self-phase modulation in normal dispersion regime, a two octave supercontinuum from 630 to 2650 nm (360 THz in total) can be generated by enhancing self-steepening in pulse propagation in nearly zero dispersion regime, when an optical shock as short as 3 fs is formed. (29 References).