

LASER MICROWELDING FOR RELIABLE PACKAGING OF PHOTONIC DEVICES.

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Abstract:

Investigations and analysis of various parameters that contribute for increasing the efficiency of laser diode to single mode fiber coupling using lens coupling scheme are presented in this paper. The low power laser weldability of Invar, Kovar and stainless steel 304 alloys make them suitable as the best materials and welding tools to different types of photonic devices packaging. The fiber attachment process and microwelds for fixing of various coupling components have been performed in what is so called active alignment process, where the system continues measuring the coupled power during the process of coupling and welding system (**LW4000S** from Newport) has been used for the alignment and welding of the coupling components inside a butterfly module. The effect of laser weld beam parameters on the weld dimensions is optimized to get good and the desired weld width to penetration depth with small heat affected zone (**HAZ**) for achieving good welds without damaging the sensitive optical components inside the module.