

Dispersion of Gas-Filled Hollow Fiber



Overview

In this work, we present an experimental and numerical study of intense ultrafast pulse propagation in HCF over a large gas pressure and pump pulse energy parameter space—corresponding to several fundamentally different dispersion regimes—all within the same optical setup. When the pulse propagates in the anomalous dispersion regime we observe. Since their inception, about 20 years ago, hollow-core photonic crystal fiber and its gas-filled form are now establishing themselves both as a platform in advancing our knowledge on how light is confined and guided in microstructured dielectric optical waveguides, and a remarkable enabler in a. In this study, we use machine learning to investigate the optimal design of supercontinuum-generating hollow-core antiresonant fibers (HC-ARFs) pressurized and filled with methane. The input pulse is first divided temporally into a sequence of almost identical subpulses by birefringent optical elements that are designed to have nearly zero group delay dispersion. underlying mechanism of broadband dispersive-wave emission within a resonance band of gas-filled anti-resonant hollow-core fiber.

Dispersion of Gas-Filled Hollow Fiber



In this paper the fundamental physical mechanism has been ...



The propagation of light in kagome HC-PCFs filled with different noble gases is described. The dependence of some properties, namely the group velocity dispersion and the nonlinear parameter ...



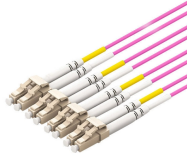
Artificial neural networks (ANNs) are trained to replace the numerical solvers, accelerate the simulation of fibers, and provide a more rapid fiber design ...



We study theoretically a pulse compression method with gas-filled hollow-core fiber (HCF) based on pulse division. The input pulse is first divided temporally into a sequence of almost identical ...



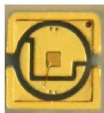
Here, we give a historical account of the major seminal works, we review the physics principles underlying the different optical guidance mechanisms that have emerged and how they have been ...



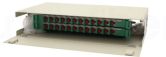
In this paper the fundamental physical mechanism has been discussed determining the dispersion properties of PCFs, and the dispersion in a gas filled hollow core photonic crystal fiber...



Dispersive wave emission in gas-filled hollow-core photonic crystal fibres has been possible in the visible and ultraviolet via the optical Kerr effect.



We experimentally investigate the nonlinear optical pulse dynamics of ultrashort laser pulses propagating in gas-filled hollow capillary fibers in different dispersion regimes, which are achieved by ...



underlying mechanism of broadband dispersive-wave emission within a resonance band of gas-filled anti-resonant hollow-core fiber. Both theoretical and experimental results unveiled that the high-order ...



Artificial neural networks (ANNs) are trained to replace the numerical solvers, accelerate the simulation of fibers, and provide a more rapid fiber design procedure. We first use an analytical ...

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