

Development of polymer-based Y-branch symmetric waveguide coupler using soft lithography technique

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ABSTRACT

The development of a Y-branch symmetric waveguide coupler based on soft lithography approach was presented. This paper focused on the design, fabrication and testing of the symmetric waveguide coupler that produces an optic with power output. The fabrication was done by engraving acrylic to produce a master mould using milling machining tools for optical devices. The device was constructed via soft lithography which duplicated the pattern from the master mould onto a second mould to produce an actual device. Afterward, optical polyme epoxy OG142 was injected into the second mould, of which the product was then put on top of acrylic. The device was completed after curing the optical polymer glue, epoxy OG142 by exposing the assembly on the second mould under UV light until both parts bonded. The results of the tap off ratio testing for asymmetric waveguide coupler were ranged from 21.1 to 49.2% within +2% error.

KEYWORDS

Optical; Soft lithography; Waveguide

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