

Designing a Dispersion Flattened Single Mode PCF for E-Band to U-Band with Less Effective Area

Authors : Shabbir Chowdhury

Abstract : A signal is broadened when it is gone through a channel, this phenomenon is known as dispersion. And dispersion is different for different wavelength. So bandwidth become limited. Research have tried to design an optical fiber with flattened dispersion to use more bandwidth and also for wavelength division multiplexing. In this paper, a single mode photonic crystal fiber with a flattened dispersion and less effective area has been proposed where silica is used as fiber materials. The effective dispersion varies from -1.996 to 0.1783 [ps/(nm-km)] for enter E-band to U-band. This fiber will take only 3.048 [micrometer²] (for 1.75 micrometer wavelength). Silica is being used as the fiber material.

Keywords : photonic crystal fiber, dispersion, bandwidth, chromatic dispersion, effective dispersion, dispersion compensation, effective area, effective refractive index

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