

HOLLOW-CORE MICROSTRUCTURED OPTICAL FIBER WITH SUBTRACTIVE MARKING, PREFORM AND FIBER DRAWING DETECTION METHOD

Abstract

The present invention discloses a hollow-core microstructured optical fiber with a subtractive marking. The hollow-core microstructured optical fiber includes a cladding hollow-core sleeve and a plurality of anti-resonant microstructured units arranged on and attached to the inner wall of the cladding hollow-core sleeve. The anti-resonant microstructured units are configured to form an air core region with an inscribed circle size thereof. The plurality of anti-resonant microstructure units are rotationally symmetric. One or more subtractive marking units are provided on the outer side of a fiber core, such that an end surface structure of the hollow-core microstructured optical fiber exhibits asymmetry. The subtractive marking unit is a groove or a through hole, and the area of the subtractive marking unit accounts for 0.002% to 2% of that of the cladding hollow-core sleeve. In the hollow-core microstructured optical fiber with the subtractive marking of the present invention, by means of the subtractive marking units, the anti-resonant microstructure units can be marked and identified in fiber drawing detection so as to evaluate the geometric uniformity of the hollow-core microstructured optical fiber, thereby providing reference and guidance for the subsequent production of preforms of the hollow-core microstructured optical fiber, and performing process adjustment and improvement in a timely manner.

(Fig. 2)