



Transmission performance of multimode W-type microstructured polymer optical fibers

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Abstract: By solving the time-independent power flow equation (TI PFE), we study mode coupling in a multimode W-type microstructured polymer optical fiber (mPOF) with a solid-core. The multimode W-type mPOF is created by modifying the cladding layer and reducing the core of a multimode singly clad (SC) mPOF. For such optical fiber, the angular power distributions, the length L_c at which an equilibrium mode distribution (EMD) is achieved, and the length z_s for establishing a steady state distribution (SSD) are determined for various arrangements of the inner cladding's air-holes and different launch excitations. This information is useful for the implement of multimode W-type mPOFs in telecommunications and optical fiber sensors.

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