

Fibre-integrated phase-change devices

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Combining phase-change materials with well-established, reliable and mature light-guiding platforms such as optical fibers constitutes an important contribute to reenergizing the field of designer optical properties, bridging the gap between promising new physical properties and real world applications with potential to revolutionize data processing networks. Two non-volatile switches merging a chalcogenide glass phase-change medium with a side-polished fiber and an optical fiber tip are proposed. Both offer switching capability across a wide wavelength range in the near-infrared band with intensity switching ratios of 2.68 dB and 6.3 dB, respectively. The versatility of these light-modulating schemes is further emphasized by the possibility of engineering the optical response of both devices by adjusting their geometry. Fibre-integrated phase-change devices could find application in a number of fields such as telecommunication and data storage.