Multilayer ARROW Channel Waveguide For Evanescent Field Enhancement In Low-Index Media

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Summary

A multilayer antiresonance reflecting optical waveguide (ARROW) channel waveguide geometry, believed to be novel, is proposed for enhancing the evanescent field in low-index materials. The finite-difference method is used in the analysis of the structure. The fraction of the fundamental TE-like-mode power in the low-index material (air) is used as a measure of the evanescent field enhancement. The calculated results suggest that the evanescent field of the fundamental TE-like mode can be significantly increased in air while the low modal loss that characterizes the leaky nature of the structure is maintained. The results also suggest that a semivectorial approach to this problem is adequate for analysis of the proposed waveguide structure. (C) 2002 Optical Society of America.

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