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Abstract ABSTRACT
Optical fiber alignment is a process used to joint two pieces of optical fibers together. Power meter is regularly employed to detect the power loss between two jointed fibers. If the power loss is above a preset level, then the alignment is invalid and must be reworked. This report studies two methods of predicting the power loss before the alignment is carried out, so that invalid alignment could be avoided. One method uses the roughness, depicted by fractal dimension, of the jointing faces of both fibers as a factor of indicating failure or not of the alignment. Another method uses both pitch and yaw angles between two alignment fibers to anticipate the possible power-loss range after alignment. Also this study considers the method of predicting the power loss after the optical fibers have been aligned, which could serve as a factor of assisting the decision making of rejecting the alignment or not before final bonding. Experiments are conducted to test the suggested methods with satisfactory results. Some of them are reported in this article.
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