

HOLLOW-CORE ANTI-RESONANT OPTICAL FIBER WITH HIGH SINGLE-MODE PERFORMANCE AND LOW LOSS

Abstract

The present disclosure relates to a hollow-core anti-resonant optical fiber with high single-mode performance and low loss, including an outer cladding and an inner cladding which is formed by nested structural elements arranged circumferentially along an inner wall of the outer cladding and connected to the inner wall of the outer cladding and wraps a central cavity to form a fiber core, wherein the nested structural element includes 2 layers of nested glass tubes having different radii, i.e., including an outer nested glass tube and an inner nested glass tube, and at least one inner nested glass tube is deflected to one side relative to the outer nested glass tube in which the inner nested glass tube is located, a deflection angle being 5° to 55° . The present disclosure changes a cladding structure and has a rational and fabricable shape of nested structural elements, an optimized combination of nesting dimensions, and a deflection of the inner nested glass tube, which significantly enhances the leakage loss of the LP₁₁ mode, has little impact on the performance of the fundamental mode, and finally effectively improves the single-mode performance of the optical fiber.

Fig. 1