Extention of ray trace in evaluation of coupling property of microlens

Syamsul El Yumin, author

Abstrak

ABSTRAK
Recently, the distributed index microlenses have been introduced as the novel elements for coupling device in microoptic circuitry. A potential advantage of such microlenses as microoptic components is the possibility of gaining a Large nemerical aperture so that incoming Light can be effectively guided, for example in optical coupler, branching circuits, wavelength multiplexer / demultiplexer and so on. The coupling property of microlenses is the basic application of microlenses in optical communication system. this study, a coupling circuit using paired microlenses with distributed index of refraction has been developed. The variation of coupling efficiency due to Lateral offset, angular misalignment and end separation of two coupled microlenses has been experimentally measured. Evaluation on the result was carried out by computer simulation based on phase space representation of ray tracing. It is concluded that the coupling property of distributed index microlenses is affected by the index profile of respective microlenses as predicted by phase space analysis. Furthermore the phase space representation has also been utilized to analyze the coupling efficiency of microoptical coupler.