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A Novel Low Loss, Highly Birefringent Photonic Crystal Fiber in THz Regime - DTU Orbit (09/11/2017)

A Novel Low Loss, Highly Birefringent Photonic Crystal Fiber in THz Regime

We present a new kind of dual-hole unit-based porous-core hexagonal photonic crystal fiber (H-PCF) with low loss and high birefringence in terahertz regime. The proposed fiber offers simultaneously high birefringence and low effective material loss (EML) in the frequency range of 0.5-0.85 THz with single-mode operation. An air-hole pair is used inside the core instead of elliptical shaped air holes to introduce asymmetry for attaining high birefringence; where the birefringence can be enhanced by rotating the dual-hole unit axis of orientation. The proposed H-PCF provides a birefringence of similar to 0.033 and an EML of 0.43 dB/cm at an operating frequency of 0.85 THz.

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