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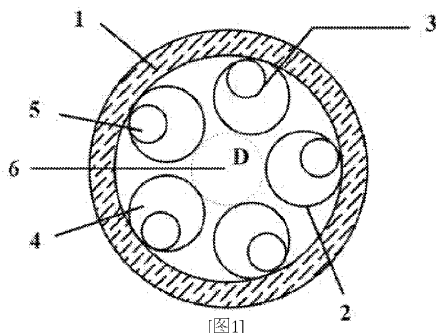
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(81) 指定国(除另有指明, 要求每一种可提供的国家保护): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CV, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ,

(54) Title: HOLLOW-CORE ANTI-RESONANT OPTICAL FIBER WITH HIGH SINGLE-MODE PERFORMANCE AND LOW LOSS

(54) 发明名称: 一种高单模性低损耗空芯反谐振光纤



(57) Abstract: The present invention relates to a hollow-core anti-resonant optical fiber with a high single-mode performance and low loss. The hollow-core anti-resonant optical fiber comprises an outer cladding and an inner cladding, wherein the inner cladding consists of nested structural units, which are arranged in the circumferential direction of the inner wall of the outer cladding and are connected to the inner wall of the outer cladding, and a central cavity enclosed by the inner cladding forms a fiber core. The hollow-core anti-resonant optical fiber is characterized in that each nested structural unit comprises two nested glass tubes with different radii, namely, 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 where the inner nested glass tube is located, with a deflection angle of 5-55 °. In the present invention, by means of the modification of a cladding structure, combined with the rational and fabricable shape of the nested structural units, an optimized combination of nested dimensions and the deflection of the inner nested glass tubes, the leakage loss of an LP11 mode is significantly improved, and the influence on the fundamental mode performance is relatively small, thereby finally effectively improving the single-mode performance of the optical fiber.

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— 包括国际检索报告(条约第21条(3))。

(57) 摘要: 本发明涉及一种高单模性低损耗空芯反谐振光纤, 包括有外包层和内包层, 所述的内包层由嵌套结构单元构成, 所述的嵌套结构单元沿外包层内壁的周向布设, 并与外包层内壁相接, 所述内包层包覆的中心空腔形成纤芯, 其特征在于所述嵌套结构单元包括有2层不同半径的嵌套玻璃管, 包括外嵌套玻璃管和内嵌套玻璃管, 至少存在有一个内嵌套玻璃管相对其所在的外嵌套玻璃管向一侧偏转, 偏转夹角为 5° ~ 55° 。本发明通过包层结构变化, 兼具合理的、可制备的嵌套结构单元形状、优化的嵌套尺寸组合和内嵌套玻璃管的偏转, 显著提高了LP11模式的泄漏损耗, 且对基模性能影响较小, 最终有效提升了光纤的单模性能。