Accepted Manuscript

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PII: S0030-4026(17)30902-6

DOI: http://dx.doi.org/doi:10.1016/j.ijleo.2017.08.010

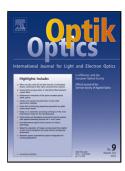
Reference: IJLEO 59473

To appear in:

Received date: 24-4-2017 Revised date: 19-7-2017 Accepted date: 2-8-2017

Please cite this article as: G.Dhanu Krishna, G.Prasannan, S.K.Sudheer, V.P.Mahadevan Pillai, Analysis of Zero Dispersion Shift and Supercontinuum Generation at Near IR in Circular Photonic Crystal Fibers, Optik - International Journal for Light and Electron Opticshttp://dx.doi.org/10.1016/j.ijleo.2017.08.010

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Analysis of Zero Dispersion Shift and Supercontinuum Generation at Near

IR in Circular Photonic Crystal Fibers.

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Abstract

In this paper, we engineered a Circular PCF having a very low confinement loss and high

nonlinear coefficient, from five Circular PCFs of same ring separation value. From the

analysis, it is derived that the zero dispersion wavelengths can be shifted by increasing the

d/R ratio. Analysis of light propagation fiber characteristics such as confinement loss,

effective mode area, non linear coefficient, numerical aperture and chromatic dispersion of

silica core circular photonic crystal fibers have been investigated by full vector finite element

method. Simulation results show that, the magnitude of confinement loss can be reduced to a

value of 5.5012×10^{-6} dB/km at the operating wavelength 1550nm for the structure with d/R =

0.8 and the corresponding effective mode area is 3.78046µm² and nonlinear coefficient is

0.03313km⁻¹W⁻¹. C-PCFs with small air hole diameter show flat chromatic dispersion

response over the wavelength region 1400nm to 1800nm. In addition to tight light

confinement and Gaussian output over the entire operating wavelengths, we have simulated

the Super continuum generation in the d/R = 0.8 fiber for different coupled power.

Keywords: Circular photonic crystal fiber (C-PCF), Confinement loss, Effective mode area,

Nonlinear coefficient, Numerical aperture, Chromatic dispersion.

1. Introduction

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