Large Mode Area Fibers for Eye Safe Wavelength Lasers and Amplifiers

Nufern offers a range of single-mode, polarization maintaining and large mode area fibers for lasers and amplifiers for important eye safe wavelengths near 1.5 μm and 1.9 – 2.2 μm. Er/Yb co-doped fibers are optimized for highest efficiency operation near 1.55 μm while maintaining the lowest parasitic ASE at 1 μm. High efficiency thulium (Tm) doped fibers for operation near 2 μm are offered through optimization of glass composition to achieve generation of two signal photons for every pump photon. Thulium fibers with optical efficiencies of over 60% are achievable with 793 nm pumping. Nufern also offers holmium (Ho) doped fibers optimized for resonant pumping with Tm doped fiber lasers and extending operating wavelengths to 2.175 μm with optical efficiencies >80%. The state-of-the-art Er/Yb, Tm and Ho doped fibers are enabling new applications in Industrial, Medical and Defense markets.
Optical Benefits

- High Optical Efficiencies
  - Tm doped fibers ➞ Efficiencies > 60% when pumped at 793 nm
  - Ho doped fibers ➞ Efficiencies > 80% when resonantly pumped by a 1950 nm Tm fiber laser
  - Er/Yb co-doped fibers ➞ Efficiencies of 40% with low 1 µm ASE operation at eye safe wavelengths

- Operations at Eye Safe Wavelengths
  - Er/Yb fibers: 1530 – 1625 nm
  - Tm fibers: 1900 – 2100 nm
  - Ho fibers: 2000 – 2175 nm

Mechanical Benefits

- Proprietary doping technology – High glass damage threshold.
- NuCOAT FA coating – Enhanced fiber reliability in demanding applications
- Prooftested to 100 kpsi – Excellent mechanical reliability
- High dynamic fatigue strength – Long life expectancy in typical deployment conditions

Applications

- LIDAR & LADAR sources
- Material processing for plastics and metals
- Free space communications
- Medical applications and surgical lasers