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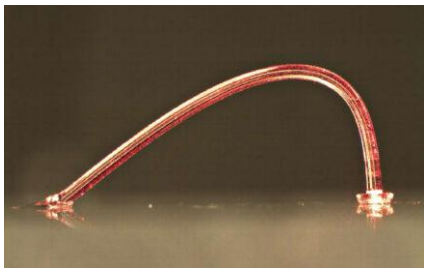
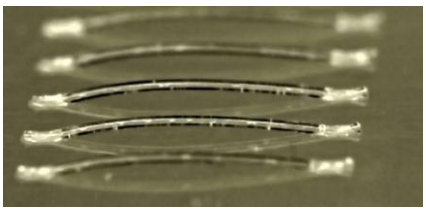
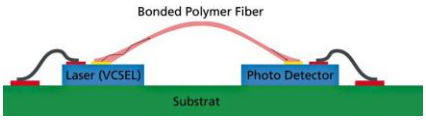
KOBOLD – competitive optical bond technique for laser, LEDs and detectors



Polymer fibre for transmission of optical signals



Bonded optical polymer fibres



Principle of optical wire bond

Due to precise positioning and sophisticated processes todays interconnection technologies for optical coupling are very expensive. A new approach for cost reduction is the use of polymer fibres. These fibres connect substrate mounted lasers and LEDs to detectors and waveguides. Because the alignment and contacting are done in one step time is saved.

The used process is similar to standard wire bonding so only slightly modified wire bond equipment can be used. A high degree of automation leads to higher productivity and lower costs for optical assembly. Smaller geometry of the bonds culminates to a new level of miniaturisation. The connections are also easy to repair, flexible in arrangement and more freely in configuration.

With this new technological approach many optoelectronic applications like multimode transceiver modules and applications in sensor systems become possible.

The KOBOLD project dealt with both existing bond techniques: wedge/wedge and ball/wedge. Also different kinds of materials were used, PMMA and glass (D263T) as substrate, polyamide, PMMA and PMMI as fibre.

The best coupling efficiency of below 1dB was achieved by ball bonds.

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