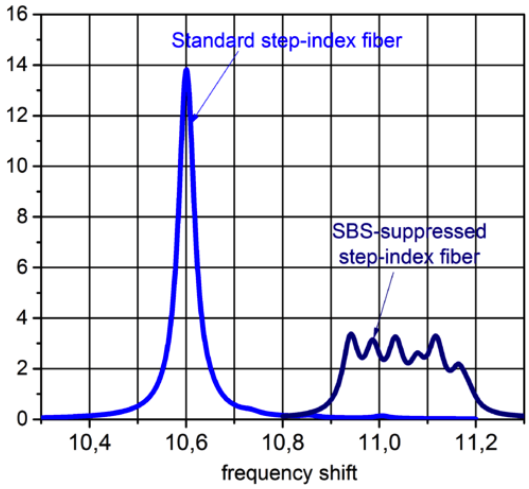
SBS-SUPPRESSED FIBER PIGTAILS

Stimulated Brillouin Scattering (SBS) is the main factor limiting the maximum power of narrow-band (less than 100MHz in linewidth) fiber lasers. One of the tasks where this effect causes significant problems is the delivery of high-power single-frequency radiation using fibers (for example, the output pigtail of fiber lasers).



The problem becomes even more critical in the case of pulsed radiation delivery. In particular a very promising application of pulsed single-frequency lasers is various types of LIDARs. The problem is that the maximum output peak power of such devices is severely limited by the low SBS threshold of the passive fibers at the amplifier output (pigtails of isolators, circulators, collimators).

The Greitlex company has developed a method for modifying the acoustic properties of fibers. This method can significantly increase the SBS threshold (guaranteed – 2 times, but typical improvement is more than 3 times) compared to a conventional fiber with the same core diameter and numerical aperture. The main advantage of our technique is that SBS-suppressed fibers are fully compatible with standard step-index fibers.

Pigtail article	PGTL-SBSS-20-1550-PM-XX	PGTL-SBSS-10-1064-PM-XX	PGTL-SBSS-15-1064-PM-XX
Operating wavelength, nm	1550±50	1064±50	1064±50
Core diameter, µm	20 ± 2	10 ± 1	15 ± 2
Clading diameter, µm	127 ± 3	127 ± 3	127 ± 3
Core mumerical aperture	0.09 ± 0.02	0.09 ± 0.02	0.09 ± 0.02
Gray loss (1550nm), dB/km	< 20	< 20	< 20
Polarization extinction ratio (after 2m), dB	> 18	> 18	> 18
Increase of SBS threshold (relative to uniformly doped fiber with the same MFD), dB	> 3 (5 typical)	> 3 (5 typical)	> 3 (5 typical)

Comments: XX - indicate required pigtail length