

Radiation pattern of cone-shaped end face of optical fiber

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Abstrak

ABSTRACT

Recently, there is a rapidly growing in the field of optical fiber communications, particularly in the technology of fiber waveguide which is used as transmitting media or communication lines. A major problem in optical waveguide systems is the coupling loss in connectors or couplers for the purpose of gaining maximum coupling efficiency. This research is dedicated to obtain an efficient waveguide device by studying the applicability of cone-shaped fiber end-face as fiber star coupler without any complement element. Light power from one end-face of fiber was directly coupled to another cone-shaped fiber end-face. The first step of this study was the process of cone-shaping for graded-index fibers. The result was used as coupling elements in an experimental star coupler. The evaluation of the result is carried out based on the concept of radiation pattern of electromagnetic field in cone-shaped end-face of fibers. It is concluded that the experimental star coupler is predicted to be useful with some improvement in choosing fiber-core diameter, matching the size of the coupled fibers and aligning the suitable axes of the outgoing fibers.

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