Crystalline Silicon for Optical Fiber Communication

Utilizing this diagram, we illustrate the creation of single-crystal silicon core fibers by laser crystallizing amorphous silicon deposited inside silica capillary fibers by high-pressure chemical ...

By harnessing the unique optical properties of the crystalline silicon core directly within the fiber geometry, it is possible to imagine compact and low power nonlinear systems that are immediately ...

Polycrystalline silicon core optical fibers have been fabricated by modified thermal annealing of amorphous silicon chemically deposited at high pressure. The resulting fibers have small-diameter ...

Silica glass optical fibres are ubiquitous, with their high transparency and design flexibility enabling the high speed and reliability of modern communications. These attributes of silica-based glasses have ...

In this chapter, we will introduce the development history, manufacturing, optical properties, and applications of silicon-based optical fibre in detail.

Silicon-core optical fibres represent a convergence of semiconductor photonics and conventional fibre technology, embedding a crystalline silicon or silicon-germanium alloy core within a...

In semiconductor fiber optic technology, long strands of silica glass fibers are deposited with semiconductor materials such as silicon, germanium, or other crystalline semiconductors.

Silicon core fibers (SCFs), which comprise a silicon core in the form of a glass-clad optical fiber, represent a marriage of fiber optics and silicon photonics, opening a route to their ...

Laser crystallization has been recently demonstrated for crystallizing amorphous silicon fibers into crystalline form. Here we explore the underlying mechanism by which long single-crystal silicon ...

These modulators leverage the properties of amorphous (top) and crystalline (bottom) silicon films surrounding silicon nitride waveguides operating in the C-band communications range at ...

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