

Enhanced Silicon Optical Fiber

Description:

Silicon optical fibers that transmit in the Infrared range have a wide variety of applications, including applications in Defense (sensing, counter-measures, high energy laser beam clean up) and Biomedical (laser surgery). Currently the processing temperatures for Silicon optical fibers are high which increase oxygen impurities. The oxygen impurities promotes optical scattering and reduces transparency and performance of the fibers. Current technologies do not eliminate the oxygen impurities in the high temperature processing of Silicon Optical Fibers.

This technology features a novel process to reduce oxygen impurities in Infrared Silicon Optical Fibers. An in-situ scavenger reacts with the oxygen and is released as a vapor. During formation, the scavenger reduces oxide precipitate to form the core primary component and volatile products. The primary material of the core can melt during the fiber formation process and crystallize upon cooling leaving the formed optical fiber with a crystalline core and little or no impurities due to precipitation of oxide into the core.

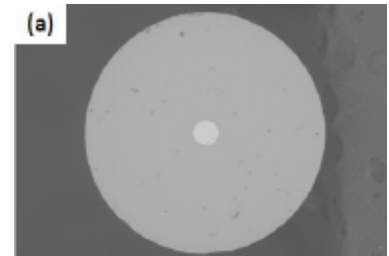


Figure 1: SEM image of optical fiber drawn using a scavenger.

Applications:

- Fiber lasers for Defense IR sensors
- Fiber lasers for Security
- Fiber Lasers for IR laser surgery

Benefits:

- Reduced oxygen/oxide impurities
- Enhanced transparency
- Minimal light scattering out of core
- Higher Strength
- Process compatible with conventional perform and fiber draw processes

Inventors: John Ballato, Robert Rice
Licensing Status: This technology is available for licensing
Protection Status: A patent application has been filed
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