Abstracts

Infrared Optical Fibers

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A state of the art review of nonsilica based infrared fibers is presented. Two types of fiber materials have been investigated--crystals and glasses. Crystal fiber work appears to be focused on development of short haul CO/sub 2/ laser power delivering lines at 10.6 µm. The maximum delivering power of the CW CO/sub 2/ laser has reached up to about 100 W by the polycrystalline KRS-5 fiber. A number of glass fibers are being developed in fluorides, sulfides and heavy metal oxides. The best optical attenuation of each glass fiber has been respectively reduced to 21 dB/km at 2.55 µm for ZrF/sub 4/-based glass fiber with a core-clad structure, 78 dB/km at 2.4 µm for As-S unclad glass fiber, and 13 dB/km at 2.05 µm (70 dB/km at 2.40 µm) for GeO/sub 2/-Sb/sub 2/O/sub 3/ glass fiber with a core-clad structure. Recent progress of these infrared fibers offers great potential for new wavelength fiber finks operating in the 2-10 µm region which have not been realized by silica-based fiber.

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