Abstract

A new kind of honeycomb photonic crystal fiber structure with triangular lattice is proposed. For
the proposed design three different air-hole diameters in cladding region is used. To calculate
dispersion, 2-D finite difference frequency domain method with the Transparent Boundary
conditions (TBC) absorbing boundary conditions is used. Through the numerical simulation and
optimizing the geometrical parameters like changing the diameter of air holes (d) for photonic
crystal fibers in triangular lattice structure, it has been demonstrated that it is possible to obtain
ultra flatten dispersion over a wide wavelength range which lies in second and third telecom
window. The ultra flatten dispersion 0±0.13 is obtained in the wavelength range 1.4 to 1.71μm.
The proposed structure is designed using seven ring in which circular air holes are used. The
best choice of material for the designing purpose is silica with refractive index 1.458.

References

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birefringent photonic crystal fibers with flattened dispersion and low effective mode area” in Optikpage no.2151– 2154, Elsevier GmbH, 2011.


Index Terms

Computer Science

Wireless

Keywords

Effective Refractive Index (neff), Photonic Crystal Fiber (PCF), Transparent Boundary Condition (TBC).