

LATCHING MICRO OPTICAL SWITCH

US Pat. No.: 8,477,148

Technology Readiness Level: 4

Basic technological components are integrated to establish that the pieces will work together

Sandia National Laboratories has developed a latching switch for optical fibers. One or more fibers are moved by an actuator between two positions, off and on. In the off position, two fiber ends are not aligned and light does not pass from the first fiber to the second. In the on position, the ends of two fibers are precisely aligned to make a low-loss optical connection. The fibers are robustly held in place by mechanical latches in both positions to prevent them from unintentional movement due to shock and vibration.

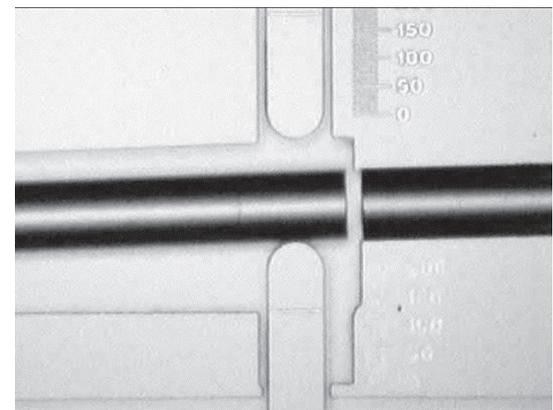
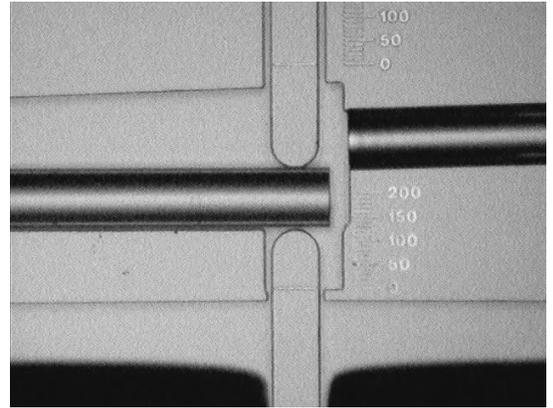
Power is not required to hold the fibers in either position. The power required to switch between on and off is low due to the micro-fabrication techniques used to create the linear actuator that aligns the fibers and the latching mechanism. Micro-fabrication also results in a small switch that will have many commercial and defense applications.

TECHNICAL BENEFITS

- Smaller Scale
- Reduced Cost
- Withstands severe mechanical environments
- Can be fabricated using a variety of techniques, including DRIE, LIGA or other bulk micromachining

INDUSTRIES & APPLICATIONS

- Aircraft and aerospace
- Communications
- Electronics
- Industrial machinery
- Medical devices
- Microelectronics
- Transportation and automotive



125 micron diameter optical fiber unlocked (above) and locked into position (bottom)